UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-K

(Mark one)

[X] ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended December 31, 2022
or

[ ] TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the transition period from _____ to _____
Commission file number 001-39747

SEER, INC.

(Exact name of Registrant as specified in its charter)

Delaware	**82-1153150**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification Number)**

3800 Bridge Parkway, Suite 102
Redwood City, California 94065
650-453-0000
(Address, including zip code and telephone number, including area code, of Registrant's principal executive offices)

Securities registered pursuant to section 12(g) of the Act:

Copies to:

Title of each class	**Trading Symbol(s)**	**Name of Exchange on which registered**
Common Stock, par value $0.00001	SEER	NASDAQ Global Select Market

Securities registered pursuant to section 12(g) of the Act: None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☐ No ☒

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes ☐ No ☒

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☒ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer	☐	Accelerated filer	☐
		Smaller reporting company	☒
Non-accelerated filer	☒	Emerging growth company	☐

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 7(a)(2)(B) of the Securities Act. ☐

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. Yes ☐ No ☒

If securities are registered pursuant to Section 12(b) of the Act, indicate by check mark whether the financial statements of the registrant included in the filing reflect the correction of an error to previously issued financial statements. ☐

Indicate by check mark whether any of those error corrections are restatements that required a recovery analysis of incentive-based compensation received by any of the registrant's executive officers during the relevant recovery period pursuant to §240.10D-1(b). ☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes ☐ No ☒

The aggregate market value of the voting and non-voting common equity held by non-affiliates of the Registrant, based on the closing price of the shares of common stock on The NASDAQ Stock Market on June 30, 2022, was approximately $426.0 million.

As of March 2, 2023, the registrant had 59,699,611 shares of Class A common stock, $0.00001 par value per share, and 4,044,969 of Class B common stock, $0.00001 par value per share, outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's definitive Proxy Statement relating to the 2023 Annual Meeting of Stockholders are incorporated herein by reference in Part III of this Annual Report on Form 10-K to the extent stated herein. The proxy statement will be filed with the Securities and Exchange Commission within 120 days of the registrant's fiscal year ended December 31, 2022.

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SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This Annual Report on Form 10-K ("Annual Report") contains forward-looking statements. All statements other than statements of historical facts contained in this Annual Report, including statements regarding our future results of operations and financial position, business strategy, commercial activities and costs, research and development costs, timing and likelihood of success, as well as plans and objectives of management for future operations, are forward-looking statements. These statements involve known and unknown risks, uncertainties and other important factors that are in some cases beyond our control and may cause our actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by the forward-looking statements.

In some cases, you can identify forward-looking statements by terms such as "may," "will," "should," "would," "expect," "plan," "anticipate," "could," "intend," "target," "project," "believe," "estimate," "predict," "potential," or "continue" or the negative of these terms or other similar expressions. Forward-looking statements contained in this Annual Report include, but are not limited to, statements about:

- estimates of our addressable market, market growth, key performance indicators, capital requirements and our needs for additional financing;
- our expectations regarding our financial performance, including among others, revenue, cost of revenue, gross profit, operating expenses, loss from operations and net losses;
- our ability to successfully implement our commercialization strategy and attract customers, including our plans for international expansion;
- the implementation of our business model, strategic plans and expected pricing for the Proteograph™ Product Suite;
- our expectations regarding the rate and degree of market acceptance of the Proteograph Product Suite;
- the impact of the Proteograph Product Suite on the field of proteomics and the size and growth of the addressable proteomics market;
- competitive companies and technologies and our industry;
- our ability to manage and grow our business;
- our ability to develop and commercialize new products;
- our ability to establish and maintain intellectual property protection for our products or avoid or defend claims of infringement;
- the performance of third-party manufacturers and suppliers;
- the potential effects of government regulation;
- our ability to hire and retain key personnel and to manage our future growth effectively;
- the volatility of the trading price of our Class A common stock;
- the benefits of the PrognomiQ, Inc. transaction;
- the impact of local, regional, and national and international economic conditions and events;
- the impact of macroeconomic factors, such as pandemics, inflation, supply chain interruptions and foreign hostilities, on our business; and
- our expectations about market trends.

We have based these forward-looking statements largely on our current expectations and projections about our business, the industry in which we operate and financial trends that we believe may affect our business, financial condition, results of operations and prospects, and these forward-looking statements are not guarantees of future performance or development. These forward-looking statements speak only as of the date of this Annual Report and are subject to a number of risks, uncertainties and assumptions described in the section titled "Risk Factors" and elsewhere in this Annual Report. Because forward-looking statements are inherently subject to risks and uncertainties, some of which cannot be predicted or quantified, you should not rely on these forward-looking statements as predictions of future events. The events and circumstances reflected in our forward-looking statements may not be achieved or occur and actual results could differ materially from those projected in the forward-looking statements. Except as required by applicable law, we undertake no obligation to update or revise any forward-looking statements contained herein to reflect events or circumstances after the date of this Annual Report, whether as a result of any new information, future events or otherwise.

In addition, statements that "we believe" and similar statements reflect our beliefs and opinions on the relevant subject. These statements are based upon information available to us as of the date of this Annual Report, and while we believe such information forms a reasonable basis for such statements, such information may be limited or incomplete, and our statements should not be read to indicate that we have conducted an exhaustive inquiry into, or review of, all potentially available relevant information. These statements are inherently uncertain, and you are cautioned not to unduly rely upon these statements.

PART I.

Item 1. Business

Overview

Our mission is to imagine and pioneer new ways to decode the secrets of the proteome to improve human health. Our first product, the Proteograph™ Product Suite (Proteograph), leverages our proprietary engineered nanoparticle (NP) technology to provide unbiased, deep, rapid and large-scale access to the proteome. The Proteograph Product Suite is an integrated solution that includes consumables, an automation instrument and software.

The human proteome is incredibly complex, with multiple protein variants derived from each gene. This complexity arises from multiple biological steps required to create the functional proteome, including transcription, translation, post-translational modifications (PTMs) and protein interactions. While many protein variants may be benign, others can severely disrupt protein function and contribute to disease. The complexity of the proteome at a population level is huge. For example, a study by the UK Biobank published in late 2021 in *Nature* identified over 900,000 potential protein loss-of-function variants in a cohort of approximately 455,000 individuals, with each individual having an average of more than 200 such variants (Backman *et al.*). It is essential to catalog the complexity of the proteome and understand the functions of protein variants to decode the links between the proteome, the genome and disease. This deeper understanding can lead to novel insights into disease mechanisms, the discovery of new biomarkers and the identification of potential therapeutic targets.

We believe that broader access to the proteome is essential, not only to understanding its complexity and accelerating biological insights, but also to expanding end-markets. These markets may include basic research and discovery, translational research, diagnostics and applied applications. To comprehend the complexity and dynamic nature of the proteome, researchers must perform population-scale, deep, unbiased interrogation of biological samples over time. We believe that this level of interrogation was not previously feasible and that the Proteograph can enable researchers to perform these types of proteomics studies. Before the commercial launch of the Proteograph, we believe that the largest published deep unbiased plasma proteomics study, which measured at least 600 proteins, was conducted on just 48 samples. However, today, multiple customers have successfully completed, or are planning, deep unbiased plasma proteomics studies with thousands of proteins quantitatively measured across thousands of samples. This breadth and depth of unbiased plasma proteomics coverage was not previously achievable at scale.

Proteins play a critical role in most biological processes and provide dynamic indicators of physiological changes across health, disease progression, and therapeutic response. However, compared to the genome, the discovered and cataloged body of proteomic data remains limited. Current proteomics approaches have not facilitated deep exploration at scale in samples with high dynamic range, because they are either: (i) unbiased but not scalable; or (ii) scalable but biased. Current deep, unbiased approaches require complex, lengthy, labor- and capital-intensive workflows that limit their application to small, under-powered studies. Targeted or biased methods are scalable but are limited to a specific number of predetermined proteins. These methods cannot distinguish between variants of the same proteins often present in the same biological samples, because they lack the necessary peptide-level resolution and accuracy needed to characterize the proteome. These limitations force a trade-off between the number of samples and the depth of protein coverage in a study. We believe that a more complete understanding of biology requires deep, unbiased, large-scale proteomic analysis with the peptide-level resolution and accuracy needed to distinguish protein variants.

We are focused on driving adoption of the Proteograph by customers in the proteomics and genomics markets who recognize the value of large-scale, unbiased, and deep proteomics. Allied Market Research estimated the global proteomics market to be approximately $24 billion in 2021. The Proteograph's unique capabilities now enable researchers to undertake first-of-their-kind, large-scale unbiased studies, which complement genomics studies by adding critical missing information that can provide functional context to genomic variation. With the advent of next-generation sequencing and improvement in cost and throughput, researchers have sequenced the equivalent of several million human genomes and human exomes. Across these studies, according to the dbSNP database, more than one billion individual genetic variants have been identified to date; however, less than 0.2% of those variants

have been cataloged in the ClinVar database with a reported relationship between variation and phenotype. This gap in functional annotation is in part due to the gross impedance mismatch between access to the proteome and genome. We believe that the Proteograph Product Suite will bridge this gap.

Just as large-scale access to genomics has dramatically impacted that field, we believe large-scale access will do the same for proteomics, revealing new content, enabling mapping and cataloging of new protein variants, and driving new disease insights, diagnostics and treatments. Importantly, by impedance-matching researchers' access to unbiased genomics content at the nucleotide level with proteomics content at the peptide and amino acid level, researchers can better connect genotype to phenotype. In this way, we believe customers will be able to develop more accurate biomarkers of disease for diagnostic and therapeutic applications, accelerating multi-omics driven precision medicine. We believe these capabilities will have broad appeal to researchers and entities undertaking large-scale genomics studies and should attract spending from the genomics market, which was estimated by Technavio to be approximately $26 billion in 2021. Additionally, we believe that the Proteograph will enable the discovery of novel content that will lead to the creation of value that will promote entirely new applications and market opportunities.

The Importance of Proteomics

Detailed and complex biological information resides within the proteome. Nearly all functions of an organism require the interaction of one or more proteins with each other and with other biological molecules. Proteins serve as dynamic indicators of health status, disease progression and therapeutic response. As depicted in Figure 1 below, the genome is a static indicator of an individual's baseline physiology, while the proteome reveals the current physiological state. Despite its importance, the human proteome is relatively unexplored compared to the human genome.

To link genomic information with phenotypes, understanding the functional context of proteins is critical. However, this connection is currently limited because the vast majority of genetic variants lack functional context at the protein level. We believe that enabling researchers to generate large-scale, integrated proteomic and genomic data will equip them to comprehend the relationship between variation, function and biology.

Protein quantitative trait loci (pQTLs) are genomic variants that are associated with the levels or abundance of specific proteins. Because they influence protein expression or regulation, they are a genetic source of variation in the proteome. The term "protein quantitative trait loci" is used because protein abundance level is viewed as quantitative traits.

To identify pQTLs, genome-wide association studies (GWAS) compare genetic variants across large populations and their association with differences in protein levels. These studies can provide valuable insights into the genetic basis of complex diseases, the molecular mechanisms that regulate protein expression, and the identification of potential therapeutic targets for drug development. However, the study of pQTLs requires large-scale acquisition of proteomic data, which is a challenge for traditional unbiased approaches. We believe that the Proteograph will bridge this gap. Moreover, the Proteograph allows for pQTL analysis at the peptide level, thus enabling the association of genomic variants with specific protein variants.

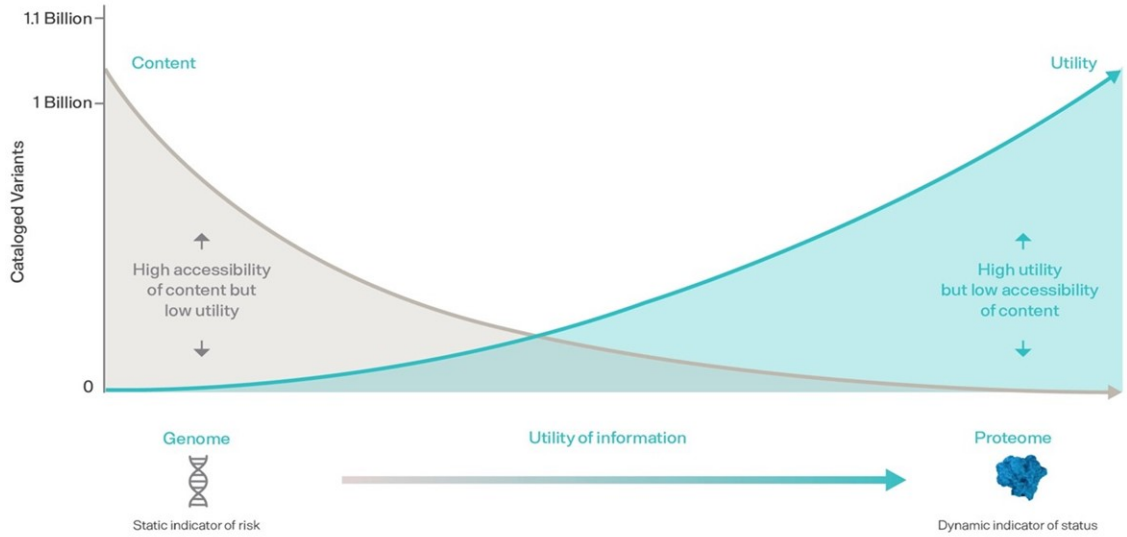

Figure 1: Utility of genomic vs. proteomic information. Over one million human genomes have been highly characterized with over one billion variants, but they have low utility and represent a static indicator of risk. The human proteome is far less characterized, but has a much higher utility as a dynamic indicator of health status.

Challenges of Accessing the Proteome

Complexity of the Proteome

The human proteome is dynamic, diverse and complex, with approximately 23,000 genes giving rise to over one million protein variants. As shown in Figure 2 below, these variants arise from various mechanisms, including alternative splicing of RNA transcripts, genetic variations that alter the amino acid sequence of the protein, and post-translational modifications such as phosphorylation and glycosylation. It is estimated that our approximately 23,000 genes give rise to approximately 69,000 protein isoforms through alternative splicing. At a population level, a much larger number of protein isoforms exist because of genetic variants and somatic variants that alter RNA processing. Protein variants can have vastly different biological functions and be expressed in different tissues within the same individual. For example, two isoforms of the protein encoded by CD99L2 have different interacting proteins and those two proteins' networks are related to distinct diseases (Yang *et al.*). An example of a protein that has tissue-specific isoform abundance is FOX1, which has differential isoform presence in muscle and brain tissue (Nakahata and Kawamoto). Therefore, it is essential to study and understand proteins at the level of protein variants in the appropriate biosample, and this can be achieved only through large-scale analysis of the proteome at the peptide level.

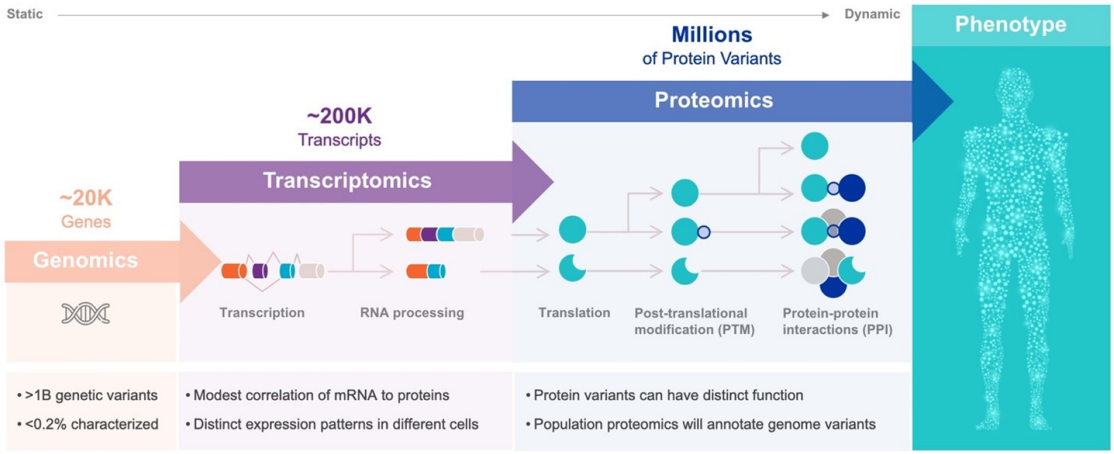

Figure 2: Functional diversity exists through modifications and interactions of different molecules, from static indicators like the genome to increasingly numerous and complex indicators like the proteome and interactome. Modified from Bludau et al.

Recently, a study by Backman *et al.* published in *Nature* revealed the genomic variation identified in a cohort of approximately 455,000 participants of the UK Biobank exome sequencing study. The study identified a vast amount of protein variation, including almost nine million protein variants, of which more than six million are potentially deleterious and 915,289 are protein loss-of-function variants. On the individual level, each participant had on average 9,506 protein variants, of which 2,945 were potentially deleterious and 214 were loss-of-function variants. However, these variants were only identified at the genomic level and did not account for alternative splicing or post-translational modifications. Considering these additional sources of protein variants, the actual number of protein variants at both individual and population-wide levels is significantly higher.

These findings emphasize the unmet need to understand protein variants at the peptide level and underscore how little is currently known about the complexity of the proteome. We believe understanding protein variation at this level could revolutionize how we diagnose, treat, and monitor diseases.

Single Individual (~20,000 genes)		Population (~455,000 individuals)	
Protein variants per participant	9,506	All protein genetics variants	8,868,971
Potential deleterious variants	2,945	Potential deleterious variants	6,345,457
Protein loss of function	214	Protein loss of function	915,289
Alternative splice forms	95% of genes	Change protein structure/binding	> 3 million

Figure 3: Summary of genetic variation across a population of approximately 455,000 participants of the UK Biobank (Backman et al.)

Limitations of Transcriptomics to Infer Proteomics

RNA sequencing (RNAseq) has been the established method for studying transcriptomics over the last decade. It is often assumed that transcript and protein abundance levels are highly correlated because of the central dogma of molecular biology describing how transcripts are translated into proteins. However, several studies have repeatedly demonstrated a poor correlation between transcript and protein levels (Buccitelli and Selbach). This discrepancy can arise from technical factors, such as noise and bias in methods for assessing both transcripts and proteins, and biological mechanisms such as mRNA translation and degradation. Although both transcriptomics and proteomics measurements have their uses, proteins are more closely linked to phenotype, making them more useful than

transcripts for understanding function. Therefore, we believe that direct analysis of the proteome via at-scale proteomics studies will provide unique biological insights for research, discovery and clinical applications.

Limitations of Affinity-Based Approaches to Proteomics

Proteins are highly variable in structure, chemistry and concentration, presenting technological challenges for their identification at low concentration levels. Due to the lack of a common amplification mechanism, researchers often use ligands to measure proteins. However, because ligands such as antibodies or aptamers were designed to bind to specific areas of proteins, approaches utilizing them are considered targeted, or biased. The average length of a human protein is approximately 470 amino acids, whereas the average binding site of a ligand is an epitope five to eight amino acids long. Panels of ligands used for protein interrogation have several shortcomings, including (i) they do not recognize differences in protein structure outside of the epitope binding site, so that all variants appear the same and cannot be differentiated from one another, (ii) conformational changes of the protein can affect epitope and ligand binding; for example, those induced by protein-protein interactions or post translational modifications, and (iii) certain protein isoforms may exclude entire protein domains and remove the epitope binding site, yielding false negative results.

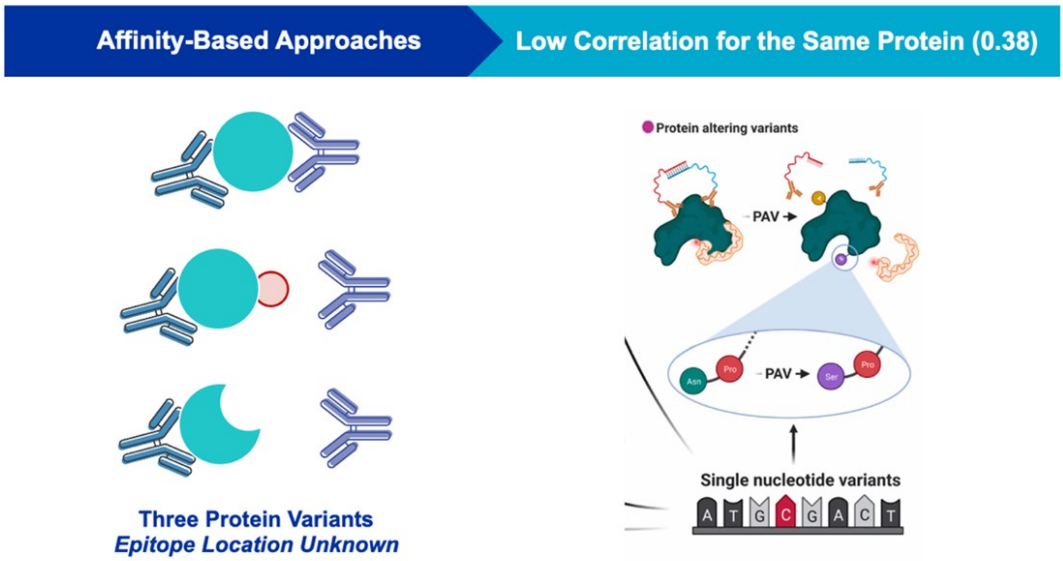

Figure 4: Sources of variation. Left panel is a graphical summary of factors contributing to variation in the affinity-based discovery of the plasma proteome. Right panel schematically describes reasons for differences in binding profile of aptamer and antibody-based proteomic profiling (PAV protein altering variant; SNV single-nucleotide variant). Adapted from Pietzner *et al.*

In a paper published in Nature Communications, Pietzner et al. from the University of Cambridge experimentally demonstrated the limitations of two distinct commercially available affinity-based approaches. Specifically, the authors show that protein altering variants can affect ligand binding, i.e., each affinity-based platform interacts differently with the same protein, depending on the epitopes to which its ligands are binding. On average, the correlation between the two commercially available affinity-based methods was 0.38. The distribution of correlations across all proteins is bimodal, with some proteins having a very good correlation, and others have a correlation close to zero (as shown in Figure 5 below). The authors attribute this poor correlation to differences in epitope binding between platforms and interference from protein-altering variants. These limitations underscore the importance of studying proteins with peptide-level resolution using a technology that is quantitatively robust in identifying protein variants.

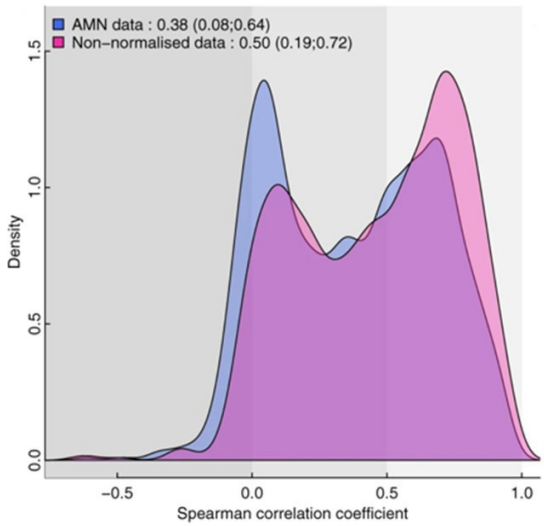

Figure 5: Distribution of correlation coefficients across 937 mapping aptamer–antibody pairs (n = 871 unique protein targets). Adapted from Pietzner et al.

Affinity-based approaches have limitations when used for pQTL analysis. These ligands bind to a specific epitope of the protein, as depicted on the left side of Figure 6 below. However, protein variants can alter the ligands' binding, as demonstrated in the middle panel of the figure. Such altered binding can lead to incorrect measurements of protein levels, resulting in false pQTL identifications or misinterpretation of true pQTLs. In contrast, the Proteograph readout offers multiple peptides per protein, some of which may contain variant peptides, while others may not, as shown in the right panel of the figure. We believe that the correlation of peptides with genomic variants enables accurate pQTL analysis. The Proteograph technology provides an advantage over affinity-based approaches in pQTL analysis by offering the necessary peptide-level resolution for detection of protein variants.

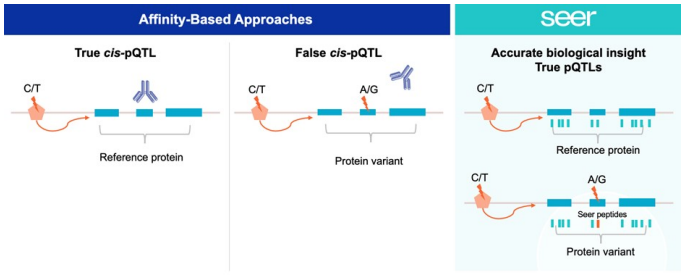

Figure 6: Protein variants may cause false associations in affinity-based approaches for proteogenomic studies.

Affinity-based approaches are effective when a known target and a specific epitope measurement is desired, but cannot cover the vast complexity of the proteome. We believe they are analogous to microarrays in genomics, where a specific DNA fragment is used in a targeted or biased manner to confirm the presence of a specific mutation or a

single nucleotide polymorphism (SNP). The fundamental limitation of affinity-based approaches is their inability to differentiate between protein variants and accurately survey the complexity of the proteome.

Limitations of Current Unbiased Approaches to Proteomics

Rather than relying on predefined epitopes, unbiased approaches can interrogate proteins at the peptide level, providing amino-acid level resolution to protein variants. However, traditional, deep, unbiased proteomic approaches rely on complex workflows that do not scale due to the wide range of protein concentrations in biological samples with high dynamic range. In human plasma, for example, the 22 most abundant plasma proteins account for 99% of the total protein mass, while the many thousands of less-abundant proteins comprise the remaining one percent. Given the important biological role of both high- and low-abundance proteins, it is critical to detect proteins accurately, precisely and reproducibly across the dynamic range.

Mass spectrometry (MS) is a widely used technique for unbiased discovery, basic research and clinical applications, and is considered the gold standard for identification. However, the wide dynamic range of protein concentrations in plasma and other biological samples has previously required complex, upfront sample preparation workflows prior to MS analysis, involving depletion of abundant proteins and fractionation of the remaining proteins and peptides. Deep unbiased proteomics analysis of complex biosamples at scale have not been feasible for wide adoption by researchers due to the high complexity, cost and time requirements. For example, in a state-of-the-art deep unbiased plasma proteomics study in 2017 prior to commercial availability of the Proteograph Product Suite, Keshishian *et al.* depleted the most abundant proteins with immuno-affinity columns and then separated remaining peptides by multiple and complex chromatographic steps and mass spectrometer injections. The study identified 4,500 different proteins across 16 samples, but took months to complete.

Prior to the commercial availability of the Proteograph Product Suite, we believe the critical unmet need in proteomic analysis was how to collect unbiased proteomic data in a sample on thousands of proteins in a sample spanning more than ten orders of magnitude in concentration (dynamic range), and to repeat this across thousands of samples in a reasonable amount of time and cost. Genomics faced a similar unmet need before the advent of NGS, which allowed for massively parallel sampling.

The Importance of Unbiased, Peptide-level Resolution Proteomics

Importance of an Unbiased Approach in the Discovery of Novel Content

The ability to perform unbiased sampling at scale has transformed biological analysis. In genomics, unbiased sequencing of the genome enabled discovery of novel content, creating new end-market opportunities in basic research and discovery, translational research and clinical applications, including early cancer detection, recurrence monitoring and non-invasive prenatal testing.

While there is no guarantee that the Proteograph Product Suite will have the same impact on proteomics that NGS had on genomics, we believe there is a significant market opportunity to provide unbiased, deep, rapid, and scalable access to the proteome. Figure 7 illustrates how content discovery increases as sample cohorts increase in size with an unbiased approach.

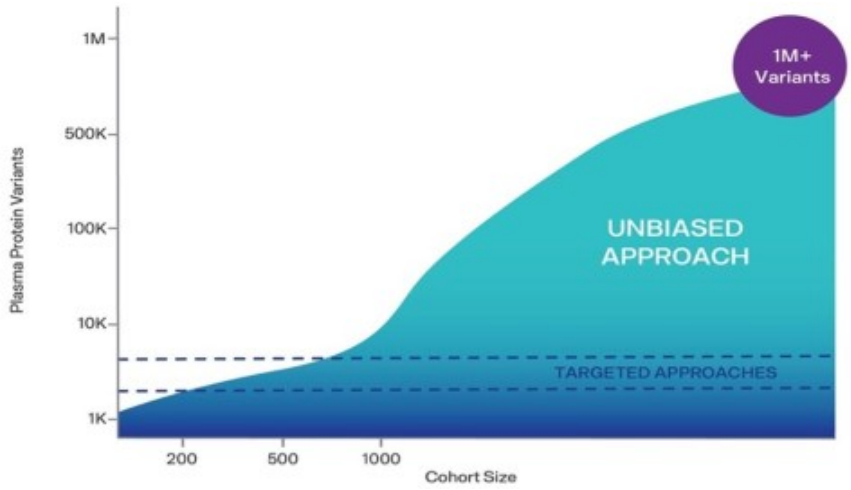

Figure 7: Unbiased approaches increase the identification of protein variants arising from genomic variants, isoforms and post-translational modifications as sample numbers increase, resulting in new biological insights, applications and utility. Targeted approaches are inherently unable to discover new protein variants.

Importance of Peptide-Level Resolution in the Understanding of Biology

We believe that peptide-level resolution is crucial to the discovery of novel content and new biological insights. One example is alternative protein isoforms arising from the same gene locus. At the transcriptome level, these alternative transcripts are known as spliceforms. The majority of human genes can produce more than one protein spliceform and, according to the Ensembl genome database project, as many as 69,000 protein spliceforms are generated by more than 23,000 human genes through alternative splicing. If we account for additional spliceforms at the population level, arising from genetic variants and somatic variants including those responsible for cancers (which affect RNA processing), the number is much larger. Affinity-based approaches generally cannot differentiate between spliceforms, whereas unbiased MS-based approaches survey proteins at the peptide level, enabling differentiation between spliceforms.

Peptide-level resolution is critical for identifying biologically important novel cancer biomarkers, as we demonstrated in our *Nature Communications* paper (Blume *et al.*). Using data from that paper, we identified several biomarkers at the peptide level that would have been missed if we had only focused on overall protein expression, including bone morphogenic protein 1 (BMP1). In a new paper currently in press with a peer-reviewed journal (Donavan *et al.*), we find that the known spliceforms of BMP1 exhibit differential abundance in cases and controls; the single short form is more abundant in cancer cases, while the long forms are more abundant in controls. In that paper, we propose a mechanism to explain the differential abundance based on lack of domains in the short form. This highlights the importance of generating data at the peptide level, which is made possible by the Proteograph Product Suite.

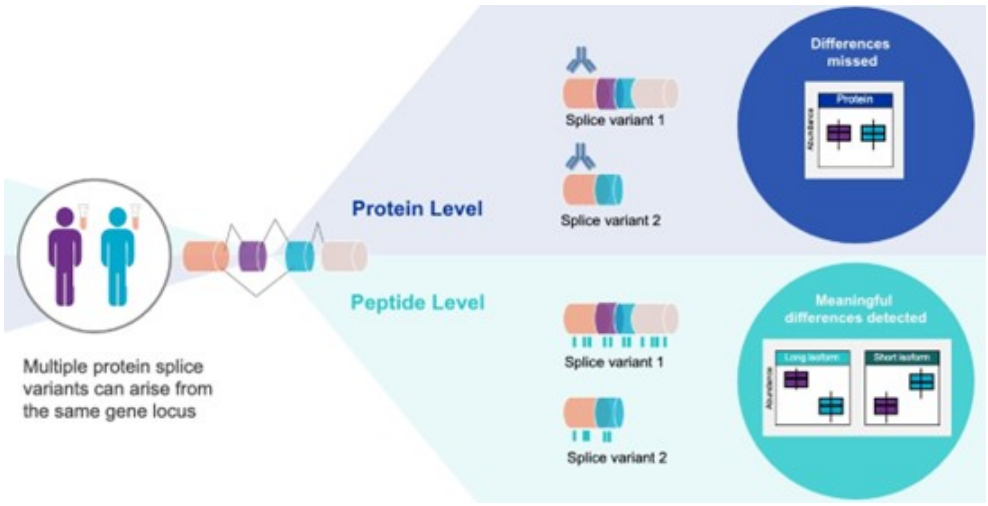

Figure 8: Identification of peptide-level variants of BMP1 enabled by an unbiased approach. Peptide-level identification reveals individual BMP1 variants, showing an opposite pattern of differential expression in the short vs. long variants of BMP1 in individuals with non-small-cell lung cancer (NSCLC) compared to normal controls.

Our Proprietary Engineered Nanoparticle Technology

The Proteograph Product Suite leverages our proprietary engineered NP technology to overcome the limitations of existing methods, and enable an easy-to-use workflow for unbiased, deep, rapid and scalable proteomic analysis. Our proprietary engineered NPs provide unbiased sampling of intact proteins across the dynamic range of the proteome, capturing molecular information at the peptide-level, including protein variants. The NPs eliminate the need for complex workflows required by other unbiased approaches, which we believe will make proteomics more accessible to the broader scientific community.

Typically, nanoparticles have a diameter in the tens to hundreds of nanometers, much smaller than a human hair, which has a diameter of 80,000 nanometers. When nanoparticles come into contact with a biological sample, a thin layer of intact proteins rapidly, selectively and reproducibly adsorbs onto their surface, forming what is called a protein “corona.” Additional intact proteins can also bind directly to proteins already attached to the nanoparticle through protein-protein interactions (PPIs), and intact protein complexes may also attach to the nanoparticle directly. Our engineered NPs capture intact proteins across the dynamic range without requiring prior knowledge of proteome composition or designing the assay for specific protein targets. In combination with an unbiased mass spectrometry readout, they reveal molecular information at the peptide level revealing protein variants. At binding equilibrium, which occurs within minutes after our NPs encounter a biosample, the selective sampling of proteins by our NPs is robust and highly reproducible.

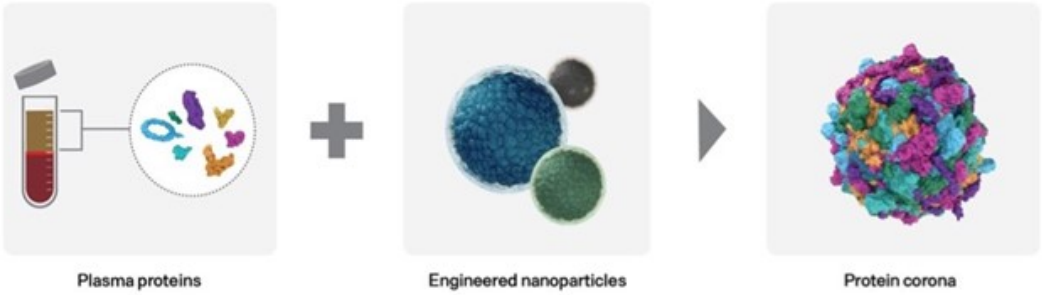

Figure 9: Nanoparticles allow unbiased interrogation of proteoform diversity. Our nanoparticle technology leverages engineered physicochemical properties to reproducibly bind to proteins without prior knowledge, forming a protein corona.

The binding of proteins to the nanoparticle surface and protein sampling are primarily driven by three factors: (i) the affinity of a particular protein for the physicochemical surface of a specific nanoparticle; (ii) the concentration of a specific protein in a biological sample; and (iii) the affinity of the proteins for other proteins on the surface of the nanoparticle, forming PPIs. A variety of materials and methods are used to create different nanoparticles with distinct physicochemical properties, which generate a unique protein corona pattern and a unique proteomic fingerprint. As the amount of proteomic data increases, we will continue to refine the unique physicochemical properties of our NPs with advanced machine learning.

By combining nanoparticles in an assay, we can achieve a representative and thorough sampling across the dynamic range of the proteome, from high- to low-abundance proteins. In this way, we can replace complex biochemical laboratory workflows for the preparation of samples for deep, unbiased MS, enabling the capture of thousands of proteins from biofluids for large-scale proteomics studies. Nanoparticles can interrogate almost any solubilized biological sample, including cell or tissue homogenates, blood or blood components (such as plasma or serum), urine, saliva, cerebrospinal fluid and synovial fluid. This versatility, we believe, strongly suggests that a vast universe of different nanoparticles with different physicochemical properties could be employed across a broad range of sample types, to selectively, reproducibly and deeply sample the proteome in an unbiased way.

The Proteograph Product Suite leverages the power of our proprietary engineered NPs to:

- eliminate complex workflows required by other unbiased proteomic approaches;
- enable unbiased sampling of a variety of biological samples across the dynamic range of the proteome;
- identify and distinguish protein variants at the peptide level;
- identify and quantify protein variants;
- create a workflow that is compatible across a wide range of laboratory workflows, automation equipment, and sample processing and detection methods; and
- facilitate broad product adoption.

Using machine learning, we are able to design, synthesize and select different NPs and combinations of NPs to create multiple products and applications. We have validated our NP technology and the principle of protein corona formation as a robust and reproducible method to deeply and broadly profile the proteome in a high-throughput manner. We have characterized our technology and its performance in three peer-reviewed publications: *Nature Communications* (Blume *et al.*), *PNAS* (Ferdosi *et al.*), and *Advanced Materials* (Ferdosi *et al.*).

The Proteograph Product Suite

The Proteograph Product Suite is an integrated solution consisting of consumables, an automation instrument, and software to perform unbiased, deep proteomic analysis at scale in a matter of hours. We designed the Proteograph workflow to be efficient and easy-to-use, and to leverage common laboratory instrumentation to enable adoption in both centralized and decentralized settings, making deep, unbiased proteomics accessible to nearly any lab.

The Proteograph consumables consist of our NPs and all other consumables necessary to assay samples in an automated workflow on our SP100 automation instrument. Our automated workflow is custom configured for researchers to assay samples in approximately seven hours, which includes 30 minutes of hands-on time and six and a half hours of automated instrument time. The output from the Proteograph workflow consists of peptides ready to be processed and evaluated on an MS instrument. The Proteograph Product Suite is detector agnostic and, we believe, will be adaptable to other protein detection instruments in the future. The MS component of the Proteograph workflow is either provided by the researcher's laboratory or can be outsourced to a third-party provider. We estimate that there are approximately 16,000 MS instruments with configurations typically used to perform proteomic analysis installed worldwide and, therefore, we believe that MS systems are readily accessible to researchers. The Proteograph Analysis Suite, a data analytics software suite, provides quality control and allows researchers to analyze and interpret the output from the system to gain insights from their data.

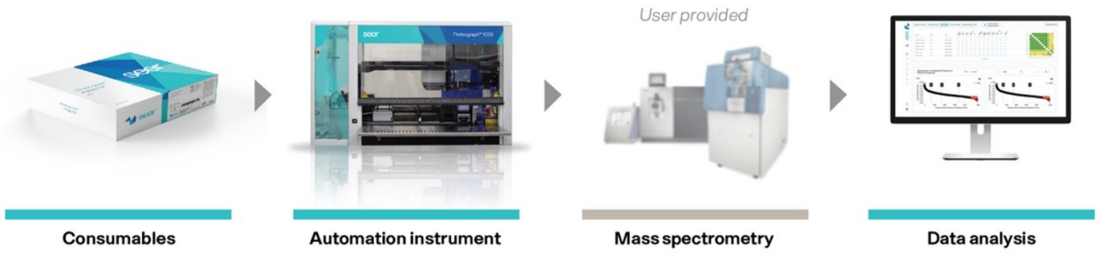

Figure 10: Proteograph Product Suite comprises consumables, an automation instrument, and software.

Consumables

For our first Proteograph assay, we employ a panel of five NPs, assay buffers and reagents for protein lysis and digestion, peptide purification, peptide quantification and the reconstitution of lyophilized materials. We designed the performance specifications of the Proteograph Product Suite to meet the core needs of the market in terms of protein coverage and sample throughput required for proteomic experiments that are unbiased and at-scale. The current product allows for the interrogation and processing of up to 16 samples in parallel on a single 96-well plate in approximately seven hours. Each sample incubates separately with each of the five nanoparticles, yielding 80 wells of peptides in a 96-well plate. The remaining 16 wells are reserved for integrated quality control samples to ensure consistent process performance and to aid in troubleshooting.

The ready availability of non-particle reagents, combined with our ability to efficiently design and fabricate different NPs with different chemical properties, greatly facilitates the development and production of future iterations or additional versions of the Proteograph assays to address potential customer needs, such as expanded protein coverage or specialized assays. Additionally, we can introduce new assays that allow for higher throughput of samples or lower sample volumes. We expect our second Proteograph assay to be available in 2023.

Automation Instrument

We designed the Proteograph assay to be run in a robust and automated manner on our SP100 automation instrument, which is a custom-configured, industry-standard, liquid handling workstation. Our SP100 instrument is designed to enable studies of hundreds to thousands of samples, with an automated workflow that allows for rapid, highly-parallel sample processing with 30 minutes of set-up time. We believe the flexibility of our instrument, coupled with the inherent diversity of our NP technology, provides a runway for many future potential applications and workflows.

The Proteograph workflow is driven by the Instrument Control Software (ICS) on the SP100 automation instrument. The workflow has been configured to process one full 96-well plate at a time, in just seven hours, processing 16 samples in parallel. Future workflows and products will be able to be run on the SP100 automation instrument with an accompanying software update. The output of the Proteograph workflow consists of peptides that are quantified, dried, and can be reconstituted when ready for injection into a mass spectrometer. MS provides quantitative unbiased detection, either on an instrument provided by the user, or sent out for MS analysis to a third-party provider.

Software

The Proteograph Analysis Suite (PAS) is designed for ease-of-use and efficiency to help users arrive at insights quickly. To accommodate varying customer needs, we have designed the PAS to be cloud-based and, in the future, to be available via more localized solutions that accommodate different customer types and geographies. The PAS offers a predefined workflow for data management and analysis, leveraging publicly available MS data analysis tools as well as our own proprietary analysis tools. Without the PAS, proteomics analysis requires expert knowledge and a scalable high-performance computer infrastructure. We believe that the PAS can accelerate adoption of the Proteograph among non-experts by providing an intuitive user interface that automates data handling, simplifies processing and analysis and provides access to a scalable infrastructure that can be used by any lab.

Currently, one potential roadblock for researchers is understanding and evaluating the quality of their results. The Proteograph Assay Kit incorporates a series of controls for monitoring assay performance, and an integrated view of the results of these control runs via the PAS. Customers can evaluate trends over time and implement performance boundaries around the expected values that flag unexpected outcomes in the data. We believe providing a simple, consistent interface to evaluate the control data and generate a quality control (QC) report will help customers understand our approach to QC in the Proteograph workflow, simplifying support.

In the third quarter of 2022, we launched the latest version of our Proteograph Analysis Suite, PAS 2.0, which incorporates a proteogenomic workflow that maps peptide-level data to genomic data to identify sample-specific variant peptides not captured in canonical reference databases. The workflow provides interactive tables and plots, enables visualization of identified peptides' relationship to gene structure, protein domain information and functional regions; and creates amino acid-level browsable peptide data maps. We believe PAS 2.0's intuitive visualizations make it faster and easier to discover protein targets for a wide range of applications.

As we continue to improve and extend our product portfolio, we expect to continue to expand the capabilities and features in PAS. Some examples include large dataset management, advanced data analysis tools and applications such as PPI analysis, PTM mapping, transcriptomic, genetic polymorphisms, multi-omics integration and systems biology framework analysis.

Proteograph Product Suite Performance

The Proteograph Product Suite provides five essential capabilities: (i) broad protein sampling with peptide-level resolution; (ii) deep coverage; (iii) accurate and precise measurement; (iv) reproducibility and (v) scalability for high-throughput studies. We believe that our integrated solution is the only product in the market that combines all

of these technical and operational capabilities. Furthermore, we rigorously measure and evaluate each of these technical attributes, as we describe below.

- ***Breadth of protein sampling.*** This capability refers to conducting unbiased, highly-parallel sampling of the proteome. Each uniquely engineered NP selectively captures hundreds of distinct intact proteins from a biosample based on their abundance and affinity for the NP surface. This sampling capability is particularly strong in complex biofluids such as plasma. Our unique NPs capture significantly more proteins than current methods of unbiased proteomic analysis, as shown in Figure 11 below.

In a head-to-head experiment, we directly compared the breadth of the Proteograph Product Suite to other unbiased proteomics methods using the same biological sample. Neat plasma, which represents the simplest form of unbiased proteomic analysis requiring minimal processing time using another method, resulted in a breadth of coverage of 750 proteins. By adding processing steps such as depletion of high-abundance peptides and fractionation (separation of the remaining proteins into multiple fractions), the breadth of protein sampling increased to 1,596 proteins. However, using the Proteograph Product Suite, we detected 2,998 proteins in plasma, representing a major expansion in breadth of protein coverage. The Proteograph is not limited to a defined set of proteins, and samples across the dynamic range of proteins and protein variants that may be present in biosamples. We have exemplified the utility of the Proteograph in studying secreted proteins across several different sample types, including cell or tissue homogenates, blood or blood components (such as plasma or serum), urine, saliva, cerebrospinal fluid, synovial fluid and conditioned media. Across these studies, over 10,000 distinct proteins have been identified. When factoring in potential variants of these proteins, we believe the number of sampled proteins could be considerably larger. Importantly, the Proteograph protein data is obtained using an MS detector, which is the gold standard for proteomics, and data is conventionally reported with a one percent False Discovery Rate (FDR). This means that the reported proteins are identified with 99% confidence.

- ***Depth of coverage.*** The Proteograph is able to evaluate the proteome across a wide dynamic range of protein abundance. Figure 11 compares our assay's depth of coverage to that of other scalable unbiased proteomic methods (i.e., 4x versus neat digestion) and not scalable unbiased proteomic methods (i.e., 2x versus fractionation and 3.5x depletion workflows). The Proteograph assay samples proteins across the entire dynamic range of the plasma proteome, as defined in the Human Plasma Proteome Project database (Schwenk *et al*.). The dotted vertical line in the center panel represents the 75th percentile point of depth of coverage for each method. The Proteograph assay reaches further into low-abundance proteins than fractionation, depletion or neat plasma methods as noted by the dotted line being furthest to the right of all workflows. Lastly, Figure 11 describes the peptide level resolution of each approach and shows approximately the same relative ratios of peptide counts as the corresponding protein group counts. The 17,703 peptides quantitatively measured by Proteograph in this single experiment provide additional information and potentially significant biological insight into protein variants.

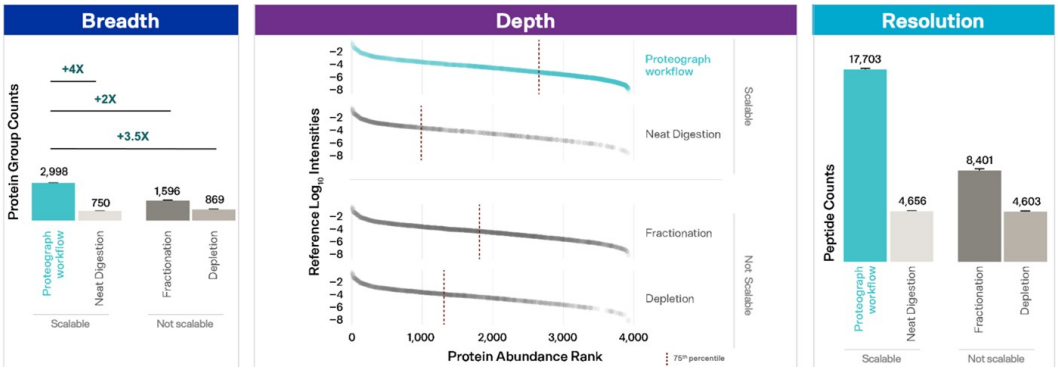

Figure 11: The Proteograph identifies more proteomic content. The Proteograph workflow identifies 4x more protein groups than alternative MS-based workflows (left). Depth of the Proteograph captures protein groups spanning high to low abundance across the dynamic range versus alternative MS-based workflows (center). Additionally, the

Proteograph better resolves the complexity of the human plasma proteome at the peptide-level versus other MS-based methods (right).

- ***Accuracy of measurement.*** This capability measures how close the measured abundance of a protein is to the true abundance in a sample. The true abundance of large number of proteins at a protein variant level at scale is not independently possible, so we use the ratio of abundances in two samples to demonstrate the accuracy of protein abundance measurement. We demonstrate the accuracy of protein abundance measurement by mixing two different plasmas in different ratios and measuring the relative MS signal intensity. By spiking human plasma with bovine plasma, the Proteograph can detect and quantify peptides that are unique to the bovine proteome. Peptides differ between the two species because of genetic differences that result in detectable changes at the amino acid level. By mixing the two plasma samples, the Proteograph can make measurements across thousands of peptides, highlighting the Proteograph Product Suite's real-world accuracy. Panel A of Figure 12 shows how the change in MS intensity or intensity fold change varies when mixing the two plasmas at different ratios. Panel B of Figure 12 shows the results of this experiment, looking at threefold changes: 2X, 5.5X, and 11X. At each level, the dashed line is the expected fold change. The gray bars represent the distribution of bovine unique peptides for a neat plasma workflow, and the teal bars represent the unique bovine peptides detected by both the Proteograph and the neat workflow. In all cases, the median of each distribution is close to the dashed line, indicating the median fold change is close to the expected value.

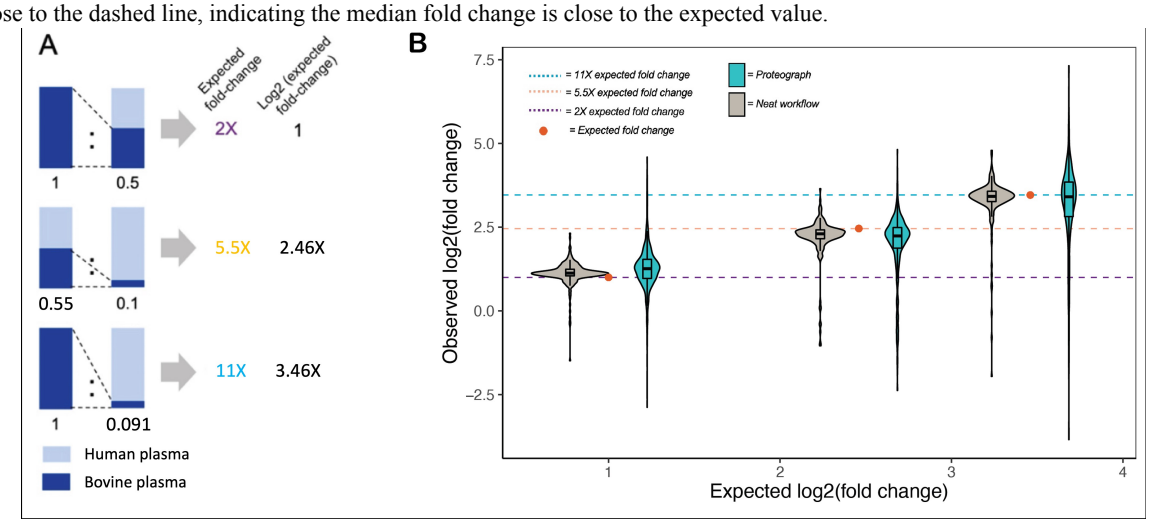

Figure 12: The Proteograph offers a high-degree of accuracy. (A) Three representative pairs of spiked-in samples and the expected fold changes of bovine proteins concentration in these pairs. (B) Distribution of observed fold changes of bovine proteins for three selected comparisons of spiked-in samples. The color indicates the data source: (i) neat digestion (gray), or (ii) Proteograph workflow constrained to proteins also identified in neat (teal). The horizontal dashed lines indicate the expected fold changes.

• ***Reproducibility of measurement.*** Reproducibility, also referred to as precision, is a measure of the consistency of protein abundance measurements (i.e., MS measured intensity) between repeated measurements of the same sample. A higher reproducibility indicates lower noise, which reduces the number of samples required to observe a true fold change in the study. Reproducibility is usually measured as the coefficient of variation (CV%), which is the standard deviation divided by the mean multiplied by 100. A lower CV% represents a more precise measurement. The CV across individual components of the workflow, including the Proteograph instrument and the mass spectrometry instrument, aggregate to form the overall CV% of the workflow (Figure 13; left panel). The typical CV% of MS instrumentation, derived by running the same peptide mixture in consecutive MS injections, is approximately 10%. Using the Proteograph assay to make protein measurements within a single plate adds approximately 7%, for a total CV of about 17%. Running a study across multiple plates and days adds further MS and Proteograph variability for a total system CV% of approximately 20%. Using data acquired over a long-running study, the Proteograph can derive power curves illustrating the power to detect fold changes of different sizes (Figure 13; right panel). For example, 1.5-fold and two-fold changes in protein abundance can be detected with 90% power in sample sizes of 192 and 66, respectively. Typical biological cohorts are much larger than this to capture biological variability and so we believe that the reproducibility of the Proteograph is well-calibrated for biomarker discovery and clinical proteomics.

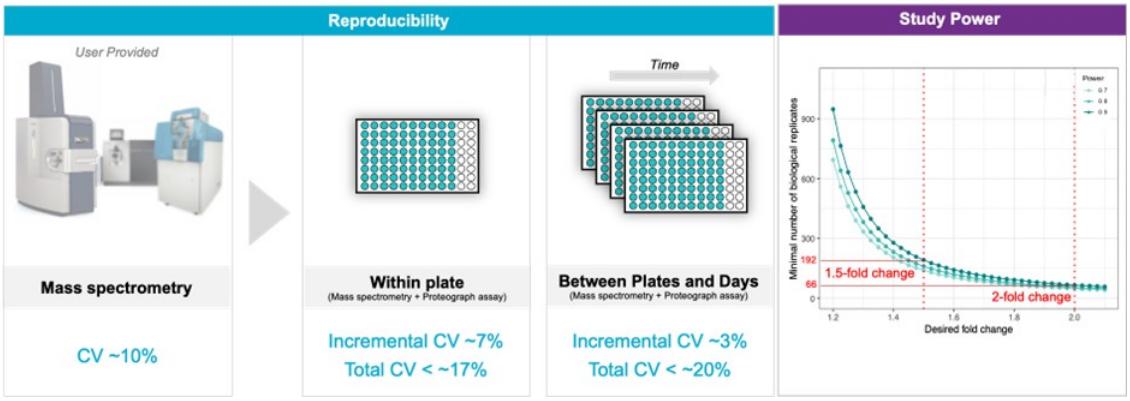

Figure 13: (A) contributors to CV; (B) smaller fold changes can be detected with increased power with larger study sizes.

• ***Scalability.*** The Proteograph Product Suite enables rapid and large-scale proteomic sample processing in a seven-hour workflow, compared to other unbiased solutions that can take days to weeks. With our current assay, we can process sixteen samples in a single run of the Proteograph SP100 instrument. Therefore, a single Proteograph Product Suite coupled with two MS instruments can process 48 samples in approximately two and a half days for unbiased and deep proteomic analysis. In comparison, the unbiased workflows developed by leading proteomics labs can take weeks for sample preparation and MS measurement to reach an equivalent depth of proteomic coverage.

We believe that the Proteograph will be attractive to researchers who are looking for an easy-to-use, scalable approach with a unique combination of attributes spanning breadth, depth, accuracy, reproducibility and precision of measurement, and the speed and throughput necessary for large-scale proteomics studies. Furthermore, the peptide-level data that the Proteograph Product Suite provides at scale are crucial for gaining novel biological insights.

Markets

We believe that the Proteograph Product Suite has two primary near-term markets: the approximately $24 billion global proteomics market, and the $26 billion global genomics market, as reported by Allied Market Research and Technavio, respectively. Potential applications of the Proteograph could span several areas, including basic research and discovery, translational research, diagnostics and applications. The proteomics market is estimated by Allied Market Research to have spent $18 billion on reagents, $4 billion on instruments, and $1.5 billion on services in 2021. We believe that we will be competing in both the proteomics reagent and instrument markets in the near term,

while our service provider customers and Centers of Excellence (COEs) will be accessing the services component. According to Technavio, the genomics market consists of approximately $16 billion spent on products and $9.5 billion spent on services. We believe that we will similarly be able to attract spending on both products and services as genomic customers link genotype to phenotype by supplementing existing genomic data with proteomics data. These applications can be used across basic research, translational research, pharmaceutical, commercial and contract research organization (CRO) customer segments.

We currently sell and market the Proteograph Product Suite for research use only (RUO). However, we believe that the capabilities of the Proteograph Product Suite may enable other applications in the future. We may in the future seek premarket approval or clearance for the Proteograph Product Suite in order to allow our customers to use the Proteograph in other product offerings. We expect that the Proteograph Product Suite's unique value proposition will appeal to proteomics researchers who value deep and unbiased proteomic information and seek to scale experiments to much larger sample sizes with greater speed and efficiency. Moreover, we believe that as more genomics researchers incorporate other -omics approaches to elucidate key genomic findings, the Proteograph will uniquely provide large-scale, unbiased and deep proteomic information to complement genomic information, and enable researchers to gain a clearer picture of both biology and genomic risk factors. We anticipate that in the longer term, the capabilities of the Proteograph and future products may yield new end-markets, applications and business models that complement existing proteomics and genomics markets.

Proteomics

According to Allied Market Research, the global proteomics market was valued at approximately $24 billion in 2021, and is expected to grow to $49 billion in 2026, representing a 15% compound annual growth rate. The market is divided into three categories, 61% focused on drug discovery, 34% on disease diagnosis and 5% on other applications. Products in the proteomics market include spectrometry, microarray and chromatography instruments as well as reagents, for both unbiased and biased proteomics. However, most proteomic analyses of high dynamic range samples to date rely on biased or targeted methods or expensive, complex, and laborious unbiased or *de novo* deep methods, which are limited to analyzing only tens of samples instead of the thousands needed to power large-scale studies. Few methods are based on capture of intact proteins that enable analysis of proteome complexity at the level of amino acid variants, PTMs and PPIs, all of which have the potential to generate important biological insights. We believe that the unique capabilities of the Proteograph Product Suite will appeal to researchers, either as a complement or alternative to current approaches, or as a wholly-novel way to survey the proteome.

We estimate that there are approximately 16,000 MS instruments with configurations typically used to perform proteomic analysis installed worldwide. By leveraging the installed base of MS instruments, we believe we can accelerate adoption of the Proteograph's technology. The Proteograph could be a robust alternative to both unbiased and biased proteomics approaches, particularly in the discovery of new biology insight. As a result, the Proteograph has the potential to grow the proteomics market by enabling new applications for unbiased proteomics spanning research, translational and clinical settings.

Genomics

According to Technavio, the global genomics market was valued at approximately $26 billion in 2021, and is expected to reach $42 billion by 2026, representing a compound annual growth rate of approximately 10%. We believe that large-scale deep, unbiased proteomics studies enabled by the Proteograph could provide important missing biological information to improve the functional characterization of genomic variants, enabling large-scale proteogenomics. Complementing large-scale genomics analysis with large-scale proteomic analysis could enhance and accelerate our understanding of biology and human health, and ultimately the treatment of disease. Therefore, we believe the Proteograph solution can attract an increasing number of genomics customers, especially those in translational settings, who are looking to leverage multi-omics approaches to further annotate genomic variants in terms of function and connect genotype to phenotype.

New Markets

We also believe that the Proteograph Product Suite, similarly to the commercial impact of a broadened access to genomics products, will enable novel applications and insights, leading to new end-markets. For example, non-

invasive prenatal testing and precision oncology currently make up a significant part of the current genomics market, which would have been difficult to predict a decade ago. We anticipate that the same dynamic of new market creation will occur in proteomics, with one such application for proteomics being early disease detection. In the third quarter of 2020, we spun out a new entity, PrognomiQ, Inc. (PrognomiQ), which is developing novel early detection diagnostic tests that leverage the Proteograph Product Suite in combination with other -omics, including genomics, metabolomics and lipidomics. More broadly, we believe the Proteograph solution has the potential to further stimulate growth of new applications and end-markets in additional ecosystems.

The Advantages of the Proteograph Product Suite

We believe the Proteograph Product Suite and its underlying NP technology have unique advantages:

- ***The first commercially available solution to combine unbiased, deep, rapid and large-scale access to the proteome.*** Other proteomics technologies currently exist, but we believe that the Proteograph Product Suite fills a gap by providing all four attributes in a single solution with an easy-to-use workflow.
- ***Provides unique insight into protein variation at the peptide level, with a depth and scale that sets a new standard for unbiased and deep proteomics.*** The Proteograph's ability to capture protein variations at scale enables synergistic insights when combined with genomic variations, yielding informative individualized models of biology at population scale.
- ***Allows for wide adoption by customers in both decentralized and centralized settings.*** The Proteograph Product Suite is an integrated solution that includes consumables, an automation instrument and software, and was designed to deliver ease-of-use, efficiency, robustness and reproducibility of results and to complement existing laboratory infrastructure. Its simple and integrated workflow enables the customer to use their own MS instrument or leverage a widely available installed base of MS instruments. We believe these features will facilitate broad adoption of the Proteograph solution across a variety of laboratories and institutions in both decentralized and centralized settings.
- ***Offers a core technology with the potential for development of a range of products, applications and platforms.*** Our diverse and expanding library of NP surfaces can support the development of new products catering to various applications and customer needs. We are using machine-learning techniques and conducting large-scale analyses to understand relationships between NP surfaces and protein binding in order to design our future products.
- ***Provides core technology with significant operational leverage in research and development, manufacturing and commercialization.*** NP-based products are efficient to design, develop and manufacture. We believe that by leveraging our understanding of NP surfaces, software and analytics capabilities, we can rapidly develop new products. Our NP manufacturing process uses well-characterized inputs and methods, which require relatively modest investments in capital equipment and space. This capital-efficient and labor-efficient model has high operating leverage potential.
- ***Presents a solution with sustainable differentiation.*** The Proteograph is uniquely capable of generating robust, reproducible, deep and unbiased proteomic data. As this data is used by more customers to generate insights, we believe this cycle will fuel further adoption of the Proteograph Product Suite throughout the industry. The Proteograph workflow is fully integrable with customer workflows and provides a unique user experience with the support of our software packages, making it a sustainable solution within customer organizations. Our NP technology, SP100 automation instrument, and software are protected by numerous issued patents and pending patent applications worldwide, covering improvements in NPs, assay methods and ways to leverage proteomic data and information for life sciences research, clinical diagnostic and drug discovery applications.

Our Strategy

Our mission is to imagine and pioneer new ways to decode the secrets of the proteome to improve human health. Our growth strategy is to:

- ***Drive adoption of the Proteograph Product Suite to enable researchers to create large-scale unbiased proteomic datasets that generate transformative scientific insights.*** Our Proteograph Product Suite uniquely enables researchers and clinicians to generate unbiased, deep proteomic information at speed and scale not previously possible. These capabilities have broad application, spanning basic research and discovery, translational research, diagnostics and applied applications.

- ***Invest in market development activities to demonstrate the importance of large-scale proteomic data and the ability to access it***. To expand and accelerate demand for our products, particularly as new applications are developed and adopted by customers, we plan to invest in market development activities to educate prospective customers, funding bodies, commercial entities, government-sponsored -omics programs, and other stakeholders of the importance of large-scale unbiased and deep proteomic data. This effort will likely include collaborations with key opinion leaders, generation of peer-reviewed publications, sponsorship of targeted projects, joint publications and seminars, and industry partnerships. We plan to demonstrate the value of large-scale unbiased and deep proteomic data, as well as the unique capabilities offered by our products.

- ***Innovate continuously to develop and commercialize additional transformative products to access the proteome and accelerate our understanding of biology.*** We aim to continuously innovate and develop new products, applications, workflows and analysis tools that simplify and accelerate researchers and clinicians' ability to generate proteomic data and to connect proteomic data to genomic and transcriptomic data that drive novel biological insights. As leaders in NGS have demonstrated, our sustainable advantage will come from continual development and commercialization of new products and applications based on our technology. We will drive innovation through both internal R&D projects and from collaborations with customers and partners.

- ***Build our commercial infrastructure and manufacturing capabilities to enable expansion of our global customer base.*** We are establishing our commercial infrastructure to sell and support our products directly in the United States, the European Union,and United Kingdom. We are expanding access to our products in other geographies, starting with select countries in Asia Pacific through distributors, and eventually to the rest of the world. We are also scaling our manufacturing capabilities in our facility in Redwood City, California, and will continually evaluate and optimize our manufacturing and supply chain footprint to meet our business objectives.

- ***Foster the creation of an ecosystem of customers, partners and collaborators whose expertise and offerings complement and enhance the power and utility of our products.*** We intend to seed and develop a new ecosystem of applications and organizations based upon large-scale proteomic analysis. This ecosystem could include areas such as disease detection, large-scale population studies, agriculture, environmental monitoring and food safety. To help seed the growth of this ecosystem, we spun-out PrognomiQ, which is developing and will commercialize diagnostic tests for early disease detection, leveraging the Proteograph Product Suite in combination with other -omics technologies.

- ***Expand our proprietary engineered NP technology to analyze molecules beyond proteins.*** We intend to expand the scope of our proprietary engineered NP technology to analyze other biomolecules, such nucleic acids and metabolites. As we continue to work closely with our customers, we will better understand their needs and requirements, which will inform our product development pathway and development of our library of NPs and our software capabilities to address other -omics applications.

The Applications of the Proteograph Product Suite

We believe the ability to generate unbiased, deep, proteomic data at scale, with rich content at the protein variant level, will have a wide range of applications in proteomics, including basic research and discovery, translational research, diagnostics and applied markets. This data can be used in many of the same application areas as genomics

data, as well as proteomics applications that are uniquely possible with unbiased proteomic data, and in new applications that the field will develop in the future.

In addition, the Proteograph Product Suite's versatility allows it to analyze not only plasma and serum, but also other biofluids across humans and model organisms. For example, when we compared the performance of the Proteograph Product Suite workflow with that of neat biological samples across model organism plasma, urine, cerebral spinal fluid, and conditioned media, we noted superior protein group identification by the Proteograph of 4x, 1.5x, 1.5x, and 8.6x, respectively. Importantly, in each sample, we measured tens of thousands of data points at the peptide level, providing information on thousands of proteins. We believe this extensibility offers researchers a powerful and flexible tool to utilize across a variety of applications and sample types.

Basic Research and Discovery Applications

We believe that the Proteograph will be a valuable tool for researchers across a wide range of basic research and discovery applications, including cataloging protein diversity, proteogenomics and exploring the interactome. Studies in these areas are currently limited in scale by the complexity of unbiased methods or the limited set of affinity-based reagents available for biased methods. The Proteograph Product Suite is designed to enable the use of unbiased proteomic data at scale, which we believe will greatly accelerate these areas of basic research and discovery.

Cataloging protein diversity

The Proteograph Product Suite is designed to enable researchers to explore the complexity and diversity of the proteome with peptide level resolution. We anticipate that researchers will use the Proteograph solution to catalog protein variants in a manner similar to the cataloging of genetic variants over the past 15 years, providing functional context at a scale that is not currently accessible with other proteomics methods. We believe that the identification of protein variants, including those resulting from PTMs such as glycosylation and phosphorylation, has the potential to significantly transform the life sciences field.

Proteogenomics

Proteogenomics is a rapidly growing field of research that integrates genomic and transcriptomic information with proteomic information, using personalized protein sequence databases to identify novel peptides. The Proteograph generates large-scale unbiased proteomic data, enabling researchers to map protein variants to genomic variants, advancing the field of proteogenomics. We anticipate that as researchers conduct large-scale proteomics studies with the Proteograph, proteogenomic content will rapidly increase, providing functional information to existing genomics and gene expression information.

Translational Research Applications

Researchers can use the Proteograph for translational research applications aimed at shortening the time from early discovery research to clinical application. The Proteograph Product Suite allows clinical and translational researchers an opportunity to perform unbiased, deep and large-scale proteomics studies in therapeutic and diagnostic research and clinical trials, which can allow for significant advances in biomarker discovery, target identification and exploration and clinical trial applications.

Biomarker Discovery

Currently, *de novo* biomarker discovery research is limited by the size of unbiased studies or is targeted in nature. These approaches have yet to uncover the large number of potential single biomarkers or combinations of markers for a range of clinical applications. The Proteograph has the potential to enable the discovery of biomarkers through large-scale, unbiased and deep proteomics studies.

Target Identification and Exploration

We believe that large-scale access to protein variant information that map to different states of health and disease, as enabled by the Proteograph and concurrent advances in proteogenomics, could lead to the discovery of personalized

drug targets that could number in the hundreds of thousands. We believe that the translational application of the Proteograph for potential biomarker development may also be applied to the identification of novel targets for therapeutic development. Components of classifiers may themselves become targets for drug development, or they may point to new knowledge with respect to disease mechanisms, which could then aid in the exploration of additional targets and/or help to elucidate the function of potential targets, particularly if these targets are discovered with genomics approaches, but lack protein functional context.

Clinical Trial Applications

The Proteograph Product Suite provides clinical researchers with the opportunity to perform deep and broad proteomic profiling of subjects in therapeutic clinical trials, enabling the real-time monitoring of protein-related drug effects, distribution and metabolism. These attributes are essential in virtually all clinical drug trials. Current methods use biased or targeted panels of proteins. It is currently impractical to do this type of monitoring with unbiased proteomic methods, given the inability of these methods to scale to the hundreds or thousands of samples that are evaluated in clinical trials.

The Proteograph Product Suite may also enable patient selection and grouping based on patients' proteomics profiles, leading to improved ability to confirm efficacy for novel therapies in complex diseases that involve multiple physiological systems. While genomic approaches are widely used to select patients in cancer and rare genetic disease clinical trials, their use in other indications has been limited by a lack of genetic understanding of these diseases. We believe that the Proteograph has the potential to generate useful proteomic signatures that can complement genomic and other patient selection criteria, improving patient selection and segmentation for clinical trials, particularly for indications outside of cancer and rare genetic diseases.

Diagnostic Applications

We believe that the Proteograph Product Suite also holds significant diagnostic potential. The unbiased, deep and scalable proteomic data generated by the Proteograph has the potential to create ecosystems, similar to the way in which NGS enabled genomics-based diagnostics for cancer and rare genetic diseases. We expect that companies in the healthcare testing space, including our spin-out PrognomiQ, will utilize the Proteograph solution, and we are committed to supporting all of our customers as the ecosystem grows, not only in their basic research and translational research applications but also as they develop their own diagnostic applications.

Applied Applications in Agriculture, Animal Health, Environmental Monitoring and Food Safety

We see significant opportunities for the Proteograph solution to be applied in areas beyond human health, including areas where broad-scale genomics is being widely applied today, and applications where proteomics can uniquely enable the creation of end-markets. We believe that unbiased, deep and large-scale proteomic information, which can be enabled by the Proteograph, can complement and extend the value of genomics, transcriptomics and metabolomics information in fields such as agriculture, animal health, environmental monitoring and food safety.

Given the robustness of the Proteograph Product Suite and the ability of its core NP technology to work across species, we believe there is significant interest and an attractive market opportunity for implementation of the Proteograph Product Suite in model organisms and the animal health markets to pursue opportunities in diagnostic and therapeutic development. We have already demonstrated the application of the Proteograph Product Suite in projects in mouse, pig, feline, chicken, canine, baboon and bovine plasmas.

PrognomiQ

In August 2020, we made a strategic decision to transfer certain assets related to disease testing to PrognomiQ, a wholly owned subsidiary of the Company, in exchange for all of its outstanding equity interests. Following the transfer, we completed a pro-rata distribution to our stockholders of most of the shares of capital stock of

PrognomiQ. Following the distribution and two subsequent financings of PrognomiQ totaling approximately $102 million, we hold approximately 15% of the outstanding equity in PrognomiQ.

The rationale for this transaction was to enable the growth of ecosystems around new applications that leverage unbiased, deep and large-scale proteomic information. The transaction allows us to remain focused on our core strategy of providing proteomics solutions to all customers across these ecosystems, rather than potentially competing with, or creating the perception that we are competing with, our customers. Our relationship with PrognomiQ does not preclude us from selling the Proteograph Product Suite to any customer in any geography, nor does it preclude our customers from using the Proteograph in any way. PrognomiQ seeks to combine the protein data from the Proteograph with genomics and other -omics data, to develop a multi-omics approach to health and disease testing. We believe this initiative will increase the adoption of the Proteograph Product Suite in these applications.

Omid Farokhzad, our Chief Executive Officer and President, and Chair of our board of directors, also serves as the Chair of PrognomiQ's board of directors. Philip Ma, Ph.D., our former Chief Business Officer, serves as the Chief Executive Officer and President of PrognomiQ. While Dr. Ma has fully transitioned to PrognomiQ, he will continue to consult until April 2023 at which time, Dr. Ma's consulting agreement will automatically renew for subsequent one year terms unless and until terminated.

Commercial

Commercial Strategy

We are focused on developing the market for deep, unbiased, rapid proteomics at scale by improving accessibility to our technology and growing the installed base of the Proteograph across a wide variety of customer types. We believe that enabling breakthrough science, demonstrating the power of our technology and catalyzing new applications and markets will lead to increased utilization of the Proteograph Product Suite by our customers. We are initially focused on research applications for the Proteograph Product Suite and selling and marketing the Proteograph for RUO. We started broad commercialization of the Proteograph Product Suite in January 2022 and shipped 22 instruments in 2022, bringing our total system shipments to 39 as of December 31, 2022.

Our market development efforts are focused on creating a body of evidence to support unbiased, deep proteomics at-scale by establishing relationships with key thought leaders and driving programs that make it easier for labs of all types to undertake first-of-their-kind studies. We believe that paving the way with standards, methods and proof in the form of published data empowers the scientific community to move forward more rapidly.

- Centers of Excellence (COE) Program: We have partnered with select service facilities and core labs globally to be Centers of Excellence for the Proteograph. These sites have become our customers and provide fee-for-service capabilities that allow interested parties to access and evaluate the Proteograph Product Suite using their own samples. We expect that these COEs will actively promote the Proteograph solution and its capabilities, help us further raise awareness, and increase the accessibility of the Proteograph to a wider range of customers.

- Proteogenomics Consortium: We have formed the Proteogenomics Consortium (PGC) to accelerate access to proteogenomic studies in partnership with Discovery Life Sciences (Discovery) and SCIEX, with the stated eventual goal of developing capacity to analyze 100,000 samples annually. Discovery announced in December 2022 that it is accepting customer samples for analysis.

- Key Opinion Leader (KOL) Relationships: The generation of publications and scientific presentations is a core pillar of our market development strategy and is important for establishing validity and utility of new disruptive products in the life sciences community. We are working closely with our customers, including KOLs, to generate clear use-cases, as well as peer-reviewed publications that illustrate the Proteograph's performance claims and value proposition.

- Commercial Partnerships: We have partnered with leading mass spectrometry instrumentation providers, including Thermo Fisher Scientific, Bruker Corporation and SCIEX to establish partnerships that include

lead sharing, co-marketing, and co-development of end-to-end workflows to enable broad education of the market as well as easy-to-implement workflows.

- Geographic Partnerships: As we expand geographically, we have partnered to enable access in key regions, such as China, where Enlight Medical is our distribution partner and they educate, develop and expand the market for the Proteograph Product Suite.

We are initially targeting potential customers who value unbiased and deep proteomic information and are performing proteomic or genomic analysis at academic institutions, translational research groups and biopharmaceutical companies. Our direct sales and marketing efforts are focused on the principal investigators, researchers, department heads, research laboratory directors and core facility directors who control the buying decisions. We expect these customers to purchase the Proteograph Product Suite and associated consumables in line with typical purchases of other life science instrumentation and consumables. We believe that we have priced the Proteograph Product Suite to be affordable to most researchers who can direct buying decisions, without the need for additional levels of approval, simplifying our sales process. For example, we price the SP100 automation instrument comparably to other similar automated fluid handling systems currently available. We price the Proteograph consumables, on a per-sample basis, in a range similar to that of other life sciences consumables that provide deep and unbiased -omics information.

To service our Proteograph customers, we provide multiple levels of technical service for the Proteograph Product Suite, depending upon the customer's needs. We recognize that excellent customer support can be a critical part of a customer experience, and we will invest accordingly in our technical and application support to achieve the desired levels of service.

Commercial Organization

We are currently building out our commercial organization across Marketing, Sales, and Customer Experience functions to support demand, with the goal of delivering an exceptional customer experience. We believe that coupling an exceptional customer experience with a transformative product will allow us to deliver substantial value to our customers, build long-term customer loyalty, enhance our competitive differentiation and, importantly, use our customer relationships to gain insights that inform our product development to grow our offerings in ways that will benefit our customers.

In North America, the United Kingdom and select countries of the European Union, we have direct sales and customer experience personnel, including Regional Business Managers (RBM), Field Application Scientists and Field Service Engineers. In addition to these direct personnel, we have significant marketing, customer experience and technical support personnel located in our offices in Redwood City and San Diego, California. The RBM are focused on identifying potential customers who have a strong interest in deep, unbiased proteomics and access to sufficient sample cohorts and capital to help drive long-term usage. They work closely with our marketing personnel to identify, qualify and close these customer opportunities. The Field Application Scientists also help in the sales process, they are primarily responsible for ensuring that customers have an exemplary experience once a purchase has been made. This ranges from providing customer training to working with each customer to help them optimize their methods and applications. Our Field Service Engineers perform installation and provide on-site service support for any technical problems or repairs that are needed.

In China, we have entered the market through our distribution partner, Enlight Medical, who provides sales, marketing, distribution and customer support services. We will continue to evaluate entering other geographies and countries over time and will likely initially enter those markets through distribution partners.

Suppliers and Manufacturing

Our overall manufacturing strategy is to continuously develop and refine our processes to achieve our objectives of continuity of supply, quality of supply and margin enhancement. Over time, this may lead to in-sourcing or outsourcing certain functions, including manufacturing, in various geographic locations in order to achieve our objectives.

Consumables

We leverage well-established unit operations to formulate and manufacture our NPs at our facilities in Redwood City, California. We procure certain components of our consumables from third-party manufacturers, which includes the commonly-available raw materials needed for manufacturing our proprietary engineered NPs. We are currently manufacturing using our production-scale and pilot lines and continue to build out our manufacturing capabilities to support broad commercial availability of our products. We obtain some of the reagents and components used in the Proteograph workflow from third-party suppliers. While some of these reagents and components are currently sourced from a single supplier, these products are readily available from numerous suppliers. While we currently perform some filling and packaging of the Proteograph assay and the related consumables, we may eventually have our filling and packaging outsourced to a third party. We conduct vendor and component qualification for components provided by third-party suppliers and quality control tests on our NPs.

Automation Instrument

We designed the SP100 automation instrument and have outsourced its manufacturing to Hamilton Company, a leading manufacturer of automated liquid handling workstations. We have entered into a non-exclusive agreement with Hamilton that covers the manufacturing of the SP100 automation instrument and its continued supply on a purchase order basis. The agreement has an initial term that runs three years following our commercial launch. We have the option to extend the term of the agreement with Hamilton upon written notice at the end of the initial term; provided that prices are only fixed during the initial term of the agreement. Hamilton has represented to us that it maintains ISO 9001 and ISO 13485 certification.

Competition

The life sciences technology industry is highly dynamic, marked by rapidly advancing technologies, intense competition and a strong focus on intellectual property. In the proteomics market, companies offer a range of analytical instruments, such as chromatography and MS instruments, and associated reagents. Competition in the proteomics market is based on proprietary technologies, rapid product development capabilities, applications and intellectual property. We believe that no currently commercially available products offer the capability to conduct unbiased, deep proteomics studies of high dynamic range samples at the same scale and throughput as the Proteograph Product Suite. However, given the potential market opportunity and scientific promise of proteomics, we expect the competition to increase and, as a result, one or more competing products to emerge in the future. Competing products may emerge from various sources, including life sciences tools, diagnostics, pharmaceutical and biotechnology companies, third-party service providers, academic research institutions, governmental agencies, and public and private research institutions.

Current companies that provide proteomics products include Agilent Technologies, Bruker Corporation, Danaher, DiaSorin and Thermo Fisher Scientific. There are also a number of companies that provide proteomic analysis services. In addition, multiple emerging growth companies have developed, or are developing, proteomics products, services and solutions, such as Nautilus Biotechnology, Olink Proteomics, Quanterix, Quantum-Si and SomaLogic.

Government Regulation

The development, testing, manufacturing, marketing, post-market surveillance, distribution, advertising and labeling of certain of medical devices are subject to regulation in the United States by the Center for Devices and Radiological Health of the U.S. Food and Drug Administration (FDA) under the Federal Food, Drug, and Cosmetic Act (FDC Act) and comparable state and international agencies. FDA defines a medical device as an instrument, apparatus, implement, machine, contrivance, implant, in vitro reagent or other similar or related article, including

any component part or accessory, which is (i) intended for use in the diagnosis of disease or other conditions, or in the cure, mitigation, treatment, or prevention of disease, in man or other animals, or (ii) intended to affect the structure or any function of the body of man or other animals and which does not achieve any of its primary intended purposes through chemical action within or on the body of man or other animals and which is not dependent upon being metabolized for the achievement of any of its primary intended purposes. Medical devices to be commercially distributed in the United States must receive from the FDA either clearance of a premarket notification, known as 510(k), or premarket approval pursuant to the FDC Act prior to marketing, unless subject to an exemption.

We label and sell our products for RUO and expect to sell them to academic institutions, life sciences and research laboratories that conduct research, and biopharmaceutical and biotechnology companies for non-diagnostic and non-clinical purposes. Our products are not intended or promoted for use in clinical practice in the diagnosis of disease or other conditions, and they are labeled for research use only, not for use in diagnostic procedures. Accordingly, we believe our products, as we intend to market them, are not subject to regulation by FDA. Rather, while FDA regulations require that research use only products be labeled with – "For Research Use Only. Not for use in diagnostic procedures." – the regulations do not subject such products to the FDA's jurisdiction or the broader pre- and post-market controls for medical devices.

In November 2013, the FDA issued a final guidance on products labeled RUO, which, among other things, reaffirmed that a company may not make any clinical or diagnostic claims about an RUO product, stating that merely including a labeling statement that the product is for research purposes only will not necessarily render the device exempt from the FDA's clearance, approval, or other regulatory requirements if the totality of circumstances surrounding the distribution of the product indicates that the manufacturer knows its product is being used by customers for diagnostic uses or the manufacturer intends such a use. These circumstances may include, among other things, written or verbal marketing claims regarding a product's performance in clinical diagnostic applications and a manufacturer's provision of technical support for such activities. If FDA were to determine, based on the totality of circumstances, that our products labeled and marketed for RUO are intended for diagnostic purposes, they would be considered medical devices that will require clearance or approval prior to commercialization. Further, sales of devices for diagnostic purposes may subject us to additional healthcare regulation. We continue to monitor the changing legal and regulatory landscape to ensure our compliance with any applicable rules, laws and regulations.

In the future, certain of our products or related applications could become subject to regulation as medical devices by the FDA. If we wish to label and expand product lines to address the diagnosis of disease, regulation by governmental authorities in the United States and other countries will become an increasingly significant factor in development, testing, production, and marketing. Products that we may develop in the molecular diagnostic markets, depending on their intended use, may be regulated as medical devices or in vitro diagnostic products (IVDs) by the FDA and comparable agencies in other countries. In the U.S., if we market our products for use in performing clinical diagnostics, such products would be subject to regulation by the FDA under pre-market and post-market control as medical devices, unless an exemption applies, we would be required to obtain either prior 510(k) clearance or prior premarket approval from the FDA before commercializing the product.

The FDA classifies medical devices into one of three classes. Devices deemed to pose lower risk to the patient are placed in either class I or II, which, unless an exemption applies, requires the manufacturer to submit a pre-market notification requesting FDA clearance for commercial distribution pursuant to Section 510(k) of the FDC Act. This process, known as 510(k) clearance, requires that the manufacturer demonstrate that the device is substantially equivalent to a previously cleared and legally marketed 510(k) device or a "pre-amendment" class III device for which pre-market approval applications (PMAs) have not been required by the FDA. This FDA review process typically takes from four to twelve months, although it can take longer. Most class I devices are exempted from this 510(k) premarket submission requirement. If no legally marketed predicate can be identified for a new device to enable the use of the 510(k) pathway, the device is automatically classified under the FDC Act as class III, which generally requires PMA approval. However, FDA can reclassify or use "de novo classification" for a device that meets the FDC Act standards for a class II device, permitting the device to be marketed without PMA approval. To grant such a reclassification, FDA must determine that the FDC Act's general controls alone, or general controls and

special controls together, are sufficient to provide a reasonable assurance of the device's safety and effectiveness. The de novo classification route is generally less burdensome than the PMA approval process.

Devices deemed by the FDA to pose the greatest risk, such as life-sustaining, life-supporting, or implantable devices, or those deemed not substantially equivalent to a legally marketed predicate device, are placed in class III. Class III devices typically require PMA approval. To obtain PMA approval, an applicant must demonstrate the reasonable safety and effectiveness of the device based, in part, on data obtained in clinical studies. All clinical studies of investigational medical devices to determine safety and effectiveness must be conducted in accordance with FDA's investigational device exemption (IDE) regulations, including the requirement for the study sponsor to submit an IDE application to FDA, unless exempt, which must become effective prior to commencing human clinical studies. PMA reviews generally last between one and two years, although they can take longer. Both the 510(k) and the PMA processes can be expensive and lengthy and may not result in clearance or approval. If we are required to submit our products for pre-market review by the FDA, we may be required to delay marketing and commercialization while we obtain premarket clearance or approval from the FDA. There would be no assurance that we could ever obtain such clearance or approval.

All medical devices, including IVDs, that are regulated by the FDA are also subject to the quality system regulation. Obtaining the requisite regulatory approvals, including the FDA quality system inspections that are required for PMA approval, can be expensive and may involve considerable delay. The regulatory approval process for such products may be significantly delayed, may be significantly more expensive than anticipated, and may conclude without such products being approved by the FDA. Without timely regulatory approval, we will not be able to launch or successfully commercialize such diagnostic products. Changes to the current regulatory framework, including the imposition of additional or new regulations, could arise at any time during the development or marketing of our products. This may negatively affect our ability to obtain or maintain FDA or comparable regulatory clearance or approval of our products in the future. In addition, regulatory agencies may introduce new requirements that may change the regulatory requirements for us or our customers, or both.

As noted above, although our products are currently labeled and sold for research purposes only, the regulatory requirements related to marketing, selling, and supporting such products could be uncertain and depend on the totality of circumstances. This uncertainty exists even if such use by our customers occurs without our consent. If the FDA or other regulatory authorities assert that any of our RUO products are subject to regulatory clearance or approval, our business, financial condition, or results of operations could be adversely affected.

For example, in some cases, our customers may use our RUO products in their own laboratory-developed tests (LDTs) or in other FDA-regulated products for clinical diagnostic use. The FDA has historically exercised enforcement discretion in not enforcing the medical device regulations against LDTs and LDT manufacturers. However, on October 3, 2014, the FDA issued two draft guidance documents that set forth the FDA's proposed risk-based framework for regulating LDTs, which are designed, manufactured, and used within a single laboratory. In January 2017, the FDA announced that it would not issue final guidance on the oversight of LDTs and LDT manufacturers, but would seek further public discussion on an appropriate oversight approach and give Congress an opportunity to develop a legislative solution. More recently, the FDA has issued warning letters to genomics labs for illegally marketing genetic tests that claim to predict patients' responses to specific medications, noting that the FDA has not created a legal "carve-out" for LDTs and retains discretion to take action when appropriate, such as when certain genomic tests raise significant public health concerns. As laboratories and manufacturers develop more complex genetic tests and diagnostic software, FDA may increase its regulation of LDTs. Any future legislative or administrative rule making or oversight of LDTs and LDT manufacturers, if and when finalized, may impact the sales of our products and how customers use our products, and may require us to change our business model in order to maintain compliance with these laws. We would become subject to additional FDA requirements if our products are determined to be medical devices or if we elect to seek 510(k) clearance or premarket approval. If our products become subject to FDA regulation as medical devices, we would need to invest significant time and resources to ensure ongoing compliance with FDA quality system regulations and other post-market regulatory requirements.

International sales of medical devices are subject to foreign government regulations, which vary substantially from country to country. In the future, if we decide to distribute or market our diagnostic products as IVDs in Europe, such products will be subject to regulation under the IVD Medical Device Regulation (IVDR) European Union (EU)

2017/746, which replaces the IVD Directive, is significantly more extensive than the IVD Directive, including requirements on performance data and quality system, and went into application in May 2022. Recently, the European Parliament voted to extend the transition timelines for IVDR. Outside of the EU, regulatory approval needs to be sought on a country-by-country basis in order to market medical devices. Although there is a trend towards harmonization of quality system, standards and regulations in each country may vary substantially which can affect timelines of introduction.

In August 2020, the Department of Health and Human Services (HHS) announced rescission of guidance and other informal issuances of the FDA regarding premarket review of LDT absent notice-and-comment rulemaking, stating that, absent notice-and-comment rulemaking, those seeking approval or clearance of, or an emergency use authorization, for an LDT may nonetheless voluntarily submit a premarket approval application, premarket notification or an Emergency Use Authorization request, respectively, but are not required to do so. In November 2021, HHS under the Biden administration issued a statement that withdrew the August 2020 policy announcement stating that HHS does not have a policy on LDTs that is separate from FDA's longstanding approach. Legislative and administrative proposals to amend the FDA's oversight of LDTs have been introduced in recent years, including the Verifying Accurate Leading-edge IVCT Development Act of 2021 (VALID Act). In September 2022, Congress passed the FDA user fee reauthorization legislation without substantive FDA policy riders, including the VALID Act, but Congress may revisit the policy riders and enact other FDA programmatic reforms in the future. It is unclear how future legislation by federal and state governments and FDA regulation will impact the industry, including our business and that of our customers. Any restrictions or heightened regulatory requirements on LDTs, IVDs, or RUO products by the FDA, HHS, Congress, or state regulatory authorities may decrease the demand for our products, increase our compliance costs, and negatively impact our business and profitability. We will continue to monitor and assess the impact of changing regulatory landscape on our business.

In the future, to the extent we develop any clinical diagnostic assays, we may pursue payment for such products through a diverse and broad range of channels and seek coverage and reimbursement by government health insurance programs and commercial third-party payors for such products. In the United States, there is no uniform coverage for clinical laboratory tests. The extent of coverage and rate of payment for covered services or items vary from payor to payor. Obtaining coverage and reimbursement for such products can be uncertain, time-consuming, and expensive, and, even if favorable coverage and reimbursement status were attained for our tests, to the extent applicable, less favorable coverage policies and reimbursement rates may be implemented in the future. Changes in healthcare regulatory policies could also increase our costs and subject us to additional regulatory requirements that may interrupt commercialization of our products, decrease our revenue and adversely impact sales of, and pricing of and reimbursement for, our products.

For further discussion of the risks we face relating to regulation, see the section titled “Risk factors—Risks related to our business and industry.”

The federal Health Insurance Portability and Accountability Act of 1996 (HIPAA), as amended by the Health Information Technology for Economic and Clinical Health Act of 2009 (HITECH), and their implementing regulations, which impose obligations, including mandatory contractual terms, with respect to safeguarding the transmission, security and privacy of protected health information by covered entities subject to HIPAA, such as health plans, health care clearinghouses and healthcare providers, and their respective business associates that access protected health information. HITECH also created new tiers of civil monetary penalties, amended HIPAA to make civil and criminal penalties directly applicable to business associates in some cases, and gave state attorneys general new authority to file civil actions for damages or injunctions in federal courts to enforce the federal HIPAA laws and seek attorneys' fees and costs associated with pursuing federal civil actions.

In addition, in the U.S., numerous federal and state laws and regulations, including state data breach notification laws, state health information privacy laws, and federal and state consumer protection laws, govern the collection, use, disclosure, and protection of health-related and other personal information. For example, in June 2018, the State of California enacted the CCPA, which came into effect on January 1, 2020 and provides new data privacy rights for consumers and new operational requirements for companies. While we are not currently subject to the CCPA, we may in the future be required to comply with the CCPA, which may increase our compliance costs and potential

liability. Furthermore, the CCPA could mark the beginning of a trend toward more stringent state privacy legislation in the U.S., which could increase our potential liability and adversely affect our business.

Furthermore, the collection, use, storage, disclosure, transfer, or other processing of personal data regarding individuals in the European Economic Area (EEA), including personal health data, is subject to the GDPR, which became effective on May 25, 2018. The GDPR is wide-ranging in scope and imposes numerous requirements on companies that process personal data, including requirements relating to processing health and other sensitive data, obtaining consent of the individuals to whom the personal data relates, providing information to individuals regarding data processing activities, implementing safeguards to protect the security and confidentiality of personal data, providing notification of data breaches, and taking certain measures when engaging third-party processors. The GDPR also imposes strict rules on the transfer of personal data to countries outside the EEA, including the United States, and permits data protection authorities to impose large penalties for violations of the GDPR, including potential fines of up to €20 million or 4% of annual global revenues, whichever is greater. The GDPR also confers a private right of action on data subjects and consumer associations to lodge complaints with supervisory authorities, seek judicial remedies, and obtain compensation for damages resulting from violations of the GDPR. In addition, the GDPR includes restrictions on cross-border data transfers. The GDPR may increase our responsibility and liability in relation to personal data that we process where such processing is subject to the GDPR, and we may be required to put in place additional mechanisms to ensure compliance with the GDPR, including as implemented by individual countries. Compliance with the GDPR will be a rigorous and time-intensive process that may increase our cost of doing business or require us to change our business practices, and despite those efforts, there is a risk that we may be subject to fines and penalties, litigation, and reputational harm in connection with our European activities. Further, the United Kingdom's decision to leave the EU, often referred to as Brexit, has created uncertainty with regard to data protection regulation in the United Kingdom. As of January 1, 2021, and the expiry of transitional arrangements agreed to between the United Kingdom and EU, data processing in the United Kingdom is governed by a United Kingdom version of the GDPR (combining the GDPR and the Data Protection Act 2018), exposing us to two parallel regimes, each of which potentially authorizes similar fines and other potentially divergent enforcement actions for certain violations. Pursuant to the Trade and Cooperation Agreement, which went into effect on January 1, 2021, the United Kingdom and EU agreed to a specified period during which the United Kingdom will be treated like an EU member state in relation to processing and transfers of personal data for four months from January 1, 2021. This period may be extended by two further months. Furthermore, following the expiration of the specified period, there will be increasing scope for divergence in application, interpretation and enforcement of the data protection law as between the United Kingdom and EEA.

For further discussion of the risks we face relating to regulation, see the section titled "Risk factors—Risks related to our business and industry."

Intellectual Property

Our success depends in part on our ability to obtain and maintain intellectual property protection for our products and technology. We use a variety of intellectual property protection strategies, including patents, trademarks, trade secrets and other methods of protecting proprietary information.

As of December 31, 2022, we owned or exclusively licensed over 125 issued patents and patent applications worldwide. Our intellectual property portfolio includes patents and patent applications directed to proteomic assays, nanoparticle chemistry, data analysis and automation instruments. Our owned or exclusively licensed patents and patent applications, if issued, are expected to expire between 2023 and 2043, in each case without taking into account any possible patent term adjustments or extensions and assuming payment of all appropriate maintenance, renewal, annuity or other governmental fees.

We exclusively license U.S. patents and patent applications, as well as ex-U.S. patents and pending patent applications from The Brigham and Women's Hospital (BWH). These patents and patent applications are directed to methods for identifying a biological state, including classification and early detection of cancers and other diseases, using nanoparticle and biosensor compositions, as well as other nanoparticle compositions. Our in-licensed patents and patent applications, if issued, are expected to expire between 2027 and 2037, in each case without taking into

account any possible patent term adjustments or extensions and assuming payment of all appropriate maintenance, renewal, annuity, or other governmental fees.

In addition to licensing patents and patent applications from BWH, we have also non-exclusively licensed certain of our patents and patent applications to PrognomiQ for use in the field of human diagnostics. Pursuant to our agreement with PrognomiQ, we also assigned a patent application related to lung cancer biomarkers to PrognomiQ. In connection with our agreement with PrognomiQ, we have granted PrognomiQ a non-exclusive sublicense to certain patents and patent applications that we license from BWH under our license agreement with BWH for use in the field of human diagnostics. For further information on the intellectual property transfer and license agreement with PrognomiQ and the license agreement with BWH, see the section titled *"Business —Collaboration and License Agreements."*

We intend to pursue additional intellectual property protection to the extent we believe it would be beneficial and cost-effective. Our ability to stop third parties from making, using, selling, offering to sell, importing or otherwise commercializing any of our patented inventions, either directly or indirectly, will depend in part on our success in obtaining, defending and enforcing patent claims that cover our technology, inventions, and improvements. With respect to both our owned and in-licensed intellectual property, we cannot provide any assurance that any of our current or future patent applications will result in the issuance of patents in any particular jurisdiction, or that any of our current or future issued patents will effectively protect any of our products or technology from infringement or prevent others from commercializing infringing products or technology. Even if our pending patent applications are granted as issued patents, those patents may be challenged, circumvented or invalidated by third parties. Consequently, we may not obtain or maintain adequate patent protection for any of our products or technologies.

In addition to our reliance on patent protection for our inventions, products and technologies, we also rely on trade secrets, know-how, confidentiality agreements and continuing technological innovation to develop and maintain our competitive position. For example, some elements of manufacturing processes, analytics techniques and processes, as well as computational-biological algorithms, and related processes and software, are based on unpatented trade secrets and know-how that are not publicly disclosed. Although we take steps to protect our proprietary information and trade secrets, including through contractual means with our employees, advisors and consultants, these agreements may be breached or may be unenforceable and we may not have adequate remedies. In addition, third parties may independently develop substantially equivalent proprietary information and techniques or otherwise gain access to our trade secrets or disclose our technology. As a result, we may not be able to meaningfully protect our trade secrets. For further discussion of the risks relating to intellectual property, see the section titled *"Risk factors—Risks Related to our Intellectual Property."*

Collaboration and License Agreements

The Brigham and Women's Hospital

In December 2017, we entered into an exclusive patent license agreement with BWH, pursuant to which we obtained an exclusive, royalty-bearing, sub-licensable (with approval from BWH) license to certain U.S. and foreign patents and patent applications in one patent family related to methods for identifying a biological state using nanoparticle and biosensor compositions and other nanoparticle compositions to develop, manufacture, use and commercialize products and processes in all fields, including but not limited to therapeutic, diagnostic, or other uses, on a worldwide basis. In addition, we were also granted an exclusive, royalty-bearing, sub-licensable (with approval from BWH) license to certain U.S. pending patent applications in another patent family to develop, manufacture, use and commercialize products and processes in all fields, including but not limited to therapeutic, diagnostic, or other uses, other than for the treatment of cancer through antigen-specific immune stimulation or the treatment of disease through immune tolerance or immune switching of lymphocyte subclasses. We may sublicense the patent rights licensed under the agreement subject to certain conditions, including obtaining the review and approval by BWH of such sublicense and any such sublicense must be consistent with and subject to the terms of the agreement.

In consideration for the licenses granted under the agreement, we must pay BWH annual license fees and a low single digit royalty on net sales of licensed products in any country during the term of the agreement, which is credited against the annual license fees. In the event we commercialize a product in the therapeutic space, we are

also required to make certain drug-approval regulatory and commercialization milestone payments to BWH of up to a mid-seven digit figure in the aggregate for licensed products. In the event we sublicense any of the licensed intellectual property, we must pay BWH a percentage of any sublicense income received by us, which on a going-forward basis will be in the high single digits.

Under the terms of the agreement, we are required to use commercially reasonable efforts to develop and commercialize the licensed products, including in accordance to certain developmental, funding, regulatory and commercialization milestones. BWH controls the prosecution, maintenance and enforcement of all licensed patents and patent applications under the agreement.

Unless earlier terminated, the agreement continues until the expiration of the last to expire patent right licensed under the agreement. Subject to an applicable cure period, BWH may terminate the agreement if we fail to comply with applicable payments or diligence obligations or upon a breach of our obligation under the agreement, or for certain insolvency-related events.

PrognomiQ

In August 2020, we entered into an intellectual property transfer and license agreement and, in October 2020, we entered into an intellectual property sublicense agreement, in each case with PrognomiQ in connection with the spin-out of PrognomiQ. Under the intellectual property transfer and license agreement, we granted PrognomiQ a non-exclusive, perpetual, irrevocable (subject to termination for breach) license to certain patents and patent applications that we own and, under the intellectual property sublicense agreement, we granted a non-exclusive sublicense to certain patent applications exclusively licensed from BWH, in each case, relating to our core technology to develop, manufacture and commercialize licensed products for the field of human diagnostics on a worldwide basis. In addition, we assigned a patent application relating to lung cancer biomarkers, and transferred certain clinical samples, contracts and other related assets to PrognomiQ. PrognomiQ may extend such licensed and sublicensed rights to customers of licensed products. PrognomiQ is not required to pay us any royalties or fees pursuant to the intellectual property transfer and license agreement. In consideration of the non-exclusive sublicense to certain patent applications licensed from BWH, PrognomiQ paid us a low-five digit figure, and would pay a low single digit royalty, in an amount equivalent to what we would have to pay under our license with BWH, on net sales of sublicensed products beginning with the first commercial sale of a sublicensed product during the term of the intellectual property sublicense agreement.

In the event we elect to grant an exclusive license to a third party in the field of human diagnostics for any of the patents and patent applications licensed or sublicensed, as applicable, to PrognomiQ under the respective agreements, we are required to first negotiate with PrognomiQ for a period of sixty days for a license or sublicense, as applicable, to such rights on reasonable terms. Furthermore, for a period of two years after the effective date, we are required to negotiate in good faith with PrognomiQ for a license or sublicense, as applicable, to any improvements to the patents and patent applications assigned or licensed or sublicensed, as applicable, under the intellectual property transfer and license agreement and the intellectual property sublicense agreement. In an amendment to the intellectual property transfer and license agreement on July 28, 2022, we agreed to extend this negotiation period to three years after the effective date.

Neither party may assign the intellectual property transfer and license agreement nor any rights or obligations under the agreement without the other party's prior written consent, other than to an affiliate or pursuant to an acquisition. PrognomiQ may not assign the intellectual property sublicense agreement or any rights or obligations under the agreement without our prior written consent, other than to an affiliate or pursuant to an acquisition, and in any event only with BWH's prior written consent. Our right to assign the intellectual property sublicense agreement and any rights or obligations under the agreement is subject to the terms and conditions of our license with BWH. Unless terminated earlier, the terms of both agreements continue until the expiration of the last to expire intellectual property right granted under such agreement. Either party may terminate either agreement for an uncured breach of the other party, upon which all licenses granted under such agreement to the breaching party will terminate.

Collaborators

As part of the initial Collaboration phase of our completed three-phase commercial strategy for the Proteograph Product Suite, we entered collaboration agreements with Oregon Health & Science University (OHSU), an academic health center, The Broad Institute of MIT and Harvard (Broad Institute), a biomedical and genomic research center, the Salk Institute for Biological Studies, a multi-disciplinary research institute focused on addressing challenging health issues, including cancer, Alzheimer's and diabetes, and Discovery Life Sciences, a provider of biomedical and genomic research services. We have worked closely with our collaborators to help exemplify applications for the Proteograph Product Suite. For example, researchers at OHSU are using our products to facilitate various research efforts focused on proteomic profiling of various oncology versus control samples to determine protein signatures common between various cancer samples versus signatures found in control samples. Additionally, researchers at the Broad Institute use our products to analyze protein signatures in diseased vs. non-diseased samples undergoing drug perturbations in various clinical applications including cardiovascular disease.

Proteogenomics Consortium

In January 2022, we entered into an agreement to form the PGC with Discovery and SCIEX. Through this multi-year effort, Discovery will expand and offer deep, unbiased proteomics capabilities to their existing genomics customers using the Proteograph Product Suite and the SCIEX ZenoTOF 7600 platform. The consortium has the objective to build capacity to analyze 100,000 samples per year to enable large-scale, unbiased plasma proteomic studies. In December 2022, Discovery announced the launch of its Proteomics Services Division, which includes services offered by the PGC, and that it is accepting customer samples from pharmaceutical and biotech companies, government, and non-profit and academic research centers. The PGC will offer unbiased, high resolution proteogenomic services to help uncover novel biomarkers that can be mapped back to underlying genetic variations.

Scientific Advisory Board

We have assembled a highly-qualified scientific advisory board composed of advisors who have deep expertise in the fields of nanotechnology, proteomics, genomics, medicine, regulatory compliance and data science. Our scientific advisory board is composed of Robert Langer, Sc.D., Mostafa Ronaghi, Ph.D., Erwin Böttinger, M.D., Charles Cantor, Ph.D., Bradley Hyman, M.D., Steve Carr, Ph.D., Joshua Coon, Ph.D., Luis Diaz, M.D., Josh Elias, Ph.D., Vivek Farias, Ph.D., Wolfgang Parak, Ph.D. and Ralph Weissleder, M.D.

Employees

Our employees are guided by our mission to imagine and pioneer news ways to decode the secrets of the proteome to improve human health. Our core values Better Together, Customer Centric, Difference Makers, People First and Trailblazers guide us toward achieving our mission. Our core values set the foundation for how we conduct business, interact with each other and our customers and evaluate employee performance.

As of December 31, 2022, we had 164 employees; 160 employees were based in the United States, one employee was based in Canada and three employees were based in the United Kingdom. Many of our employees are highly educated, holding masters and doctorate degrees. Of these employees, 80 were engaged in research and development activities, 21 were engaged in manufacturing and operations and 63 were engaged in selling, general, and administrative activities. We consider our relationship with our employees to be good. None of our employees are represented by a labor union or covered under a collective bargaining agreement.

Diversity, equality and inclusion awareness and training were an important part of our 2022 human capital strategy. As of December 31, 2022, 66% of our employees were women and people of color.

Our human capital resources objectives include identifying, recruiting, retaining, incentivizing and integrating our existing and new employees, advisors and consultants. The principal purposes of our equity and cash incentive plans are to attract, retain and reward personnel through the granting of stock-based and cash-based compensation awards, in order to increase stockholder value and the success of our company by motivating such individuals to perform to the best of their abilities and achieve our objectives.

Corporate Information and History

We were incorporated in Delaware on March 16, 2017, under the name Seer Biosciences, Inc., and changed our name to Seer, Inc. on July 16, 2018. Our principal executive offices are located at 3800 Bridge Parkway, Suite 102, Redwood City, California 94065. Our telephone number is 650-543-0000. Our website address is http://seer.bio. Information contained on, or that can be accessed through, our website should not be considered to be part of this Annual Report.

We use Seer and Proteograph as trademarks in the United States and other countries. This Annual Report contains references to our trademarks and service marks and to those belonging to other entities. Solely for convenience, trademarks and trade names referred to in this Annual Report, including logos, artwork and other visual displays, may appear without the ® or TM symbols, but such references are not intended to indicate in any way that we will not assert, to the fullest extent under applicable law, our rights or the rights of the applicable licensor to these trademarks and trade names. We do not intend our use or display of other entities' trade names, trademarks or service marks to imply a relationship with, or endorsement or sponsorship of us by, any other entity.

References

Published studies referenced throughout this Annual Report are cited below. These studies are not a part of this prospectus and are not incorporated by reference in this Annual Report.

Backman, J.D. et al. Exome sequencing and analysis of 454,787 UK Biobank participants. *Nature* 599, 628–634 (2021)

Bludau, I. et al. Proteomic and interactomic insights into the molecular basis of cell functional diversity. *Nat Rev Molec Cell Biol* 21, 327–340 (2020).

Blume, J.E. et al. Rapid, deep and precise profiling of the plasma proteome with multi-nanoparticle protein corona. *Nat. Commun.* 11 (2020).

Buccitelli C. and Selbach M. mRNAs, proteins and the emerging principles of gene expression control. *Nat Rev Genet.* 21(10):630-644 (2020).

Donovan M. et al. Functionally distinct BMP1 isoforms show an opposite pattern of abundance in plasma from non-small cell lung cancer subjects and controls (in press; bioRxiv).

Ferdosi, S. et al. Engineered nanoparticles enable deep proteomic studies at scale by leveraging tunable nano-bio interactions. *PNAS*. 119(11) (2022).

Ferdosi, S. et al. Enhanced competition at the nano-bio interface enables comprehensive characterization of protein corona dynamics and deep coverage of proteomes. *Advanced Materials*. 34, 2206008 (2022).

Keshishian, H. et al. Quantitative, multiplexed workflow for deep analysis of human blood plasma and biomarker discovery by mass spectrometry. *Nat. Proc.* 12 1683-1701 (2017).

Keshishian, H. et al. Multiplexed, quantitative workflow for sensitive biomarker discovery in plasma yields novel candidates for early myocardial injury. *Molec & Cellular Proteomics* 14(9) 2375-2393 (2015).

Nakahata and Kawamoto. Tissue-dependent isoforms of mammalian Fox-1 homologs are associated with tissue-specific splicing activities. Nucleic Acid Research 33(7) 2078-2089 (2005).

Pietzner, M. et al. Synergistic insights into human health from aptamer- and antibody-based proteomic profiling. *Nat Commun.* 12, 6822 (2021).

Schwenk, J.M. et al. The Human Plasma Proteome Draft of 2017: Building on the Human Plasma Peptide Atlas from Mass Spectrometry and Complementary Assays. *J. Proteome Res.* 16, 4299-4310 (2017).

Yang X. et al. Widespread Expansion of Protein Interaction Capabilities by Alternative Splicing. *Cell.* 164(4):805-17 (2016).

Available Information

We make our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, and amendments to those reports, available free of charge at our website as soon as reasonably practicable after they have been filed with the SEC. Our website address is http://seer.bio. Information on our website is not part of this report. The SEC maintains a website that contains the materials we file with the SEC at www.sec.gov.

Item 1A. Risk Factors

Investing in our Class A common stock involves a high degree of risk. You should carefully consider the risks described below, as well as the other information in this Annual Report, including our consolidated financial statements and the related notes and the section titled "Management's Discussion and Analysis of Financial Condition and Results of Operations" in this Annual Report, before deciding whether to invest in our Class A common stock. The occurrence of any of the events or developments described below could harm our business, financial condition, results of operations and prospects. In such an event, the market price of our Class A common stock could decline, and you may lose all or part of your investment. Additional risks and uncertainties not presently known to us or that we currently deem immaterial also may impair our business operations and the market price of our Class A common stock.

Summary Risk Factor

Our business is subject to numerous risks and uncertainties that you should consider before investing in our company, as more fully described below. The principal factors and uncertainties that make investing in our company risky include, among others:

- we are an early-stage life sciences technology company with a history of net losses, which we expect to continue, and we may not be able to generate meaningful revenues or achieve and sustain profitability in the future;
- we have a limited operating history, which may make it difficult to evaluate our current business and the prospects for our future viability, and to predict our future performance;
- our operating results may fluctuate significantly in the future, which makes our future operating results difficult to predict and could cause our operating results to fall below expectations or any guidance we may provide;
- the size of the markets for the Proteograph Product Suite may be smaller than estimated, and new market opportunities may not develop as quickly as we expect, or at all, limiting our ability to successfully sell our products;
- we are in the early stages of our commercialization plan, and we may not be able to commercialize the Proteograph Product Suite as planned;
- our commercialization success depends on broad scientific and market acceptance of the Proteograph, which we may fail to achieve;
- even if the Proteograph Product Suite is successfully commercialized and achieves broad scientific and market acceptance, if we fail to improve it or introduce compelling new products, our revenues and our prospects could be harmed;
- The COVID-19 pandemic and efforts to reduce its spread have adversely impacted our operations, and other public health crises and other epidemics could adversely impact, our business and operations;

- if we are unable to obtain and maintain sufficient intellectual property protection for our products and technology, or if the scope of the intellectual property protection obtained is not sufficiently broad, our competitors could develop and commercialize products similar or identical to ours, and our ability to successfully commercialize our products may be impaired;
- if we are unable to identify and recruit qualified employees, and retain or maintain our employee base, it may adversely impact our business and operations; and
- if we fail to maintain an effective system of internal controls, or otherwise fail to comply with the Sarbanes-Oxley Act of 2002, we may not be able to accurately and timely report our financial results, which may adversely affect our business and investor confidence in us and, as a result, the value of our Class A common stock.

Risks Related to Our Business and Industry

We are an early-stage life sciences technology company with a history of net losses, which we expect to continue, and we may not be able to generate meaningful revenues or achieve and sustain profitability in the future.

We are an early-stage life sciences technology company, and we have incurred significant losses since we were formed in 2017, and expect to continue to incur losses in the future. We incurred net losses of $93.0 million and $71.2 million in 2022 and 2021, respectively. As of December 31, 2022, we had an accumulated deficit of $219.5 million. These losses and accumulated deficit were primarily due to the substantial investments we have made to develop and improve our technology and the Proteograph Product Suite. Over the next several years, we expect to continue to devote substantially all of our resources towards continuing development and commercialization of the Proteograph Product Suite, including sales and marketing, manufacturing and operations costs, and research and development efforts for products. These efforts may prove more costly than we currently anticipate. While we have generated product revenue, we may never generate revenue sufficient to offset our expenses. In addition, as a public company, we incur significant legal, accounting, administrative, insurance and other expenses. Accordingly, we cannot assure you that we will achieve profitability in the future or that, if we do become profitable, we will sustain profitability.

We have a limited operating history, which may make it difficult to evaluate our current business and the prospects for our future viability, and to predict our future performance.

We are in the early stages of commercialization of the Proteograph Product Suite. Our operations to date have been primarily focused on developing our technology and products. Our prospects must be considered in light of the uncertainties, risks, expenses, and difficulties frequently encountered by companies in their early stages of operations. Consequently, predictions about our future success or viability are highly uncertain and may not be as accurate as they could be if we had a longer operating history or a company history of successfully developing and commercializing products.

In addition, as a business with a limited operating history, we may encounter unforeseen expenses, difficulties, complications, delays and other known and unknown obstacles. As we continue to transition from a company with a focus on research and development to a company capable of supporting broad commercial activities as well, we may not be successful in such a transition. We have encountered in the past, and will encounter in the future, risks and uncertainties frequently experienced by growing companies with limited operating histories in emerging and rapidly changing industries. If our assumptions regarding these risks and uncertainties, which we use to plan and operate our business, are incorrect or change, or if we do not address these risks successfully, our results of operations could differ materially from our expectations, and our business, financial condition and results of operations could be adversely affected.

Our operating results may fluctuate significantly in the future, which makes our future operating results difficult to predict and could cause our operating results to fall below expectations of investors or security analysts or any

guidance we may provide, and which may cause the price of our Class A common stock to fluctuate or decline substantially.

Our quarterly and annual operating results may fluctuate significantly, which makes it difficult for us to predict our future operating results. These fluctuations may occur due to a variety of factors, many of which are outside of our control, including, but not limited to:

- our ability to successfully commercialize the Proteograph Product Suite on our anticipated timeline;
- our ability to offer high-quality customer service:
- the timing and cost of, and level of investment in, research and development and commercialization activities relating to the Proteograph Product Suite, including our SP100 automation instrument, proprietary engineered nanoparticle (NP) technology and Proteograph Analysis Suite software, which may change from time to time;
- the level of demand for any products we are able to commercialize, particularly the Proteograph Product Suite, which may vary significantly from period to period;
- our ability to drive adoption of the Proteograph in our target markets and our ability to expand into any future target markets;
- our relationship with third-party distributorships, the quantity of our products they elect to hold in inventory, and their ability to promote and sell our products;
- the prices at which we will be able to sell the Proteograph Product Suite;
- the volume and mix of our sales between the Proteograph Product Suite and associated consumables, or changes in the manufacturing or sales costs related to our products;
- the length of time and unpredictable nature of the sales cycle;
- the lead time needed to procure SP100 automation instruments from our third-party contract manufacturer;
- the success of our sales force, which if less than anticipated, could significantly impair our ability to generate revenue;
- the failure of customers to exercise Proteograph purchase options;
- the effective and efficient use of our financial and other resources, including the timing and amount of expenditures that we may incur to develop, commercialize or acquire additional products and technologies or for other purposes, such as the expansion of our facilities;
- changes in governmental funding of life sciences research and development or changes that impact budgets and budget cycles;
- seasonal spending patterns and the ability to collect on the accounts receivable of our customers;
- the timing of when we recognize revenue;
- future accounting pronouncements, changes in accounting rules and regulations, or modifications to our accounting policies;
- the outcome of any future litigation or governmental investigations involving us, our industry or both;
- higher than anticipated service, replacement and warranty costs;

- the impact of health epidemics such as the COVID-19 pandemic or any other pandemic on the economy, investment in life sciences and research industries, our business operations, and resources and operations of our customers, suppliers, and distributors;
- global supply chain interruptions; and
- general industry, economic and market conditions such as inflation, rising interest rates, and other factors, including factors unrelated to our operating performance or the operating performance of our competitors.

The cumulative effects of the factors discussed above could result in large fluctuations and unpredictability in our quarterly and annual operating results. As a result, comparing our operating results on a period-to-period basis may not be meaningful. Investors should not rely on our past results as an indication of our future performance.

This variability and unpredictability could also result in our failing to meet expectations of industry or financial analysts, or investors, for any period. If we are unable to commercialize products or generate sufficient revenue, or if our operating results fall below the expectations of analysts or investors or below any guidance we may provide, or if the guidance we provide is below the expectations of analysts or investors, it could cause the market price of our Class A common stock to fluctuate or decline substantially.

The size of the markets for the Proteograph Product Suite may be smaller or different from estimated, and new market opportunities may not develop as quickly as we expect, or at all, limiting our ability to successfully sell our products.

The market for proteomics and genomics technologies and products is evolving, making it difficult to predict with any accuracy the size of the markets for our current and future products, including the Proteograph Product Suite. Our estimates of the total addressable market for our current and future products are based on a number of internal and third-party estimates and assumptions. In particular, our estimates are based on our expectations that researchers in the market for certain life sciences research tools and technologies will view our products as competitive alternatives to, or better options than, existing tools and technologies. We also expect researchers will recognize the ability of our products to complement, enhance and enable new applications of their current tools and technologies. We expect them to recognize the value proposition offered by our products, enough to purchase our products in addition to the tools and technologies they already own. Underlying each of these expectations are a number of estimates and assumptions that may be incorrect, including the assumptions that government or other sources of funding will continue to be available to life sciences researchers at times and in amounts necessary to allow them to purchase our products and that researchers have sufficient samples and an unmet need for performing proteomics studies at scale across thousands of samples. In addition, sales of new products into new market opportunities may take years to develop and mature and we cannot be certain that these market opportunities will develop as we expect. New life sciences technology may not be adopted until the consistency and accuracy of such technology, method or device has been proven. As a result, the sizes of the annual total addressable market for new markets and new products are even more difficult to predict. Our product is an innovative new product, and while we draw comparisons between the evolution and growth of the genomics and proteomics markets, the proteomics market may develop more slowly or differently. In addition, the Proteograph Product Suite may not impact the field of proteomics in the same manner or degree, or within the same time frame, that NGS technologies have impacted the field of genomics, or at all. While we believe our assumptions and the data underlying our estimates of the total addressable market for our products are reasonable, these assumptions and estimates may not be correct and the conditions supporting our assumptions or estimates, or those underlying the third-party data we have used, may change at any time, thereby reducing the accuracy of our estimates. As a result, our estimates of the total addressable market for our products may be incorrect.

The future growth of the market for our current and future products depends on many factors beyond our control, including recognition and acceptance of our products by the scientific community and the growth, prevalence and costs of competing products and solutions. Such recognition and acceptance may not occur in the near term, or at all. If the markets for our current and future products are smaller than estimated or do not develop as we expect, our growth may be limited and our business, financial condition and operational results of operations could be adversely affected.

We are in the early stages of commercialization, and we may not be able to commercialize the Proteograph Product Suite as planned.

We have only recently initiated the broad commercialization of the Proteograph Product Suite, and we may not be able to successfully execute on this phase as planned due to:

- the inability to establish the capabilities and value proposition of the Proteograph Product Suite with key opinion leaders and other customers in a timely fashion;
- delays or longer-than expected lead times in the sales cycle to establish customer contacts, complete responsive presentations including platform evaluations tailored to specific requests, and move expeditiously from quote to order to revenue to receipt of payment due to budgetary or other constraints of academic organizations, laboratories, biopharmaceutical companies and others;
- changing industry or market conditions, customer requirements or competitor offerings during broad commercialization;
- delays in continuing the build-out of our sales, customer support and marketing organization as needed for broad commercialization;
- delays in ramping up manufacturing, either internally or through our suppliers, to meet the expected demand for broad commercialization; and
- the impact of the COVID-19 or any other pandemic on the economy and research industries, our business operations, and resources and the operations of our customers, suppliers and supply chain, and distributors.

To the extent our broad commercial release phase is unsuccessful, our financial results will be adversely impacted.

Even if we are able to execute on our commercialization plan, our success depends on broad scientific and market acceptance of the Proteograph Product Suite, which we may fail to achieve.

Our ability to achieve and maintain scientific and commercial market acceptance of the Proteograph Product Suite will depend on a number of factors. We expect that the Proteograph will be subject to the market forces and adoption curves common to other new technologies. The market for proteomics and genomics technologies and products is in its early stages of development. If widespread adoption of the Proteograph takes longer than anticipated, or broad scientific and market acceptance does not occur, we will continue to experience operating losses.

The success of life sciences products is due, in large part, to acceptance by the scientific community and their adoption of certain products in the applicable field of research. The life sciences scientific community is often led by a small number of early adopters and key opinion leaders who significantly influence the rest of the community through publications, including peer-reviewed journals. In such journal publications, the researchers will describe not only their discoveries, but also the methods, and typically the products used, to fuel such discoveries. Mentions in publications, including peer-reviewed journal publications, are a driver for the general acceptance of life sciences products, such as the Proteograph Product Suite. We have and continue to collaborate with a small number of key opinion leaders who are highly skilled at evaluating novel technologies and whose feedback helped us solidify our commercialization plans and processes. Ensuring that early adopters and key opinion leaders publish research involving the use of our products is critical to ensuring our products gain widespread scientific acceptance. In addition, continuing collaborative relationships with key opinion leaders is vital to maintaining any market acceptance we achieve. If too few researchers describe the use of our products, too many researchers utilize or shift to a competing product and publish research outlining their use of that product or too many researchers negatively describe the use of our products in publications, it may drive customers away from our products and it may delay market acceptance and adoption of the Proteograph during broad commercialization.

Other factors in achieving commercial market acceptance, include:

- our ability to market and increase awareness of the capabilities of the Proteograph Product Suite;
- the ability of the Proteograph Product Suite to perform intended use applications broadly in the hands of customers;
- our customers' willingness to adopt new products and workflows;
- the Proteograph's ease of use and whether it reliably provides advantages over other alternative technologies;
- the rate of adoption of the Proteograph Product Suite by academic institutions, laboratories, biopharmaceutical companies and others;
- the prices we charge for the Proteograph Product Suite;
- our ability to develop new products and workflows and solutions for customers;
- if competitors develop and commercialize products that perform similar functions as the Proteograph; and
- the impact of our investments in product innovation and commercial growth.

We cannot assure you that we will be successful in addressing each of these criteria or other criteria that might affect the market acceptance of any products we commercialize, particularly the Proteograph Product Suite. If we are unsuccessful in achieving and maintaining market acceptance of the Proteograph, our business, financial condition and results of operations would be adversely affected.

If our sales force is less successful than anticipated, we may not be successful in commercializing the Proteograph Product Suite.

We have limited experience as a company in sales and marketing and our ability to successfully commercialize depends on our being able to attract customers for the Proteograph Product Suite. Although members of our management team have considerable industry experience, we need to expand our sales, marketing, distribution and customer service and support capabilities with the appropriate technical expertise during the commercialization of the Proteograph Product Suite. To perform sales, marketing, distribution, and customer service and support successfully, we will face a number of risks, including:

- our ability to attract, retain and manage the sales, marketing and customer service and support force necessary to commercialize and gain market acceptance for our technology;
- the time and cost of establishing a specialized sales, marketing and customer service and support force; and
- our sales, marketing and customer service and support force may be unable to initiate and execute successful commercialization activities.

We have enlisted and may seek to enlist additional third parties to assist with sales, distribution and customer service and support globally or in certain regions of the world. There is no guarantee that we have attracted or will be successful in attracting desirable or experienced sales or distribution partners or that we have entered or will be able to enter into such arrangements on favorable terms. In addition, we rely on commercial carriers to transport our products, including consumables that are temperature controlled, to customers in a timely and cost-efficient manner, and if these services are delayed or disrupted, our business may be harmed. If our sales and marketing efforts, and logistics capability, or those of any third-party sales and distribution partners, are not successful, the Proteograph may not gain market acceptance, which could materially impact our business operations.

Even if the Proteograph Product Suite is successfully commercialized and achieves broad scientific and market acceptance, if we fail to improve it or introduce compelling new products, our revenues and our prospects could be harmed.

Even if we are able to broadly commercialize the Proteograph Product Suite and achieve broad scientific and market acceptance, our ability to attract new customers and increase revenue from existing customers will depend in large part on our ability to enhance and improve the Proteograph solution and to introduce compelling new products. The success of any enhancement to the Proteograph Product Suite or introduction of new products depends on several factors, including timely completion and delivery, competitive pricing, adequate quality testing, integration with existing technologies, appropriately timed and staged introduction and overall market acceptance. Any new product or enhancement to the Proteograph that we develop may not be introduced in a timely or cost-effective manner, may contain defects, errors, vulnerabilities or bugs, or may not achieve the market acceptance necessary to generate significant revenue.

The typical development cycle of new life sciences products can be lengthy and complicated, and may require new scientific discoveries or advancements, considerable resources and complex technology and engineering. Such developments may involve external suppliers and service providers, making the management of development projects complex and subject to risks and uncertainties regarding timing, timely delivery of required components or services and satisfactory technical performance of such components or assembled products. If we do not achieve the required technical specifications or successfully manage new product development processes, or if development work is not performed according to schedule, then such new technologies or products may be adversely impacted. If we are unable to successfully develop new products, enhance the Proteograph Product Suite to meet customer requirements, compete with alternative products, or otherwise gain and maintain market acceptance, our business, results of operations and financial condition could be harmed.

The COVID-19 pandemic and efforts to reduce its spread have adversely impacted our operations, and other public health crises and other epidemics could adversely impact, our business and operations.

The COVID-19 pandemic has had an adverse impact on our operations, particularly as a result of preventive and precautionary measures that we, other businesses, and governments are taking. Governmental mandates related to COVID-19 or other infectious diseases, or public health crises, have impacted, and could impact, our personnel and personnel at third-party manufacturing facilities in the United States and other countries, and the availability or cost of materials, which would disrupt or delay our receipt of instruments, components and supplies from the third parties we rely on to, among other things, produce our SP100 automation instrument and NPs. To the extent that any governmental authority imposes additional regulatory requirements or changes existing laws, regulations, and policies that apply to our business and operations, such as additional workplace safety measures, our product development plans and our commercial plans may be delayed, and we may incur further costs in bringing our business and operations into compliance with changing or new laws, regulations, and policies related to COVID-19 pandemic, other public health crises and other epidemics.

In the near term, we expect that substantially all of our revenue will be derived from sales of the Proteograph Product Suite, including our instruments and associated consumables, to academic, research and commercial customers. We have initiated commercial release and, as a result, in the near term, our ability to drive the adoption of the Proteograph solution will depend on our ability to visit customer sites, the ability of our customers to access laboratories, and the ability to install and train on the Proteograph Product Suite and conduct research in light of the COVID-19 pandemic. For example, due to the pandemic, we have encountered delays permitting the travel of our U.S.-based employees to China, and additional restrictions could adversely affect our business. We also may encounter delays in other countries. Additionally, since we have moved into broad commercial release, the research and development budgets of these customers, the ability of such customers to receive funding for research, and the ability of such customers to receive instrument installations and visitors to their facilities and to travel to our facilities, other laboratories and industry events, has become increasingly important to the adoption of the Proteograph. All of these considerations are impacted by factors beyond our control, such as:

- reductions in capacity or shutdowns of laboratories and other institutions as well as other impacts stemming from the COVID-19 pandemic, such as reduced or delayed spending on instruments or consumables as a

result of such shutdowns and delays before re-opened laboratories and institutions resume previous levels of research activities that require new purchases of our instruments or consumables;

- decreases in government funding of research and development; and
- changes to programs that provide funding to research laboratories and institutions, including changes in the amount of funds allocated to different areas of research, changes that have the effect of increasing the length of the funding process or the impact of the COVID-19 pandemic on our customers and potential customers and their funding sources.

Additionally, our suppliers have also been impacted by the COVID-19 pandemic and may be impacted by other public health crises and other epidemics. For example, our SP100 automation instrument manufacturer, Hamilton Company, has experienced a surge in demand for equipment and associated consumables used for COVID-19 diagnostics. A surge in demand for equipment, associated consumables, component parts, or raw materials could significantly harm our business if we cannot obtain equipment, associated consumables, component parts or raw materials in a timely manner, at an increased cost or at all.

The ultimate impact of the COVID-19 pandemic and any new epidemic is highly uncertain and subject to sudden change. This impact could have a material, adverse impact on our liquidity, capital resources, operations and business and those of the third parties on which we rely, and could worsen over time. Recently, President Biden announced that the administration intends to end the COVID-19 national and public health emergencies on May 11, 2023. The full impact of the termination of the public health emergencies on FDA and other regulatory policies and operations are unclear. Any of these occurrences, and any new epidemics, could significantly harm our business, results of operations and financial condition.

Unfavorable U.S. or global economic conditions could adversely affect our ability to raise capital and our business, results of operations and financial condition.

There has recently been extreme volatility and disruptions in the capital and credit markets, reducing our ability to raise additional capital through equity, equity-linked or debt financings, which could negatively impact our short-term and long-term liquidity and our ability to operate in accordance with our operating plan, or at all. Additionally, our results of operations could be adversely affected by general conditions in the global economy and financial markets. A severe or prolonged economic downturn could result in a variety of risks to our business, including weakened demand for the Proteograph Product Suite and our ability to raise additional capital when needed on favorable terms, if at all. A weak or declining economy, rising inflation, or rising interest rates could strain our customers' budgets or cause delays in their payments to us. Any of the foregoing could harm our business, and we cannot anticipate all of the ways in which the current economic climate and financial market conditions could adversely impact our ability to raise capital, business, results of operations and financial condition.

If we do not sustain or successfully manage our growth or financial resources, our business and prospects will be harmed.

Growing our business will place significant strains on our management, operational and manufacturing systems and processes, sales and marketing team, financial resources, systems and internal controls, and other aspects of our business. Developing and commercializing the Proteograph Product Suite will require us to hire and retain scientific, sales and marketing, software, manufacturing, customer service, distribution, quality assurance and other personnel. In addition, we will need to hire additional accounting, finance and other personnel in connection with our efforts to comply with the requirements of being a public company. As a public company, our management and other personnel will need to devote a substantial amount of time towards maintaining compliance with these requirements and effectively manage these activities. We may face challenges integrating, developing and motivating our rapidly growing employee base. To effectively manage our growth, we must continue to improve our operational and manufacturing systems and processes, our financial systems and internal controls and other aspects of our business and continue to effectively expand, train and manage our personnel. As our organization continues to grow, we will be required to implement more complex organizational management structures, and may find it increasingly difficult to maintain the benefits of our corporate culture, including our ability to quickly develop and launch new and

innovative products. If we do not successfully manage our growth or financial resources, our business, results of operations, financial condition and prospects will be harmed.

We depend on our key personnel and other highly qualified personnel, and if we are unable to recruit, train and retain our personnel, we may not achieve our goals.

Our future success depends upon our ability to recruit, train, retain and motivate key personnel. Our senior management team, including Omid Farokhzad, one of our founders and our Chief Executive Officer and President, and David Horn, our Chief Financial Officer, are critical to our vision, strategic direction, product development and commercialization efforts.

Omead Ostadan, our former President and one of our key personnel, took a leave of absence on November 20, 2021, for personal reasons lasting approximately three months. Mr. Ostadan returned on a part-time basis as the Company's President on February 28, 2022. On August 25, 2022, Mr. Ostadan resigned from his position as President of the company and the company's Board of Directors for personal reasons each effective September 30, 2022. Following Mr. Ostadan's departure, Mr. Farokhzad is now the CEO and President.

The departure of one or more of our executive officers, senior management team members, or other key employees could be disruptive to our business until we are able to hire qualified successors. We do not maintain "key man" life insurance on our senior management team.

Our continued growth and ability to successfully transition from a company primarily focused on development to commercialization depends, in part, on attracting, retaining and motivating qualified personnel, including highly-trained sales personnel with the necessary scientific background and ability to understand our systems at a technical level to effectively identify and sell to potential new customers. New hires require significant training and, in most cases, take significant time before they achieve full productivity. Our failure to successfully integrate these key personnel into our business could adversely affect our business. In addition, competition for qualified personnel is intense, particularly in the San Francisco Bay Area and San Diego. We compete for qualified scientific and information technology personnel with other life science and information technology companies as well as academic institutions and research institutions. Some of our scientific personnel are qualified foreign nationals whose ability to live and work in the United States is contingent upon the continued availability of appropriate visas. Due to the competition for qualified personnel in the San Francisco Bay Area and San Diego, we expect to continue to utilize foreign nationals to fill part of our recruiting needs. As a result, changes to United States immigration policies could restrain the flow of technical and professional talent into the United States and may inhibit our ability to hire qualified personnel.

We do not maintain fixed term employment contracts with any of our employees. As a result, our employees could leave our company with little or no prior notice and could be free to work for a competitor. Due to the complex and technical nature of our products and technology and the dynamic market in which we compete, any failure to attract, train, retain and motivate qualified personnel could materially harm our business, results of operations, financial condition and prospects.

We expect to be dependent upon revenue generated from the sale of the Proteograph Product Suite for the foreseeable future.

We expect that we will generate substantially all of our revenue from the sale of the Proteograph Product Suite and associated consumables for the foreseeable future. There can be no assurance that we will be able to successfully broadly commercialize the Proteograph solution, design other products that will meet the expectations of our customers or that any of our future products will become commercially viable. As technologies change in the future for life sciences research tools, generally, and in proteomics and genomics technologies, specifically, we will be expected to upgrade or adapt the Proteograph solution to keep up with the latest technology. To date, we have limited experience simultaneously designing, testing, manufacturing and selling products and there can be no assurance we will be able to do so. Our sales expectations are based in part on the assumption that the Proteograph Product Suite will increase study sizes for our future customers and their associated purchases of our consumables.

If sales of our instruments fail to materialize, or our assumptions about study sizes or customer purchases of our consumables, so will the related consumable sales and associated revenue.

In our development and commercialization plans for the Proteograph Product Suite, we may forego other opportunities that may provide greater revenue or be more profitable. If our research and product development efforts do not result in commercially viable products within anticipated timelines, or at all, our business and results of operations will be adversely affected. Any delay or failure by us to develop and release the Proteograph Product Suite or new products or product enhancements would have a substantial adverse effect on our business and results of operations.

Our sales have been concentrated in a small number of customers.

We are in the early stages of our commercialization plan and our revenues have been concentrated in a relatively small number of customers, including a related party, PrognomiQ, Inc. For the years ended December 31, 2022 and 2021, PrognomiQ, Inc. accounted for 32% and 35% of our revenue, respectively. If one or more customers, including PrognomiQ, Inc., terminate all or any portion of their agreements, delay installations or fail to order the anticipated amount of consumables or services, there could be a material adverse effect on our business, financial condition and results of operations. See Note 5 - *Revenue and Deferred Revenue* and Note 11 - *Related Party Transactions* to our notes to financial statements included in Part I, Item 1, herein for further information regarding our relationship with PrognomiQ, Inc.

Our business depends significantly on research and development spending by academic and other research institutions, and other third parties, including commercial organizations, and any reduction in spending could limit demand for our products and adversely affect our business, results of operations, financial condition and prospects.

Substantially all of our sales revenue in the near term will be generated from sales to commercial companies, academic institutions and other research institutions. Certain of these customers' funding is provided by various state, federal and international government agencies. As a result, the demand for the Proteograph Product Suite depends upon the research and development budgets of these customers, which are impacted by factors beyond our control, such as:

- decreases in government funding of research and development;
- changes to programs that provide funding to research laboratories and institutions, including changes in the amount of funds allocated to different areas of research or changes that have the effect of increasing the length of the funding process;
- changes in strategy and funding by commercial companies in their efforts around therapeutic and diagnostic product development and their adoption and use of the Proteograph Product Suite;
- macroeconomic conditions;
- opinions in the scientific community, including researchers' opinions of the utility of the Proteograph solution;
- citation of the Proteograph Product Suite in published research;
- potential changes in the regulatory environment;
- differences in budgetary cycles, especially government- or grant-funded customers, whose cycles often coincide with government fiscal year ends;
- competitor product offerings or pricing;
- market-driven pressures to consolidate operations and reduce costs; and
- market acceptance of relatively new technologies, such as the Proteograph Product Suite.

In addition, various state, federal and international agencies that provide grants and other funding may be subject to stringent budgetary constraints that could result in spending reductions, reduced grant making, reduced allocations or budget cutbacks, which could jeopardize the ability of these customers, or the customers to whom they provide funding, to purchase our products. For example, congressional appropriations to the National Institutes of Health (NIH) have generally increased year-over-year, the NIH also experiences occasional year-over-year decreases in appropriations, including as recently as 2013. In addition, funding for life science research has increased more slowly during the past several years compared to previous years and has actually declined in some countries. There is no guarantee that NIH appropriations will not decrease in the future. A decrease in the amount of, or delay in the approval of, appropriations to NIH or other similar United States or international organizations, such as the Medical Research Council in the United Kingdom, could result in fewer grants benefiting life sciences research. These reductions or delays could also result in a decrease in the aggregate amount of grants awarded for life sciences research or the redirection of existing funding to other projects or priorities, any of which in turn could cause our customers and potential customers to reduce or delay purchases of our products. Our operating results may fluctuate substantially due to any such reductions and delays. Any decrease in our customers' budgets or expenditures, or in the size, scope or frequency of their capital or operating expenditures, could materially and adversely affect our business, results of operations, financial condition and prospects.

We rely on single suppliers for some of the components of the Proteograph Product Suite, including a single contract manufacturer to manufacture and supply our instruments. If these suppliers or manufacturers should fail or not perform satisfactorily, our ability to meet demand and supply the Proteograph Product Suite would be adversely affected.

We rely on a single contract manufacturer, Hamilton Company, a manufacturer of precision measurement devices, automated liquid handling workstations, and sample management systems located in Nevada and other locations, to manufacture and supply our instruments. Since our contract with Hamilton does not commit them to carry inventory or make available any particular quantities, Hamilton may give other customers' needs higher priority than ours, we may not be able to obtain adequate supplies in a timely manner or on commercially reasonable terms, and we may incur price increases from Hamilton Company. Further, if Hamilton is unable to obtain critical components used in the Proteograph solution or supply our instruments on the timelines we require, our business and commercialization efforts would be harmed.

In the event it becomes necessary to utilize one or more different contract manufacturers for automated liquid handling workstations, reagents or other product components associated with the Proteograph Product Suite, we would experience additional costs, delays and difficulties in doing so as a result of identifying and entering into new agreements with new suppliers or manufacturers. In addition, we would have to prepare such new suppliers or manufacturers to meet the logistical requirements associated with supplying and manufacturing the Proteograph Product Suite, and our business would suffer.

In addition, certain components used in our products are sourced from limited or sole suppliers. If we were to lose such suppliers, there can be no assurance that we will be able to identify or enter into agreements with alternative suppliers on a timely basis on acceptable terms, if at all. An interruption in our ability to sell and deliver instruments to customers could occur if we encounter delays or difficulties in securing these components, or if the quality of the components supplied does not meet specifications, or if we cannot then obtain an acceptable substitute. Our suppliers have also been impacted by the COVID-19 pandemic, and we have also experienced supply delays for critical hardware, instrumentation, medical and testing supplies that we use for product development, and certain components of our consumable kits, as these other components and supplies are otherwise diverted to COVID-19-related testing and other uses. If any of these events occur, our business, results of operations, financial condition and prospects could be harmed.

We have limited experience producing and supplying our products, and we may be unable to consistently manufacture or source our SP100 automation instruments and consumables to the necessary specifications or in quantities necessary to meet demand on a timely basis and at acceptable performance and cost levels.

The Proteograph Product Suite is an integrated solution with many different components that work together. As such, a quality defect in a single component can compromise the performance of the entire solution. In order to

successfully generate revenue from the Proteograph Product Suite, we need to supply our customers with products that meet their expectations for quality and functionality in accordance with established specifications on a timely basis. Our instruments are manufactured by Hamilton Company at their facility using complex processes, sophisticated equipment and strict adherence to specifications and quality systems procedures. Given the complexity of this automation instrumentation, individual units may occasionally require additional installation and service time prior to becoming available for customer use.

We leverage well-established unit operations to formulate and manufacture our NPs at our facilities in Redwood City, California. We procure certain components of our consumables from third-party manufacturers, which includes the commonly available raw materials needed for manufacturing our proprietary engineered NPs. These manufacturing processes are complex. As we increase the commercial scale formulation and manufacturing of our NP panels, if we are not able to repeatably produce our NPs at commercial scale or source them from third-party suppliers, encounter unexpected difficulties in packaging our consumables, fail to comply with regulations relating to laboratory safety, the handling of human samples, the use of certain hazardous substances or chemicals, including in commercial products, or the collection, reuse, and recycling of waste from products we manufacture, our business will be adversely impacted.

As we continue to scale commercially and develop new products, and as our products incorporate increasingly sophisticated technology, it will be increasingly difficult to ensure our products are produced in the necessary quantities without sacrificing quality. There is no assurance that we or our third-party manufacturer will be able to continue to manufacture our SP100 automation instrument so that it consistently achieves the product specifications and produces results with acceptable quality. Our NPs and other consumables have a limited shelf life, after which their performance is not ensured. Shipment of consumables that effectively expire early or shipment of defective instruments or consumables to customers may result in recalls and warranty replacements, which would increase our costs, and depending upon current inventory levels and the availability and lead time for additional inventory, could lead to availability issues. Any future design issues, unforeseen manufacturing problems, such as contamination of our or our manufacturers' facilities, equipment malfunctions, aging components, quality issues with components and materials sourced from third-party suppliers, or failures to strictly follow procedures or meet specifications, may have a material adverse effect on our brand, business, results of operations and financial condition and could result in us or our third-party manufacturers losing International Organization for Standardization (ISO) quality management certifications. If our third-party manufacturers fail to maintain ISO quality management certifications, customers might choose not to purchase products from us.

In addition, as we commercialize the Proteograph Product Suite, we will also need to make corresponding improvements to other operational functions, such as our customer support, service and billing systems, compliance programs and our internal quality assurance programs. We cannot assure you that any increases in scale, related improvements and quality assurance will be successfully implemented or that appropriate personnel will be available. As we develop additional products, we may need to bring new equipment online, implement new systems, technology, controls and procedures and hire personnel with different qualifications.

An inability to manufacture products and components that consistently meet specifications, in necessary quantities, at commercially acceptable costs and without significant delays, may have a material adverse effect on our business, results of operations, financial condition and prospects.

Our products could have defects or errors, which may give rise to claims against us, adversely affect market adoption of the Proteograph Product Suite, damage our reputation, and adversely affect our business, financial condition, and results of operations.

The Proteograph Product Suite utilizes novel and complex technology, including hardware, consumables and software, and may develop or contain defects or errors. We cannot assure you that material performance problems, defects, or errors will not arise, and as we commercialize the Proteograph, these risks may increase. We provide

warranties that our products will meet performance expectations and will be free from material defects. The costs incurred in correcting any defects or errors may be substantial and could adversely affect our operating margins.

In manufacturing the Proteograph Product Suite, we depend upon third parties for the supply of our instruments and various components, many of which require a significant degree of technical expertise to produce. If our suppliers fail to produce our SP100 automation instrument and components to specification or provide defective products to us and our quality control tests and procedures fail to detect such errors or defects, or if we or our suppliers use defective materials or workmanship in the manufacturing process, the reliability and performance of our products will be compromised.

If the Proteograph Product Suite contains defects, we may experience:

- a failure to achieve market acceptance for the Proteograph or expansion of the Proteograph Product Suite sales;
- loss of customer orders and delay in order fulfillment;
- damage to our brand reputation;
- increased warranty and customer service and support costs due to product repair or replacement;
- product recalls or replacements;
- inability to attract new customers;
- diversion of resources from our manufacturing and research and development departments to our service department; and
- legal claims against us, including product liability, hazardous material or environmental compliance claims, which could be costly and time consuming to defend and result in substantial damages.

In addition, we expect that the Proteograph Product Suite will be used with our potential customers' own mass spectrometry (MS) instruments or the MS instrument of a third-party service provider and the performance of these MS instruments is outside of our control. If such third-party products are not produced to specification, are produced in accordance with modified specifications, are defective, or are not used with recommended equipment, they may not be compatible or perform as intended with the Proteograph. In such case, the reliability, results and performance of the Proteograph may be compromised. The occurrence of any one or more of the foregoing may have a material adverse effect on our business, results of operations, financial condition and prospects.

We face potential risks related to the use, handling, storage and transportation of biological samples, hazardous materials and substances or chemicals such as reagents in commercial products; the collection, reuse and recycling of waste from products we manufacture and services we provide; and compliance with environmental health and safety regulations.

At our facilities in Redwood City, including our Biohazards Safety Level 2 laboratory, we leverage unit operations to formulate and manufacture our NPs, assemble our consumables, conduct assays and perform mass spectrometer analyses. As we increase the commercial scale, formulation and manufacture of our products using, handling, storing and transporting biological samples, hazardous materials and substances or chemicals such as reagents, or if we are unable to repeatably produce our products, in compliance with applicable healthy and safety, and environmental laws, rules and regulations, our operations, including our sales, could be negatively affected. In addition, if we encounter issues in packaging and labelling our consumables, complying with regulations relating to laboratory safety, safety data sheets, handling human samples such as inactive COVID-19 samples, using certain hazardous substances or chemicals such as reagents in commercial products, collecting, reusing and recycling of

waste from products we manufacture, or complying with environmental health and safety regulations, our business could be adversely impacted.

If we do not successfully deploy and implement enhancements of the Instrument Control Software and Proteograph Analysis Suite, our commercialization efforts and, therefore, business and results of operations could suffer.

The success of the Proteograph Product Suite depends, in part, on our ability to design and deploy our Instrument Control Software and Proteograph Analysis Suite in a manner that enables the integration with our potential customers' systems and accommodates our customers' needs. Without the Instrument Control Software, the Proteograph may become inoperable. Without the Proteograph Analysis Suite software, quality control of the workflow and data analysis is less accessible and robust, and it may be difficult for our customers to understand and evaluate the quality of their results.

We have and will continue to spend significant amounts of effort continuing to develop our software to meet our customers' and potential customers' evolving needs. There is no assurance that the development or deployment of our software will be compelling to our customers or function correctly. In addition, we may experience delays in our release dates of our software, and there can be no assurance that our software will be released according to schedule. If our software development and deployment plan, which may include participation from third party vendors and licensors, does not accurately anticipate customer demands, or if we fail to develop our software in a manner that satisfies customer preferences in a timely and cost-effective manner, the Proteograph Product Suite may fail to gain market acceptance or function correctly. The occurrence of any one or more of the foregoing could negatively affect our business, financial condition, and results of operations.

As we commercialize the Proteograph Product Suite outside of the United States, our international business could expose us to business, regulatory, legal, political, operational, financial, and economic risks associated with doing business outside of the United States.

Engaging in international business inherently involves a number of difficulties and risks, including:

- required compliance with existing and changing foreign regulatory requirements and laws that are or may be applicable to our business in the future, such as the European Union's General Data Protection Regulation (GDPR) and other data privacy requirements, labor and employment regulations, anti-competition regulations, the U.K. Bribery Act of 2010 and other anti-corruption laws, regulations relating to the use of certain hazardous substances or chemicals in commercial products, and to the collection, reuse, and recycling of waste from products we manufacture;
- required compliance with U.S. laws such as the Foreign Corrupt Practices Act, and other U.S. federal laws and regulations, including with respect to not doing business with sanctioned parties, as prohibited by the office of Foreign Asset Control;
- export requirements and import or trade restrictions, including, without limitation, trade retaliation laws;
- laws and business practices favoring local companies;
- risks associated with transactions or payments denominated in foreign currency, longer payment cycles and difficulties in enforcing agreements and collecting receivables through certain foreign legal systems;
- changes in social, economic, political and climate conditions or in laws, regulations and policies governing foreign trade, manufacturing, research and development, investment, and climate control both domestically as well as in the other countries and jurisdictions in which we operate and into which we may sell our products, including as a result of the separation of the United Kingdom from the European Union (Brexit);
- potentially adverse tax consequences, tariffs, customs charges, bureaucratic requirements, and other trade barriers;
- difficulties and costs of staffing and managing foreign operations; and

- difficulties protecting, maintaining, enforcing or procuring intellectual property rights.

The collection and transfer of personal data and human samples is subject to increasing regulatory authority around the world. For example, Europe and China have adopted or are in the process of adopting data protections laws, regulations, and practice standards covering personal data, medical samples and data, and their potential transfer across national borders. In some cases, consent from individuals and the opportunity for revocation of consent, handling by local entities, and approvals from regulatory bodies may be required, and enforcement may include suspension of the ability to conduct business in the regulated jurisdiction along with civil fines and criminal penalties. This could increase our compliance costs and subject us to significant risks of doing business in these jurisdictions, and any failure to comply with these laws, rules, and regulations could materially and adversely affect our revenue and business operations.

If one or more of these risks occurs, it could require us to dedicate significant resources to remedy such occurrence, and if we are unsuccessful in finding a solution, our financial results will suffer.

A portion of our international sales is and will be conducted through third-party distributors, and we will not control their efforts to sell our products. If our relationships with these third-party distributors cannot be established or deteriorate, or if these third-party distributors fail to sell our products, or engage in activities that harm our reputation, our results of operation and business may be negatively affected.

Our current commercial model includes direct sales in the United States and elsewhere, and we have built and are building relationships with third party distributors in various countries, including China, to enable us to enter additional markets more efficiently. If we are unable to enter or maintain such distribution arrangements on acceptable terms, or at all, we may not be able to successfully commercialize our products in certain countries.

Furthermore, distributors can choose the level of effort that they apply to selling our products relative to others in their portfolio. Our distributors may not commit the necessary resources to market our products or may favor the products of other companies. The selection, training, and compensation of distributors' sales personnel are within their control rather than our own and may vary significantly in quality from distributor to distributor. They may experience their own financial difficulties, or distribution relationships may be terminated or allowed to expire, which could increase the cost of or impede commercialization of our products in applicable countries. Disputes may also arise between us and our distributors that result in the delay or termination of commercialization or that result in costly litigation or arbitration that diverts management's attention and resources. Distributors may not properly maintain or defend our intellectual property rights or may use our intellectual property, and our confidential or proprietary information in such a way as to invite litigation that could jeopardize or invalidate our intellectual property rights, and confidential or proprietary information, and expose us to potential litigation. Distributors could move forward with competing products developed either independently or in collaboration with others, including our competitors.

In addition, although we intend to require contract terms obligating our distributors to comply with all applicable laws regarding the sale of our products, including regulatory labelling, protection of personal data, U.S. export regulations and the U.S. Foreign Corrupt Practices Act (FCPA), we may not be able to ensure proper compliance. If our distributors fail to effectively market and sell our products in full compliance with applicable laws and regulations, our results of operations and business may suffer.

The life sciences technology market is highly competitive. If we fail to compete effectively, our business and results of operation will suffer.

We face significant competition in the life sciences technology market. We currently compete with life sciences technology and the diagnostic companies that are supplying components, products and services that serve customers engaged in proteomics analysis. These companies include Agilent Technologies, Bruker Corporation, Danaher, DiaSorin, and Thermo Fisher Scientific. We also compete with a number of companies that have developed, or are developing, proteomic products and solutions, such as Nautilus Biotechnology, Olink Proteomics, Quanterix, Quantum-Si and SomaLogic.

Some of our current competitors are large publicly-traded companies, or are divisions of large publicly-traded companies, and may enjoy a number of competitive advantages over us, including:

- greater name and brand recognition;
- greater financial and human resources;
- broader product lines;
- larger sales forces and more established distributor networks;
- substantial intellectual property portfolios;
- larger and more established customer bases and relationships; and
- better established, larger scale and lower cost manufacturing capabilities.

We also face competition from researchers developing their own products. The area in which we compete involves rapid innovation and some of our customers have in the past, and more may in the future, elect to create their own assays rather than rely on a third-party supplier such as ourselves. This is particularly true for the largest research centers and laboratories who are continually testing and trying new technologies, whether from a third-party vendor or developed internally. We will also compete for the resources our customers allocate for purchasing a wide range of products used to analyze the proteome, some of which may be additive to or complementary with our own but not directly competitive.

We cannot assure investors that our products will compete favorably or that we will be successful in the face of increasing competition from products and technologies introduced by our existing or future competitors, companies entering our markets or developed by our customers internally. In addition, we cannot assure investors that our competitors do not have or will not develop products or technologies that currently or in the future will enable them to produce competitive products with greater capabilities or at lower costs than ours or that are able to run comparable experiments at a lower total experiment cost. Any failure to compete effectively could materially and adversely affect our business, financial condition and operating results.

We may need to raise additional capital to fund commercialization plans for the Proteograph Product Suite, including manufacturing, sales and marketing activities, expand our investments in research, and develop and commercialize new products and applications.

Based on our current plans, we believe that our current cash, cash equivalents and investments will be sufficient to meet our anticipated cash flow requirements for at least twelve months from the date of this Annual Report. If our available cash resources and anticipated cash flow from operations are insufficient to satisfy our liquidity requirements including because of lower demand for our products or the realization of other risks described in this Annual Report, we may be required to raise additional capital prior to such time through issuances of equity or convertible debt securities, entrance into a credit facility or another form of third-party funding or seek other debt financing.

We will consider raising additional capital in the future to expand our business, to pursue strategic investments, to take advantage of financing opportunities or for other reasons, including:

- increasing our sales and marketing and other commercialization efforts to drive market adoption of the Proteograph Product Suite;
- funding development and marketing efforts of the Proteograph Product Suite or any other future products;
- expanding our technologies into additional markets;
- acquiring, licensing or investing in technologies and other intellectual property rights;
- acquiring or investing in complementary businesses or assets; and

- financing capital expenditures and general and administrative expenses.

Our present and future funding requirements will depend on many factors, including:

- our rate of progress in commercializing the Proteograph Product Suite and new products, and the cost of the sales and marketing activities associated with establishing adoption of our products;
- our rate of progress in, and cost of research and development activities associated with, products in research and development; and
- the effect of competing technological and market developments.

The various ways we could raise additional capital carry potential risks. If we raise funds by issuing equity securities, dilution to our stockholders could result. If we raise funds by issuing debt securities, those debt securities would have rights, preferences and privileges senior to those of holders of our Class A common stock. The terms of debt securities issued or borrowings pursuant to a credit agreement could impose significant restrictions on our operations. If we raise funds through collaborations or licensing arrangements, we might be required to relinquish significant rights to our technologies or products or grant licenses on terms that are not favorable to us.

If we are unable to obtain adequate financing or financing on terms satisfactory to us, if we require it, our ability to continue to pursue our business objectives and to respond to business opportunities, challenges, or unforeseen circumstances could be significantly limited, and could have a material adverse effect on our business, financial condition, results of operations and prospects.

We may acquire other companies, or their assets or technologies, enter into joint ventures, or make other strategic investments in companies, which could divert our management's attention, result in additional dilution to our stockholders and otherwise disrupt our operations and harm our operating results.

We may in the future seek to acquire or invest in businesses, applications or technologies that we believe could complement or expand the Proteograph Product Suite or future products, enhance our technical capabilities or otherwise offer growth opportunities. The pursuit of potential acquisitions may divert the attention of management and cause us to incur various costs and expenses in identifying, investigating and pursuing suitable acquisitions, whether or not they are consummated. We may not be able to identify desirable acquisition targets or be successful in entering into an agreement with any particular target or obtain the expected benefits of any acquisition or investment.

To date, the growth of our operations has been organic, and we have limited experience in acquiring or investing in other businesses or technologies. We may not be able to successfully integrate acquired personnel, operations and technologies, or effectively manage the combined business following an acquisition. Acquisitions could also result in dilutive issuances of equity securities, the use of our available cash, or the incurrence of debt, which could harm our operating results. In addition, if an acquired business fails to meet our expectations, our operating results, business and financial condition may suffer.

We may not realize the benefits of PrognomiQ as a separate healthcare company in the area of disease testing.

In August 2020, we transferred certain assets to PrognomiQ, as a separate healthcare company to help enable the growth of ecosystems around new applications that leverage the Proteograph solution for unbiased, deep and large-scale proteomic information. As of December 31, 2022, we held approximately 15% of the outstanding capital stock of PrognomiQ. We may not realize the potential benefits of forming PrognomiQ for a variety of reasons, including:

- PrognomiQ may be unable to successfully develop viable testing products;
- PrognomiQ's business may not help demonstrate the value of the Proteograph;
- an inability to reach agreement with PrognomiQ on future commercial arrangements;

- although PrognomiQ accounted for 32% of our revenue during the year ended December 31, 2022, it may not continue to be a meaningful customer of ours;
- PrognomiQ may need to raise additional funding in the future and be unable to do so; and
- the formation of PrognomiQ and our continuing equity position in PrognomiQ may add complexities to our business from a finance, tax and accounting perspective.

Further, PrognomiQ is a separate entity, and as such, may decide over time to pursue a different business model, decide to do business with our competitors in addition to or instead of with us, be acquired by a competitor or take other actions that may not be beneficial to us.

Risks Related to Financial Reporting

We are required by Section 404 of the Sarbanes-Oxley Act to evaluate the effectiveness of our internal control over financial reporting. If we are unable to achieve and maintain effective internal controls, our operating results and financial condition could be harmed and the market price of our Class A common stock may be negatively affected.

As a public company with SEC reporting obligations, we are required to document and test our internal control procedures to satisfy the requirements of Section 404(a) of the Sarbanes-Oxley Act (SOX), which requires annual assessments by management of the effectiveness of our internal control over financial reporting. Because we re-qualified as a smaller reporting company, as of December 31, 2022, we are a non-accelerated filer and are no longer be required to comply with the auditor attestation requirements regarding the effectiveness of our internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act until we become an accelerated filer or large accelerated filer.

During our assessments, we may identify deficiencies that we are unable to remediate in a timely manner. Testing and maintaining our internal control over financial reporting may also divert management's attention from other matters that are important to the operation of our business. We may not be able to conclude on an ongoing basis that we have effective internal control over financial reporting in accordance with Section 404(a) of SOX. If we conclude that our internal control over financial reporting is not effective, the cost and scope of remediation actions and their effect on our operations may be significant. Moreover, any material weaknesses or other deficiencies in our internal control over financial reporting may impede our ability to file timely and accurate reports with the SEC, and there could be a failure to meet exchange listing requirements. Any of the above could cause investors to lose confidence in our reported financial information or our Class A common stock listing on Nasdaq to be suspended or terminated, which could have a negative effect on the trading price of our common stock.

We previously identified material weaknesses in our internal control over financial reporting, and if we fail to maintain an effective system of internal controls, or otherwise fail to comply with the Sarbanes-Oxley Act of 2002, we may not be able to accurately and timely report our financial results, which may adversely affect our business and investor confidence in us and, as a result, the value of our Class A common stock.

As previously disclosed in our Annual Report on Form 10-K for the year ended December 31, 2020, we and our independent registered public accounting firm identified the following material weaknesses in our internal control over financial reporting:

- there is insufficient accounting personnel to enable segregation of duties relating to the general ledger, disbursement, and certain accounting functions;
- there are not formalized processes or controls for account reconciliations, including independent review of such reconciliations, or related financial statement analysis prepared in conformity with generally accepted accounting principles in the United States (U.S. GAAP); and

- there is not a sufficient complement of accounting personnel with the necessary U.S. GAAP technical expertise to timely identify and account for complex or non-routine transactions or to formalize accounting policies, memoranda, or controls for such transactions.

We completed remediation measures related to the material weaknesses and concluded that our internal control over financial reporting was effective as of December 31, 2021. Our internal control over financial reporting will not prevent or detect all errors and all fraud. A control system, no matter how well designed and operated, can provide only reasonable, not absolute, assurance that the control system's objectives will be met. Because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that misstatements due to error or fraud will not occur or that all control issues and instances of fraud will be detected.

If we are unable to successfully maintain internal control over financial reporting, or identify any additional material weaknesses, the accuracy and timing of our financial reporting may be adversely affected. In addition, if we are unable to assert that our internal control over financial reporting is effective, or if our independent registered public accounting firm is unable to express an opinion as to the effectiveness of our internal control over financial reporting, when required, or if we receive SEC comment letters not resolved to the SEC's satisfaction, investors may lose confidence in the accuracy and completeness of our financial reports, we may face restricted access to the capital markets, and our stock price may be materially adversely affected. Moreover, we could become subject to investigations by regulatory authorities, which could require additional financial and management resources.

If we fail to maintain an effective system of internal control over financial reporting, we may not be able to accurately report our financial results in a timely manner or prevent fraud, which would harm our business.

Effective internal controls over financial reporting are necessary for us to provide reliable financial reports and, together with adequate disclosure controls and procedures, are designed to prevent fraud. Any failure to implement required new or improved controls, or difficulties encountered in their implementation, could cause us to fail to meet our reporting obligations in a timely manner, or at all. In addition, any testing by us conducted in connection with Section 404(a) of SOX or any subsequent testing by our independent registered public accounting firm in connection with Section 404(b) of SOX, may reveal deficiencies in our internal controls over financial reporting that are deemed to be significant deficiencies or material weaknesses or that may require prospective or retroactive changes to our consolidated financial statements or identify other areas for further attention or improvement. We are also required to disclose material changes made in our internal controls over financing reporting and procedures on a quarterly basis and our management is required to assess the effectiveness of these controls annually. Remediation of previous material weaknesses may not be effective or prevent any future deficiency in our internal control over financial reporting. Ineffective internal controls could also cause investors to lose confidence in our reported financial information, which could have a negative effect on the trading price of our Class A common stock.

To achieve compliance with Section 404(a) within the prescribed period, we have engaged in a process to document and evaluate our internal control over financial reporting, which is both costly and challenging. In this regard, we will need to continue to dedicate internal resources, potentially engage outside consultants and adopt a plan to assess and document the adequacy of our internal control over financial reporting, continue steps to improve control processes as appropriate, validate through testing that controls are designed and operating effectively and implement a continuous reporting and improvement process for internal control over financial reporting.

An independent assessment of the effectiveness of our internal controls could detect problems that our management's assessment might not identify. Undetected material weaknesses in our internal controls could lead to financial statement restatements and require us to incur the expense of remediation.

Changes in, or evolving interpretations of, financial accounting rules, regulations, standards or practices could result in unfavorable accounting changes, require us to, for example, change our compensation policies or restate our financial statements, or cause adverse, unexpected fluctuations in our operating results, resulting in a decline in the market price of our Class A common stock.

The preparation of consolidated financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the amounts reported in our consolidated financial statements and accompanying notes. We base our estimates on historical experience and estimates and on various other assumptions

that we believe to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets, liabilities, equity, revenue and expenses that are not readily apparent from other sources. However, we have a limited operating history. For example, in connection with the implementation of the new revenue accounting standard for product sales, management makes judgments and assumptions based on our interpretation of the new standard. The new revenue standard is principle-based and interpretation of those principles may vary from company to company based on their unique circumstances. It is possible that interpretation, industry practice and guidance may evolve as we apply the new standard. If our assumptions underlying our estimates and judgments relating to our critical accounting policies change or if actual circumstances differ from our assumptions, estimates or judgments, or if accounting rules, regulations, standards or practices change, our compensation practices may need to change or our financial statements may need to be restated, and our operating results may be adversely affected and could fall below our publicly announced guidance or the expectations of securities analysts and investors, resulting in a decline in the market price of our Class A common stock.

Risks Related to Regulatory Compliance

If we elect to label and promote any of our products as clinical diagnostics tests or medical devices, we would be required to obtain prior approval or clearance by the FDA, which would take significant time and expense and could fail to result in FDA clearance or approval for the intended uses we believe are commercially attractive.

Our products are currently labeled and promoted, and are, and in the near-future will be, sold as research use only (RUO) products, primarily to academic and research institutions and research companies, and are not currently designed, or intended to be used, for diagnostic procedures, clinical diagnostic tests or as medical devices. If we elect to label and market our products for use as, or in the performance of, clinical diagnostics in the United States, thereby subjecting them to U.S. Food and Drug Administration (FDA) regulation as medical devices, we would be required to obtain premarket 510(k) clearance or premarket approval from the FDA, unless an exception applies.

We may in the future register with the FDA as a medical device manufacturer and list some of our products with the FDA pursuant to an FDA Class I listing for general purpose laboratory equipment. While this regulatory classification is exempt from certain FDA requirements, such as the need to submit a premarket notification commonly known as a 510(k), and some of the requirements of the FDA's Quality System Regulations (QSRs), we would be subject to ongoing FDA "general controls," which include compliance with FDA regulations for labeling, inspections by the FDA, complaint evaluation, corrections and removals reporting, promotional restrictions, reporting adverse events or malfunctions for our products, and general prohibitions against misbranding and adulteration.

In addition, we may in the future submit 510(k) premarket notifications to the FDA to obtain FDA clearance of certain of our products on a selective basis. It is possible, in the event we elect to submit 510(k) applications for certain of our products, that the FDA would take the position that a more burdensome premarket application, such as a premarket approval application (PMA) or a *de novo* application is required for some of our products. If such applications were required, greater time and investment would be required to obtain FDA approval. Even if the FDA agreed that a 510(k) was appropriate, FDA clearance can be expensive and time consuming. It generally takes a significant amount of time to prepare a 510(k), including conducting appropriate testing on our products, and several months to years for the FDA to review a submission. Notwithstanding the effort and expense, FDA clearance or approval could be denied for some or all of our products for which we choose to market as a medical device or a clinical diagnostic device. Even if we were to seek and obtain regulatory approval or clearance, it may not be for the intended uses we request or that we believe are important or commercially attractive. There can be no assurance that future products for which we may seek premarket clearance or approval will be approved or cleared by FDA or a comparable foreign regulatory authority on a timely basis, if at all, nor can there be assurance that labeling claims will be consistent with our anticipated claims or adequate to support continued adoption of such products. Compliance with FDA or comparable foreign regulatory authority regulations will require substantial costs, and subject us to heightened scrutiny by regulators and substantial penalties for failure to comply with such requirements or the inability to market our products. The lengthy and unpredictable premarket clearance or approval process, as well as the unpredictability of the results of any required clinical studies, may result in our failing to obtain regulatory clearance or approval to market such products, which would significantly harm our business, results of operations, reputation, and prospects.

If we sought and received regulatory clearance or approval for certain of our products, we would be subject to ongoing FDA obligations and continued regulatory oversight and review, including the general controls listed above and the FDA's QSRs for our development and manufacturing operations. In addition, we would be required to obtain a new 510(k) clearance before we could introduce subsequent modifications or improvements to such products. We could also be subject to additional FDA post-marketing obligations for such products, any or all of which would increase our costs and divert resources away from other projects. If we sought and received regulatory clearance or approval and are not able to maintain regulatory compliance with applicable laws, we could be prohibited from marketing our products for use as, or in the performance of, clinical diagnostics and/or could be subject to enforcement actions, including warning letters and adverse publicity, fines, injunctions, and civil penalties; recall or seizure of products; operating restrictions; and criminal prosecution.

In addition, we could decide to seek regulatory clearance or approval for certain of our products in countries outside of the United States. Sales of such products outside the United States will likely be subject to foreign regulatory requirements, which can vary greatly from country to country. As a result, the time required to obtain clearances or approvals outside the United States may differ from that required to obtain FDA clearance or approval and we may not be able to obtain foreign regulatory approvals on a timely basis or at all. In Europe, we would need to comply with the new Medical Device Regulation 2017/745 and In Vitro Diagnostic Regulation 2017/746, which became effective on May 26, 2021 (postponed from 2020) and May 26, 2022 respectively. Recently, the European Parliament voted to extend the transition timelines for MDR and IVDR. These regulations increase the clinical requirements and will increase the difficulty of regulatory approvals in Europe. In addition, the FDA regulates exports of medical devices. Failure to comply with these regulatory requirements or obtain and maintain required approvals, clearances and certifications could impair our ability to commercialize our products for diagnostic use outside of the United States.

Our products could become subject to government regulation as medical devices by the FDA and other regulatory agencies even if we do not elect to seek regulatory clearance or approval to market our products for diagnostic purposes, which would adversely impact our ability to market and sell our products and harm our business. If our products become subject to FDA regulation, the regulatory clearance or approval and the maintenance of continued and post-market regulatory compliance for such products will be expensive, time-consuming, and uncertain both in timing and in outcome.

We do not currently expect the Proteograph Product Suite to be subject to the clearance or approval of the FDA, as it is not intended to be used for the diagnosis, treatment or prevention of disease. However, as we expand our product line and the applications and uses of our current or products into new fields, certain of our future products could become subject to regulation by the FDA, or comparable international agencies, including requirements for regulatory clearance or approval of such products before they can be marketed. Also, even as our products are labeled, promoted, and intended as RUO, the FDA or comparable agencies of other countries could disagree with our conclusion that our products are intended for research use only or deem our sales, marketing and promotional efforts as being inconsistent with RUO products. For example, our customers may independently elect to use our RUO labeled products in their own laboratory developed tests (LDTs) for clinical diagnostic use, which could subject our products to government regulation, and the regulatory clearance or approval and maintenance process for such products may be uncertain, expensive, and time-consuming. Regulatory requirements related to marketing, selling, and distribution of RUO products could change or be uncertain, even if clinical uses of our RUO products by our customers were done without our consent. If the FDA or other regulatory authorities assert that any of our RUO products are subject to regulatory clearance or approval, our business, financial condition, or results of operations could be adversely affected.

As manufacturers develop more complex diagnostic tests and diagnostic software, the FDA may increase its regulation of LDTs. Any future legislative or administrative rule making or oversight of LDTs, if and when finalized, may impact the sales of our products and how customers use our products, and may require us to change our business model in order to maintain compliance with these laws. We cannot predict how these various efforts will be resolved, how Congress or the FDA will regulate LDTs in the future, or how that regulatory system will impact our business. Changes to the current regulatory framework, including the imposition of additional or new regulations, including regulation of our products, could arise at any time during the development or marketing of our products, which may negatively affect our ability to obtain or maintain FDA or comparable regulatory approval of

our products, if required. Further, sales of devices for diagnostic purposes may subject us to additional healthcare regulation and enforcement by the applicable government agencies. Such laws include, without limitation, state and federal anti-kickback or anti-referral laws, healthcare fraud and abuse laws, false claims laws, privacy and security laws, Physician Payments Sunshine Act and related transparency and manufacturer reporting laws, and other laws and regulations applicable to medical device manufacturers.

Additionally, on November 25, 2013, the FDA issued Final Guidance "Distribution of In Vitro Diagnostic Products Labeled for Research Use Only." The guidance emphasizes that the FDA will review the totality of the circumstances when it comes to evaluating whether equipment and testing components are properly labeled as RUO. The final guidance states that merely including a labeling statement that the product is for research purposes only will not necessarily render the device exempt from the FDA's clearance, approval, and other regulatory requirements if the circumstances surrounding the distribution, marketing and promotional practices indicate that the manufacturer knows its products are, or intends for its products to be, used for clinical diagnostic purposes. These circumstances may include written or verbal sales and marketing claims or links to articles regarding a product's performance in clinical applications and a manufacturer's provision of technical support for clinical applications.

In August 2020, the Department of Health and Human Services, or HHS, announced rescission of guidances and other informal issuances of FDA regarding premarket review of LDT absent notice-and-comment rulemaking, stating that, absent notice-and-comment rulemaking, those seeking approval or clearance of, or an emergency use authorization, for an LDT may nonetheless voluntarily submit a premarket approval application, premarket notification or an EUA request, respectively, but are not required to do so. In November 2021, HHS under the Biden administration issued a statement that withdrew the August 2020 policy announcement, stating that HHS does not have a policy on LDTs that is separate from FDA's longstanding approach. Legislative and administrative proposals to amend the FDA's oversight of LDTs have been introduced in recent years, including the Verifying Accurate Leading-edge IVCT Development Act of 2021 (VALID Act). In September 2022, Congress passed the FDA user fee reauthorization legislation without substantive FDA policy riders, including the VALID Act, but Congress may revisit the policy riders and enact other FDA programmatic reforms in the future. It is unclear how future legislation by federal and state governments and FDA regulation will impact the industry, including our business and that of our customers.

Risks Related to our Intellectual Property

If we are unable to obtain, maintain and enforce sufficient intellectual property protection for our products and technology, or if the scope of the intellectual property protection obtained is not sufficiently broad, our competitors could develop and commercialize products similar or identical to ours, and our ability to successfully commercialize our products may be impaired.

We rely on patent protection as well as trademark, copyright, trade secret and other intellectual property rights protection and contractual restrictions to protect our proprietary products and technologies, all of which provide limited protection and may not adequately protect our rights or permit us to gain or keep any competitive advantage. If we fail to obtain, maintain, enforce and protect our intellectual property, third parties may be able to compete more effectively against us. In addition, we may incur substantial litigation costs in our attempts to recover or restrict use of our intellectual property.

To the extent our intellectual property offers inadequate protection, or is found to be invalid or unenforceable, we would be exposed to a greater risk of direct competition. If our intellectual property does not provide adequate coverage of our competitors' products, our competitive position could be adversely affected, as could our business, financial condition, results of operations and prospects. Both the patent application process and the process of managing patent and other intellectual property disputes can be time-consuming, expensive and unpredictable.

Our success depends in large part on our and our licensor's ability to obtain and maintain protection of the intellectual property we may own solely and jointly with, or license from, third parties, particularly patents, in the United States and other countries with respect to our products and technologies. We apply for patents covering our products and technologies and uses thereof, as we deem appropriate. However, obtaining and enforcing patents is costly, time-consuming and complex, and we may fail to apply for patents on important products and technologies in

a timely fashion or at all, or we may fail to apply for patents in potentially relevant jurisdictions. We may not be able to file and prosecute all necessary or desirable patent applications, or maintain, enforce and license any patents that may issue from such patent applications, at a reasonable cost or in a timely manner or in all jurisdictions. It is also possible that we will fail to identify patentable aspects of our research and development output before it is too late to obtain patent protection. Moreover, we may not develop additional proprietary products, methods and technologies that are patentable. We may not have the right to control the preparation, filing and prosecution of patent applications, or to maintain the rights to patents licensed from or to third parties. Therefore, these patents and applications may not be prosecuted and enforced by such third parties in a manner consistent with the best interests of our business.

In addition, the patent position of life sciences technology companies generally is highly uncertain, involves complex legal and factual questions, and has been the subject of much litigation in recent years. Changes in either the patent laws or in interpretations of patent laws in the United States or other countries or regions may diminish the value of our intellectual property. As a result, the issuance, scope, validity, enforceability, and commercial value of our patent rights are highly uncertain. It is possible that none of our pending patent applications will result in issued patents in a timely fashion or at all, and even if patents are granted, they may not provide a basis for intellectual property protection of commercially viable products or services, may not provide us with any competitive advantages, or may be challenged, narrowed and invalidated by third parties. We cannot predict the breadth of claims that may be allowed or enforced in our patents or in third-party patents. It is possible that third parties will design around our current or future patents such that we cannot prevent such third parties from using similar technologies and commercializing similar products to compete with us. Some of our owned or licensed patents or patent applications may be challenged at a future point in time and we may not be successful in defending any such challenges made against our patents or patent applications. Any successful third-party challenge to our patents could result in the narrowing, unenforceability or invalidity of such patents and increased competition to our business. The outcome of patent litigation or other proceeding can be uncertain, and any attempt by us to enforce our patent rights against others or to challenge the patent rights of others may not be successful, or, regardless of success, may take substantial time and result in substantial cost, and may divert our efforts and attention from other aspects of our business. Any of the foregoing events could have a material adverse effect on our business, financial condition and results of operations.

The U.S. law relating to the patentability of certain inventions in the life sciences technology industry is uncertain and rapidly changing, which may adversely impact our existing patents or our ability to obtain patents in the future.

Changes in either the patent laws or interpretation of the patent laws in the United States or in other jurisdictions could increase the uncertainties and costs surrounding the prosecution of patent applications and the enforcement or defense of issued patents. For instance, under the Leahy-Smith America Invents Act, or the America Invents Act, enacted in September 2011, the United States transitioned to a first inventor to file system in which, assuming that other requirements for patentability are met, the first inventor to file a patent application is entitled to the patent on an invention regardless of whether a third party was the first to invent the claimed invention. These changes include allowing third-party submission of prior art to the United States Patent and Trademark Office (USPTO) during patent prosecution and additional procedures to challenge the validity of a patent by USPTO administered post-grant proceedings, including post-grant review, *inter partes* review and derivation proceedings. The America Invents Act and its implementation could increase the uncertainties and costs surrounding the prosecution of our patent applications and future patent applications, and the enforcement or defense of our issued patents, all of which could have a material adverse effect on our business, financial condition, results of operations and prospects.

Various courts, including the U.S. Supreme Court, have rendered decisions that impact the scope of patentability of certain inventions or discoveries relating to the life sciences technology. Specifically, these decisions stand for the proposition that patent claims that recite laws of nature or abstract ideas are not themselves patentable unless those patent claims have sufficient additional features that provide practical assurance that the processes are genuine inventive applications of those laws rather than patent drafting efforts designed to monopolize the law of nature itself. What constitutes a “sufficient” additional feature is uncertain. Furthermore, in view of these decisions, since December 2014, the USPTO has published and continues to publish revised guidelines for patent examiners to apply when examining process claims for patent eligibility.

In addition, U.S. Supreme Court rulings have narrowed the scope of patent protection available in certain circumstances and weakened the rights of patent owners in certain situations. In addition to increasing uncertainty with regard to our ability to obtain patents in the future, this combination of events has created uncertainty with respect to the value of patents, once obtained. Depending on decisions by the U.S. Congress, the federal courts and the USPTO, the laws and regulations governing patents could change in unpredictable ways that may have a material adverse effect on our ability to obtain new patents and to defend and enforce our existing patents and patents that we might obtain in the future.

We cannot assure you that our patent portfolio will not be negatively impacted by the current uncertain state of the law, new court rulings or changes in guidance or procedures issued by the USPTO or other similar patent offices around the world. From time to time, the U.S. Supreme Court, other federal courts, the U.S. Congress or the USPTO may change the standards of patentability, scope and validity of patents within the life sciences technology and any such changes, or any similar adverse changes in the patent laws of other jurisdictions, could have a material and negative impact on our business, financial condition, prospects and results of operations.

We may not be able to protect our intellectual property rights throughout the world.

Filing, prosecuting and defending patents on our technology and products, including the Proteograph Product Suite, in all countries throughout the world would be prohibitively expensive, and our intellectual property rights in some countries outside the United States can be less extensive than those in the United States.

The laws of some foreign countries do not protect intellectual property rights to the same extent as the laws of the United States, and we and our licensor may encounter difficulties in protecting and defending such rights in foreign jurisdictions. Obtaining granted patents in foreign jurisdictions is time-consuming and expensive, the outcome is unpredictable, and some countries are unable to prosecute and grant patents in a timely manner. Consequently, we and our licensor(s) may not be able to prevent third parties from practicing our inventions in some or all countries outside the United States, or from selling or importing products made using our or our licensor's inventions in and into the United States or other jurisdictions. It is unknown whether we will be successful in obtaining patents with sufficient claim scope in certain jurisdictions to block third parties, in a cost effective or in a timely manner, and if we are unable to do so it could have a material adverse effect on our business, financial condition, results of operation and prospects in various geographies.

Moreover, European applications will soon have the option, upon grant of a patent, of becoming a Unitary Patent which will be subject to the jurisdiction of the Unitary Patent Court (UPC). This will be a significant change in European patent practice. As the UPC is a new court system, there is no precedent for the court, increasing the uncertainty of any patent litigation in Europe.

Competitors and other third parties may also use our technologies in jurisdictions where we have not obtained patent protection to develop their own products and technologies and may also export infringing products to territories where we have patent protection, but enforcement is not as strong as that in the United States. These products may compete with our products. Our and our licensor's patents or other intellectual property rights may not be effective or sufficient to prevent them from competing. In addition, certain countries have compulsory licensing laws under which a patent owner may be compelled to grant licenses to other parties. Furthermore, many countries limit the enforceability of patents against other parties, including government agencies or government contractors. In these countries, the patent owner may have limited remedies, which could materially diminish the value of any patents.

Many companies have encountered significant problems in protecting and defending intellectual property rights in foreign jurisdictions. The legal systems of many other countries do not favor the enforcement of patents and other intellectual property protection, which could make it difficult for us to stop the misappropriation or other violations of our intellectual property rights including infringement of our patents in such countries. The legal systems in certain countries may also favor state-sponsored or companies headquartered in particular jurisdictions over our first-in-time patents and other intellectual property protection. Geopolitical actions worldwide could increase the uncertainties and costs surrounding the prosecution or maintenance of our patent applications or those of any current or future licensors and the maintenance, enforcement or defense of our issued patents or those of any current or future licensors. The absence of harmonized intellectual property protection laws and effective enforcement makes it

difficult to ensure consistent respect for patent, trade secret, and other intellectual property rights on a worldwide basis. As a result, it is possible that we will not be able to enforce our rights against third parties that misappropriate our proprietary technology in those countries.

Proceedings to enforce our or our licensor's patent rights in foreign jurisdictions could result in substantial cost and divert our efforts and attention from other aspects of our business, could put our and our licensor's patents at risk of being invalidated or interpreted narrowly and our and our licensor's patent applications at risk of not issuing, and could provoke third parties to assert claims against us. We and our licensors may not prevail in any lawsuits that we or our licensor initiate, or that are initiated against us or our licensor, and the damages or other remedies awarded, if any, may not be commercially meaningful. In addition, changes in the law and legal decisions by courts in the United States and foreign countries may affect our ability to obtain adequate protection for our products, services and other technologies and the enforcement of intellectual property. Accordingly, our efforts to enforce our intellectual property rights around the world may be inadequate to obtain a significant commercial advantage from the intellectual property that we develop or license. Any of the foregoing events could have a material adverse effect on our business, financial condition, results of operations and prospects.

Issued patents covering our products could be found invalid or unenforceable if challenged.

Our owned and licensed patents and patent applications may be subject to validity, enforceability and priority disputes. The issuance of a patent is not conclusive as to its inventorship, scope, validity or enforceability. Some of our patents or patent applications (including licensed patents and patent applications) may be challenged at a future point in time in opposition, revocation, nullification, derivation, reexamination, *inter partes* review, post-grant review or interference or other similar proceedings. Any successful third-party challenge to our patents in this or any other proceeding could result in the unenforceability or invalidity of such patents, which may lead to increased competition to our business, which could have a material adverse effect on our business, financial condition, results of operations and prospects. In addition, if we or our licensor initiate legal proceedings against a third party to enforce a patent covering our products, the defendant could counterclaim that such patent covering our products, as applicable, is invalid and/or unenforceable. In patent litigation in the United States, defendant counterclaims alleging invalidity or unenforceability are commonplace. There are numerous grounds upon which a third party can assert invalidity or unenforceability of a patent. Grounds for a validity challenge could be an alleged failure to meet any of several statutory requirements, including lack of novelty, obviousness, lack of written description or non-enablement. Grounds for an unenforceability assertion could be an allegation that someone connected with prosecution of the patent withheld relevant information from the relevant patent office, or made a misleading statement, during prosecution. Third parties may also raise similar claims before administrative bodies in the United States or abroad, even outside the context of litigation. Such mechanisms include *ex parte* re-examination, *inter partes* review, post-grant review, derivation and equivalent proceedings in non-U.S. jurisdictions, such as opposition proceedings. Such proceedings could result in revocation of or amendment to our patents in such a way that they no longer cover and protect our products, or exclude our competitor's products. With respect to the validity of our patents, for example, we cannot be certain that there is no invalidating prior art of which we, our licensor, our or its patent counsel and the patent examiner were unaware during prosecution. The outcome following legal assertions of invalidity and unenforceability during patent litigation is unpredictable. If a defendant or other third party were to prevail on a legal assertion of invalidity or unenforceability, we would lose at least part, and perhaps all, of the patent protection on certain aspects of our products and technologies, which could have a material adverse effect on our business, financial condition, results of operations and prospects. In addition, if the breadth or strength of protection provided by our patents and patent applications is threatened, regardless of the outcome, it could dissuade companies from collaborating with us to license intellectual property, or develop or commercialize current or future products.

We may not be aware of all third-party intellectual property rights potentially relating to our products. Publications of discoveries in the scientific literature often lag behind the actual discoveries, and patent applications in the United States and other jurisdictions are typically not published until approximately 18 months after filing or, in some cases, not until such patent applications issue as patents. We might not have been the first to make the inventions covered by each of our pending patent applications and we might not have been the first to file patent applications for these inventions. To determine the priority of these inventions, we may have to participate in interference proceedings, derivation proceedings or other post-grant proceedings declared by the USPTO, or other similar

proceedings in non-U.S. jurisdictions, that could result in substantial cost to us and the loss of valuable patent protection. The outcome of such proceedings is uncertain. No assurance can be given that other patent applications will not have priority over our patent applications. In addition, changes to the patent laws of the United States allow for various post-grant opposition proceedings that have not been extensively tested, and their outcome is therefore uncertain. Furthermore, if third parties bring these proceedings against our patents, regardless of the merit of such proceedings and regardless of whether we are successful, we could experience significant costs and our management may be distracted. Any of the foregoing events could have a material adverse effect on our business, financial condition, results of operations and prospects.

If we are unable to protect the confidentiality of our trade secrets, the value of our technology could be materially adversely affected and our business could be harmed.

We may rely heavily on trade secrets and confidentiality agreements to protect our unpatented know-how, technology and other proprietary and confidential information, including parts of the Proteograph Product Suite, and to maintain our competitive position. However, trade secrets and know-how can be difficult to protect. In particular, we anticipate that with respect to our technologies, these trade secrets and know how will over time be disseminated within the industry through independent development, the publication of journal articles describing the methodology, and the movement of personnel between academia and industry.

In addition to pursuing patents on our technology, we take steps to protect our intellectual property and proprietary technology by entering into agreements, including confidentiality agreements, non-disclosure agreements and intellectual property assignment agreements, with our employees, consultants, academic institutions, corporate partners and, when needed, our advisers. However, we cannot be certain that such agreements have been entered into with all relevant parties, and we cannot be certain that our trade secrets and other confidential proprietary information will not be disclosed or that competitors or other third parties will not otherwise gain access to our trade secrets or independently develop substantially equivalent information and techniques. For example, any of these parties may breach the agreements and disclose our proprietary information, including our trade secrets, and we may not be able to obtain adequate remedies for such breaches. Such agreements may not be enforceable or may not provide meaningful protection for our trade secrets or other proprietary information in the event of unauthorized use or disclosure or other breaches of the agreements, and we may not be able to prevent such unauthorized disclosure, which could have a material and adverse impact on our ability to establish or maintain a competitive advantage in the market and our business, financial condition, results of operations and prospects.

Monitoring unauthorized disclosure is difficult, and we do not know whether the steps we have taken to prevent such disclosure are, or will be, adequate. If we were to enforce a claim that a third party had wrongfully obtained and was using our trade secrets, it would be expensive and time-consuming, it could distract our personnel, and the outcome would be unpredictable. In addition, courts outside the United States may be less willing to protect trade secrets.

We also seek to preserve the integrity and confidentiality of our confidential proprietary information by maintaining physical security of our premises and physical and electronic security of our information technology systems, but it is possible that these security measures could be breached. If any of our confidential proprietary information were to be lawfully obtained or independently developed by a competitor or other third party, absent patent protection, we would have no right to prevent such competitor from using that technology or information to compete with us, which could harm our competitive position. Competitors or third parties could purchase our products and attempt to replicate some or all of the competitive advantages we derive from our development efforts, design around our protected technology, develop their own competitive technologies that fall outside the scope of our intellectual property rights or independently develop our technologies without reference to our trade secrets. If any of our trade secrets were to be disclosed to or independently discovered by a competitor or other third party, it could materially and adversely affect our business, financial condition, results of operations and prospects.

We may be subject to claims challenging the inventorship of our patents and other intellectual property.

We or our licensor may be subject to claims that former employees, collaborators or other third parties have an interest in our owned or in-licensed patents, trade secrets or other intellectual property as an inventor or co-inventor.

For example, we or our licensor may have inventorship disputes arise from conflicting obligations of employees, consultants or others who are involved in developing our products. In addition, counterparties to our consulting, sponsored research, software development and other agreements may assert that they have an ownership interest in intellectual property developed under such arrangements. In particular, certain software development agreements pursuant to which certain third parties have developed parts of our proprietary software may not include provisions that expressly assign to us ownership of all intellectual property developed for us by such third parties. Furthermore, certain of our sponsored research agreements pursuant to which we provide certain research services for third parties do not assign to us all intellectual property developed under such agreements. As such, we may not have the right to use all such developed intellectual property under such agreements, we may be required to obtain licenses from third parties and such licenses may not be available on commercially reasonable terms or at all, or may be non-exclusive. If we are unable to obtain such licenses and such licenses are necessary for the development, manufacture and commercialization of our products and technologies, we may need to cease the development, manufacture and commercialization of our products and technologies.

Litigation may be necessary to defend against these and other claims challenging inventorship of our or our licensor's ownership of our owned or in-licensed patents, trade secrets or other intellectual property. If we or our licensor fail in defending any such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights, such as exclusive ownership of, or right to use, intellectual property that is important to our technologies and products, including the Proteograph solution, including our software, workflows, consumables and reagent kits. In such an event, we may be required to obtain licenses from third parties and such licenses may not be available on commercially reasonable terms or at all, or may be non-exclusive. If we are unable to obtain and maintain such licenses, we may need to cease the development, manufacture and commercialization of our products and technologies. Even if we are successful in defending against such claims, litigation could result in substantial costs and be a distraction to management and other employees, and certain customers or partners may defer engaging with us until the particular dispute is resolved. Any of the foregoing could have a material adverse effect on our business, financial condition, results of operations and prospects.

We may not be able to protect and enforce our trademarks and trade names, or build name recognition in our markets of interest thereby harming our competitive position.

The registered or unregistered trademarks or trade names that we own may be challenged, infringed, circumvented, declared generic, lapsed or determined to be infringing on or dilutive of other marks. We may not be able to protect our rights in these trademarks and trade names, which we need in order to build name recognition. In addition, third parties have filed, and may in the future file, for registration of trademarks similar or identical to our trademarks, thereby impacting our ability to build brand identity and possibly leading to market confusion. In addition, there could be potential trade name or trademark infringement claims, or other challenges to our trademarks, brought by owners of trademarks that incorporate variations of our registered or unregistered trademarks or trade names. Further, we may in the future enter into agreements with owners of such third party trade names or trademarks to avoid potential trademark litigation which may impact our ability to use our trade names or trademarks in certain fields of business. Over the long term, if we are unable to establish name recognition based on our trademarks and trade names, then we may suffer a competitive disadvantage, and our business, financial condition, results of operations and prospects may be adversely affected. Our efforts to enforce or protect our proprietary rights related to trademarks, trade secrets, domain names, copyrights or other intellectual property may be ineffective and could result in substantial costs and diversion of resources. Any of the foregoing events could have a material adverse effect on our business, financial condition and results of operations.

Patent terms may be inadequate to protect our competitive position on our products and technologies, including the Proteograph Product Suite for an adequate amount of time.

Patents have a limited lifespan. In the United States, if all maintenance fees are timely paid, the natural expiration of a patent is generally 20 years from its earliest U.S. non-provisional filing date. While extensions may be available, the life of a patent, and the protection it affords, is limited. In the United States, a patent's term may, in certain cases, be lengthened by patent term adjustment, which compensates a patentee for administrative delays by the USPTO in examining and granting a patent, or may be shortened if a patent is terminally disclaimed over a commonly owned patent or a patent naming a common inventor and having an earlier expiration date. Even if patents covering our

products are obtained, once the patent life has expired, we may be open to competition from competitive products. If one of our products requires extended development, testing and/or regulatory review, patents protecting such products might expire before or shortly after such products are commercialized. As a result, our owned and licensed patent portfolio may not provide us with sufficient rights to exclude others from commercializing products similar or identical to ours, which could have a material adverse effect on our business, financial condition and results of operations.

We may become involved in lawsuits to defend against third-party claims of infringement, misappropriation or other violations of intellectual property or to protect or enforce our intellectual property, any of which could be expensive, time consuming and unsuccessful, and may prevent or delay our development and commercialization efforts.

Our commercial success depends in part on our ability and the ability of future collaborators to develop, manufacture, market and sell our product and use our products and technologies without infringing, misappropriating or otherwise violating the intellectual property rights of third parties. There is a substantial amount of litigation involving patents and other intellectual property rights in the life sciences technology sector, as well as administrative proceedings for challenging patents, including interference, derivation, *inter partes* review, post grant review, and reexamination proceedings before the USPTO, or oppositions and other comparable proceedings in foreign jurisdictions. We may be exposed to, or threatened with, future litigation by third parties having patent or other intellectual property rights alleging that our products, manufacturing methods, software and/or technologies infringe, misappropriate or otherwise violate their intellectual property rights. Numerous issued patents and pending patent applications that are owned by third parties exist in the fields in which we are developing our products and technologies. It is not always clear to industry participants, including us, the claim scope that may issue from pending patent applications owned by third parties or which patents cover various types of products, technologies or their methods of use or manufacture. Thus, because of the large number of patents issued and patent applications filed in our fields, there may be a risk that third parties, including our competitors, may allege they have patent rights encompassing our products, technologies or methods and that we are employing their proprietary technology without authorization.

If third parties, including our competitors, believe that our products or technologies infringe, misappropriate or otherwise violate their intellectual property, such third parties may seek to enforce their intellectual property, including patents, by filing an intellectual property-related lawsuit, including patent infringement lawsuit, against us. Even if we believe the third-party intellectual property claims are without merit, there is no assurance that a court would find in our favor on questions of infringement, validity, enforceability, or priority. For example, we are aware of a U.S. issued patent owned by a third party that is directed to a method for diagnosing a biological condition by analyzing certain types of proteins, including through the use of nanoparticles. Such patent is expected to expire in 2026, without taking into account any possible patent term adjustments or extensions. We are also aware of pending patent applications in Europe and in the United States owned by a third party that are directed to a method of identifying biomarkers in biofluids using nanoparticles and, if issued, is projected to expire in 2037, without taking into account any possible patent term adjustments or extensions. Such patent and patent applications could be construed to cover certain aspects of our products or technologies, including the Proteograph Product Suite. If any of these third parties, or any other third parties, were to assert these or any other patents against us and we are unable to successfully defend against any such assertion, we may be required, including by court order, to cease the development and commercialization of the infringing products or technologies and we may be required to redesign such products or technologies so they do not infringe such patents, which may not be possible or may require substantial monetary expenditures and time. We could also be required to pay damages, which could be significant, including treble damages and attorneys' fees if we are found to have willfully infringed such patents. We could also be required to obtain a license to such patents in order to continue the development and commercialization of the infringing product or technology, however such a license may not be available on commercially reasonable terms or at all, including because certain of these patents are held by or may be licensed to our competitors. Even if such license were available, it may require substantial payments or cross-licenses under our intellectual property rights, and it may only be available on a nonexclusive basis, in which case third parties, including our competitors, could use the same licensed intellectual property to compete with us. Any of the foregoing could have a material adverse effect on our business, financial condition, results of operation or prospects.

We may choose to challenge, including in connection with any allegation of patent infringement by a third party, the patentability, validity or enforceability of any third-party patent that we believe may have applicability in our field, and any other third-party patent that may be asserted against us. Such challenges may be brought either in court or by requesting that the USPTO, European Patent Office (EPO), or other foreign patent offices review the patent claims, such as in an *ex-parte* reexamination, *inter partes* review, post-grant review proceeding, opposition or other comparable proceeding. However, there can be no assurance that any such challenge by us or any third party will be successful. Even if such proceedings are successful, these proceedings are expensive and may consume our time or other resources, distract our management and technical personnel, and the costs of these proceedings could be substantial. There can be no assurance that our defenses of non-infringement, invalidity or unenforceability in a court of law will succeed.

Third parties, including our competitors, could be infringing, misappropriating or otherwise violating our owned and in-licensed intellectual property rights. Monitoring unauthorized use of our intellectual property is difficult and costly. We may not be able to detect unauthorized use of, or take appropriate steps to enforce, our intellectual property rights. From time to time, we seek to analyze our competitors' products and services, and may in the future seek to enforce our rights against potential infringement, misappropriation or violation of our intellectual property. However, the steps we have taken to protect our intellectual property rights may not be adequate to enforce our rights as against such infringement, misappropriation or violation of our intellectual property. Any inability to meaningfully enforce our intellectual property rights could harm our ability to compete and reduce demand for our products and technologies.

Litigation proceedings may be necessary for us to enforce our patent and other intellectual property rights. In any such proceedings, a court may refuse to stop the other party from using the technology at issue on the grounds that our owned and in-licensed patents do not cover the technology in question. Further, in such proceedings, the defendant could counterclaim that our intellectual property is invalid or unenforceable and the court may agree, in which case we could lose valuable intellectual property rights, which could allow third parties to commercialize technology or products similar to ours and compete directly with us, without payment to us, or could require us to obtain license rights from the prevailing party in order to be able to manufacture or commercialize our products without infringing such party's intellectual property rights, and if we unable to obtain such a license, we may be required to cease commercialization of our products and technologies, any of which could have a material adverse effect on our business, financial condition, results of operations and prospects. The outcome in any such proceedings are unpredictable.

Regardless of whether we are defending against or asserting any intellectual property-related proceeding, any such intellectual property-related proceeding that may be necessary in the future, regardless of outcome, could result in substantial costs and diversion of resources and could have a material adverse effect on our business, financial condition, results of operations and prospects. Furthermore, because of the substantial amount of discovery required in connection with intellectual property litigation, there is a risk that some of our confidential information could be compromised by disclosure during this type of litigation. In addition, there could be public announcements of the results of hearings, motions, or other interim proceedings or developments, and if securities analysts or investors perceive these results to be negative, it could have a substantial adverse effect on the price of our Class A common stock. Some of our competitors and other third parties may be able to sustain the costs of such litigation or proceedings more effectively than we can because of their greater financial resources and more mature and developed intellectual property portfolios. We may not have sufficient financial or other resources to adequately conduct these types of litigation or proceedings. Any of the foregoing, or any uncertainties resulting from the initiation and continuation of any litigation, could have a material adverse effect on our ability to raise the funds necessary to continue our operations or could otherwise have a material adverse effect on our business, financial condition, results of operations and prospects. Claims that we have misappropriated the confidential information or trade secrets of third parties could have a similar material adverse effect on our business, financial condition, results of operations and prospects.

Obtaining and maintaining our patent protection depends on compliance with various required procedures, document submissions, fee payments and other requirements imposed by governmental patent agencies, and our patent protection could be reduced or eliminated for non-compliance with these requirements.

Periodic maintenance fees, renewal fees, annuity fees and various other governmental fees on patents and/or applications will be due to be paid to the USPTO and various governmental patent agencies outside of the United States at several stages over the lifetime of the patents and/or applications. The USPTO and various non-U.S. governmental patent agencies require compliance with a number of procedural, documentary, fee payment and other similar provisions during the patent application process. In certain circumstances, we rely on our licensor to pay these fees due to the U.S. and non-U.S. patent agencies and to take the necessary action to comply with these requirements with respect to our licensed intellectual property. In many cases, an inadvertent lapse can be cured by payment of a late fee or by other means in accordance with the applicable rules. However, there are situations in which non-compliance can result in abandonment or lapse of the patent or patent application, resulting in partial or complete loss of patent rights in the relevant jurisdiction. In such an event, our competitors may be able to enter the market without infringing our patents and this circumstance would have a material adverse effect on our business, financial condition, results of operations and prospects.

Our employees, consultants, advisors or independent contractors may have wrongfully used or disclosed, or may in the future wrongfully use or disclose, confidential information or alleged trade secrets of ours, third parties or former employers.

We have employed and expect to employ individuals, and engaged consultants and expect to engage consultants, who were previously employed, or consulted, at universities or other companies, including our competitors or potential competitors. Although we try to ensure that our employees, consultants, advisors and independent contractors do not use confidential or proprietary information or know-how of others in their work for us, we may be subject to claims that our employees, advisors, consultants or independent contractors have inadvertently or otherwise used or disclosed intellectual property, including trade secrets or other confidential or proprietary information of their former employers or other third parties, or to claims that we have improperly used or obtained such trade secrets. Domestic or international litigation may be necessary to defend against these claims. If we fail in defending such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights and face increased competition to our business. Any such litigation or the threat thereof may adversely affect our ability to hire employees or contract with advisors, contractors and consultants. A loss of key research personnel work product could hamper or prevent our ability to commercialize potential products, which could harm our business. Even if we are successful in defending against these claims, litigation could result in substantial costs and be a distraction to management. This type of litigation or proceeding could substantially increase our operating losses and reduce our resources available for development activities. Some of our competitors may be able to sustain the costs of this type of litigation or proceedings more effectively than we can because of their substantially greater financial resources.

In addition, while it is our policy to require our employees and contractors who may be involved in the conception or development of intellectual property to execute agreements assigning such intellectual property to us, we may be unsuccessful in executing such an agreement with each party who, in fact, conceives or develops intellectual property that we regard as our own. The assignment of intellectual property rights may not be self-executing, or the assignment agreements may be breached, and we may be forced to bring claims against third parties, or defend claims that they may bring against us, to determine the ownership of what we regard as our intellectual property. Furthermore, individuals executing agreements with us may have pre-existing or competing obligations to a third party, such as an academic institution, and thus an agreement with us may be ineffective in perfecting ownership of inventions developed by that individual, which could have a material adverse effect on our business, financial condition, results of operations, and prospects.

Furthermore, we or our licensor may in the future be subject to claims by former employees, consultants or other third parties asserting an ownership right in our owned or licensed patents or patent applications. An adverse determination in any such proceeding may result in loss of exclusivity or freedom to operate or in patent claims being narrowed, invalidated or held unenforceable, in whole or in part, which could limit our ability to stop others from using or commercializing similar technology, without payment to us, or could limit the duration of the patent

protection covering our technology and products. Such challenges may also result in our inability to develop, manufacture or commercialize our products without infringing third-party patent rights. Any of the foregoing could harm our business, financial condition, results of operations and prospects.

We currently rely on a license from a third party, and in the future may rely on additional licenses from other third parties, in relation to our technologies and products, including the Proteograph Product Suite and if we lose any of these licenses, then we may be subjected to future litigation.

We are, and may in the future become, a party to license agreements that grant us rights to use certain intellectual property, including patents and patent applications, typically in certain specified fields of use. Currently, we rely on an in-license from The Brigham and Women's Hospital, Inc. (BWH), for patents, for example, relating to methods of using nanoparticles to measure the proteome, including the methods used in the Proteograph Product Suite and may in the future rely on licenses from other third parties with respect to our products, including the Proteograph Product Suite, or other technology. Our rights to use licensed technology in our business are subject to the continuation of and compliance with the terms of the BWH license and any licenses we may enter into in the future. Some of these licensed rights provide us with freedom to operate for aspects of our products and technologies. As a result, any termination of this license could result in the loss of significant rights and could harm our ability to develop, manufacture and commercialize our products, including the Proteograph Product Suite. We may need to obtain additional licenses from others to advance our research, development and commercialization activities. For instance, under our license agreement with BWH, we currently in-license a patent family which includes methods used in the Proteograph Product Suite, and to the extent any additional intellectual property developed by BWH that are not included in such licensed patent families are necessary or useful for the Proteograph Product Suite or any other product or technology, we would need to negotiate for additional licenses to such additional intellectual property. Such licenses may not be available on commercially reasonable terms or at all, or may be non-exclusive, in which case third parties, including our competitors, could use the same licensed intellectual property to compete with us. Any of the foregoing could have a material adverse effect on our business, financial condition, results of operation or prospects.

Our success may depend in part on the ability of our licensor and any future licensors to obtain, maintain and enforce patent protection for our licensed intellectual property. Under our license agreement with BWH and under any licenses we may enter into in the future, BWH controls, and future licensors may control, the prosecution, maintenance and enforcement of patents and patent applications that are licensed to us. BWH or any future licensors may not successfully prosecute the patent applications we license or prosecute such patent applications in our best interest. Even if patents issue in respect of these patent applications, BWH and any future licensors may fail to maintain these patents, may determine not to pursue litigation against other companies that are infringing these patents or may pursue such litigation less aggressively than we would. Without protection for the intellectual property we license, other companies might be able to offer substantially identical products and technologies for sale, which could materially adversely affect our competitive business position and harm our business prospects, financial condition or results of operations.

If we fail to comply with our obligations under any license, collaboration or other agreements, we may be required to pay damages and could lose intellectual property rights necessary for developing and protecting our technologies and products, including the Proteograph Product Suite, or we could lose certain rights to grant sublicenses.

Future agreements may impose, and our current license agreement imposes, various diligence, commercialization, funding, milestone payment, royalty, sublicensing, insurance, patent prosecution and enforcement and other obligations on us and require us to meet development timelines, or to exercise commercially reasonable efforts to develop and commercialize licensed products, in order to maintain the licenses. If we fail to comply with any of these obligations, a licensor(s) may have the right to terminate our license and/or we may be required to pay damages, in which event we would not be able to develop or market products or technology covered by the licensed intellectual property. In addition, while we cannot currently determine the amount of any future royalty obligations we would be required to pay on future sales of a licensed product, the amount may be significant. The amount of our

future royalty obligations will depend on the technology and intellectual property we use in products we commercialize, if at all. Therefore, even if we successfully develop and commercialize existing or future products, we may be unable to achieve or maintain profitability. Any of the foregoing could have a material adverse effect on our competitive position, business, financial conditions, results of operations and prospects.

Moreover, disputes may also arise between us and our licensor regarding intellectual property subject to a license agreement, including:

- the scope of rights granted under the license agreement and other interpretation-related issues;
- our financial or other obligations under the license agreement;
- whether, and the extent to which, our products, technology and processes infringe on intellectual property of the licensor that is not subject to the licensing agreement;
- our diligence obligations under the license agreement and what activities satisfy those diligence obligations;
- the inventorship and ownership of inventions and know-how resulting from the joint creation or use of intellectual property by our licensor(s); and
- the priority of invention of patented technology.

If we do not prevail in such disputes, we may lose any or all of our rights under such license agreements, experience significant delays in the development and commercialization of our products and technologies, or incur liability for damages, any of which could have a material adverse effect on our business, financial condition, results of operations, and prospects. In addition, we may seek to obtain additional licenses from our licensor(s) and, in connection with obtaining such licenses, we may agree to amend our existing licenses in a manner that may be more favorable to the licensor(s), including by agreeing to terms that could enable third parties, including our competitors, to receive licenses to a portion of the intellectual property that is subject to our existing licenses and to compete with our products.

In addition, the agreements under which we currently and in the future license intellectual property or technology from third parties are complex and certain provisions in such agreements may be susceptible to multiple interpretations. The resolution of any contract interpretation disagreement that may arise could narrow what we believe to be the scope of our rights to the relevant intellectual property or technology, or increase what we believe to be our financial or other obligations under the relevant agreement, either of which could have a material adverse effect on our business, financial condition, results of operations and prospects. Moreover, if disputes over intellectual property that we have licensed prevent or impair our ability to maintain our current licensing arrangements on commercially acceptable terms, we may be unable to successfully develop and commercialize any affected products or services, which could have a material adverse effect on our business, financial condition, results of operations and prospects.

Absent the license agreements, we may infringe patents subject to those agreements, and if the license agreements are terminated, we may be subject to litigation by the licensor. Litigation could result in substantial costs to us and distract our management. If we do not prevail, we may be required to pay damages, including treble damages, attorneys' fees, costs and expenses and royalties or be enjoined from selling our products, including the Proteograph Product Suite, which could adversely affect our ability to offer products or services, our ability to continue operations and our business, financial condition, results of operations and prospects. Any of the foregoing could have a material adverse effect on our competitive position, business, financial conditions, results of operations and prospects.

If we cannot license rights to use technologies on reasonable terms, we may not be able to commercialize new products in the future.

We may identify third-party technology that we may need to license or acquire in order to develop or commercialize our products or technologies, including the Proteograph Product Suite. However, we may be unable to secure such licenses or acquisitions. The licensing or acquisition of third-party intellectual property rights is a competitive area,

and several more established companies may pursue strategies to license or acquire third-party intellectual property rights that we may consider attractive or necessary. These established companies may have a competitive advantage over us due to their size, capital resources and greater clinical development and commercialization capabilities. In addition, companies that perceive us to be a competitor may be unwilling to assign or license rights to us.

We also may be unable to license or acquire third-party intellectual property rights on terms that would allow us to make an appropriate return on our investment or at all. In return for the use of a third party's technology, we may agree to pay the licensor royalties based on sales of our products or services. Royalties are a component of cost of products or technologies and affect the margins on our products. We may also need to negotiate licenses to patents or patent applications before or after introducing a commercial product. We may not be able to obtain necessary licenses to patents or patent applications, and our business may suffer if we are unable to enter into the necessary licenses on acceptable terms or at all, if any necessary licenses are subsequently terminated, if the licensor fails to abide by the terms of the license or fails to prevent infringement by third parties, or if the licensed intellectual property rights are found to be invalid or unenforceable. Any of the foregoing could have a material adverse effect on our competitive position, business, financial conditions, results of operations and prospects.

Certain of our in-licensed patents are, and our future owned and in-licensed patents may be, subject to a reservation of rights by one or more third parties, including government march-in rights, that may limit our ability to exclude third parties from commercializing products similar or identical to ours.

In addition, our owned and in-licensed patents may be subject to a reservation of rights by one or more third parties. For example, the U.S. government has certain rights, including march-in rights, to patent rights and technology funded by the U.S. government and licensed to us from BWH. When new technologies are developed with government funding, in order to secure ownership of such patent rights, the recipient of such funding is required to comply with certain government regulations, including timely disclosing the inventions claimed in such patent rights to the U.S. government and timely electing title to such inventions, including as set forth in the Bayh-Dole Act of 1980. Any failure to timely elect title to such inventions may provide the U.S. government to, at any time, take title in such inventions. Additionally, the U.S. government generally obtains certain rights in any resulting patents, including a non-exclusive license authorizing the government to use the invention or to have others use the invention on its behalf. If the government decides to exercise these rights, it is not required to engage us as its contractor in connection with doing so. These rights may permit the U.S. government to disclose our confidential and proprietary information to third parties and to exercise march-in rights to use or allow third parties to use our licensed technology. The U.S. government can exercise its march-in rights if it determines that action is necessary because we fail to achieve practical application of the government-funded technology, because action is necessary to alleviate health or safety needs, to meet requirements of federal regulations, or to give preference to U.S. industry. In addition, our rights in such inventions may be subject to certain requirements to manufacture products embodying such inventions in the United States. Any exercise by the government of any of the foregoing rights could have a material adverse effect on our business, financial condition, results of operations and prospects.

Our products contain third-party open source software components and failure to comply with the terms of the underlying open source software licenses could restrict our ability to sell our products and service our customers, or require disclosure of our proprietary software.

Our products contain software licensed by third parties under open source software licenses. Use and distribution of open source software may entail different or greater risks than use of third-party commercial software, as open source software licensors generally do not provide warranties or other contractual protections regarding infringement claims or the quality of the code. Some open source software licenses contain requirements that the licensee make its source code publicly available if the licensee creates combined works, modifications or derivative works using the open source software, depending on the type of open source software the licensee uses and how the licensee uses it. If we combine our proprietary software with open source software in a certain manner, we could, under certain open source software licenses, be required to release the source code of our proprietary software to the public for free. This would allow our competitors and other third parties to create similar products with less development effort and time and ultimately could result in a loss of our product sales and revenue, which could have a material adverse effect on our business, financial condition, results of operations and prospects. In addition, some companies that use third-party open source software have faced claims challenging their use of such open source

software and their compliance with the terms of the applicable open source license. We may be subject to suits by third parties claiming ownership of what we believe to be open source software, or claiming non-compliance with the applicable open source licensing terms. Use of open source software may also present additional security risks because the public availability of such software may make it easier for hackers and other third parties to compromise or attempt to compromise our technology platform and systems.

Although we review our use of open source software to avoid subjecting our proprietary software to conditions we do not intend, the terms of many open source software licenses have not been interpreted by United States courts, and there is a risk that these licenses could be construed in a way that could impose unanticipated conditions or restrictions on our ability to commercialize our products and proprietary software. Moreover, we cannot assure investors that our processes for monitoring and controlling our use of open source software in our products will be effective. If we are held to have breached the terms of an open source software license, we could be subject to damages, required to seek licenses from third parties to continue offering our products on terms that are not economically feasible, to re-engineer our products, to discontinue the sale of our products if re-engineering could not be accomplished on a timely basis, or to make generally available, in source code form, our proprietary code, any of which could materially adversely affect our business, financial condition, results of operations and prospects.

Intellectual property rights do not necessarily address all potential threats.

The degree of future protection afforded by our intellectual property rights is uncertain because intellectual property rights have limitations, and may not adequately protect our business or permit us to maintain our competitive advantage. For example:

- others may be able to make products that are similar to products and technologies we may develop or utilize similar technology that are not covered by the claims of the patents that we own or license now or in the future;
- we, or our licensor(s), might not have been the first to make the inventions covered by the issued patent or pending patent application that we license or may own in the future;
- we, or our licensor(s), might not have been the first to file patent applications covering certain of our or their inventions;
- others may independently develop similar or alternative technologies or duplicate any of our technologies without infringing, misappropriating or otherwise violating our owned or licensed intellectual property rights;
- it is possible that our pending patent applications, and our licensed pending patent applications, or those that we may own or license in the future, will not lead to issued patents;
- issued patents that we hold rights to may be held invalid or unenforceable, including as a result of legal challenges by our competitors;
- our competitors might conduct research and development activities in countries where we do not have patent rights and then use the information learned from such activities to develop competitive products for sale in our major commercial markets;
- we, and our licensor(s), may not develop additional proprietary technologies that are patentable;
- the patents of others may harm our business; and
- we may choose not to file a patent for certain trade secrets or know-how, and a third party may subsequently file a patent covering such intellectual property.

Should any of these events occur, they could materially adversely affect our business, financial condition, results of operations and prospects.

Risks Related to Ownership of Our Class A Common Stock

An active trading market for our Class A common stock may not be sustained.

Although our Class A common stock is traded on the Nasdaq Global Select Market under the symbol "SEER," there is a limited trading history and an active trading market for our Class A common stock may not be sustained. Accordingly, we cannot assure you of your ability to sell your shares of Class A common stock when desired or the prices that you may obtain for your shares. If an active market for our Class A common stock with meaningful trading volume is not sustained, the market price of our Class A common stock may decline materially and you may not be able to sell your shares.

The market price of our Class A common stock has been and may continue to be volatile.

Some of the factors that may cause the market price of our Class A common stock to fluctuate include, but are not limited to:

- the degree to which our launch and commercialization of our products meets the expectations of securities analysts and investors;
- actual or anticipated fluctuations in our operating results, including fluctuations in our quarterly and annual results;
- revenue being less than anticipated or operating expenses being more than anticipated;
- the failure or discontinuation of any of our product development and research programs;
- changes in the structure or funding of research at academic and research laboratories and institutions, including changes that would affect their ability to purchase our instruments or consumables;
- the success of existing or new competitive businesses or technologies;
- announcements about new research programs or products of our competitors;
- developments or disputes concerning patent applications, issued patents or other proprietary rights;
- the recruitment or departure of key personnel;
- litigation and governmental investigations involving us, our industry or both;
- regulatory or legal developments in the United States and other countries;
- volatility and variations in market conditions in the life sciences technology sector generally, or the proteomics or genomics sectors specifically, including volatility in the stock prices of publicly held companies in our industry;
- investor perceptions of us or our industry;
- the level of expenses related to any of our research and development programs or products;
- actual or anticipated changes in our estimates as to our financial results or development timelines, variations in our financial results or those of companies that are perceived to be similar to us or changes in estimates or recommendations by securities analysts, if any, that cover our Class A common stock or companies that are perceived to be similar to us;
- whether our financial results meet the expectations of securities analysts or investors;
- short-selling strategies that may drive down the price of our Class A common stock;
- the announcement or expectation of additional financing efforts;

- sales of our Class A common stock by us or sales of our Class A common stock or Class B common stock by our insiders or other stockholders, or future stock issuances;
- general economic, industry and market conditions; and
- health epidemics such as the COVID-19 pandemic, natural disasters or major catastrophic events.

Recently, stock markets in general, and the market for life sciences technology companies in particular, have experienced significant price and volume fluctuations that have often been unrelated or disproportionate to changes in the operating performance of the companies whose stock is experiencing those price and volume fluctuations, particularly in light of the current COVID-19 pandemic. Broad market and industry factors may seriously affect the market price of our Class A common stock, regardless of our actual operating performance. Following periods of such volatility in the market price of a company's securities, securities class action litigation has often been brought against that company. Because of the potential volatility of our stock price, we may become the target of securities litigation in the future. Securities litigation could result in substantial costs and divert management's attention and resources from our business.

The multi-class structure of our common stock will have the effect of concentrating voting control with certain stockholders and it may depress the trading price of our Class A common stock.

Our Class A common stock, which is our publicly-traded class of stock, has one vote per share, and our Class B common stock has ten votes per share, except as otherwise required by law. Our Class B common stock is held by our founders and early investors. As of March 2, 2023, the holders of our Class B common stock hold in the aggregate 40.4% of the voting power of our capital stock.

As a result, the holders of our Class B common stock collectively will continue to control a significant amount of the combined voting power of our common stock and therefore may be able to control matters submitted to our stockholders for approval. This control will limit to the stockholders' influence over corporate matters for approximately five years following our initial public offering, including the election of directors, amendments of our organizational documents and any sale of the company or other major corporate transaction requiring stockholder approval. This may prevent or discourage unsolicited proposals to acquire the company. Future transfers by holders of Class B common stock will generally result in those shares converting to Class A common stock, subject to limited exceptions, such as certain transfers effected for estate planning purposes where sole dispositive power and exclusive voting control with respect to the shares of Class B common stock is retained by the transferring holder. The Class B common stock will also automatically convert into Class A common stock on December 8, 2025. The conversion of Class B common stock to Class A common stock will have the effect, over time, of increasing the relative voting power of those individual holders of Class B common stock who retain their shares over the long term.

In July 2017, S&P Dow Jones announced that it would no longer admit companies with multiple-class share structures to certain of its indices. Affected indices include the S&P 500, S&P MidCap 400, and S&P SmallCap 600, which together make up the S&P Composite 1500. Our multi-class capital structure may make us ineligible for inclusion in certain indices, and as a result, mutual funds, exchange-traded funds and other investment vehicles that attempt to passively track these indices may not be investing in our stock. It is unclear what effect, if any, exclusion from any indices has had on the valuations of the affected publicly traded companies. It is possible that such policies could depress the valuations of public companies excluded from such indices compared to those of other companies that are included.

If industry analysts, including securities analysts do not publish research or reports about our business or if they publish negative evaluations of our Class A common stock, the price of our Class A common stock could decline.

The trading market for our Class A common stock relies in part on the research and reports that industry or securities analysts publish about us or our business. If no or few analysts commence or continue coverage of us, the trading price of our Class A common stock could decrease. If one or more of the analysts covering our business downgrade their evaluations of our Class A common stock, the price of our Class A common stock could decline. If one or more

of these analysts cease to cover our Class A common stock, we could lose visibility in the market for our Class A common stock, which in turn could cause the price of our Class A common stock to decline.

Sales of a substantial number of shares of our Class A common stock by our existing stockholders could cause the price of our Class A common stock to decline.

Sales of a substantial number of shares of our Class A common stock in the public market could occur at any time and the perception in the market that the holders of a large number of shares of Class A common stock intend to sell shares could reduce the market price of our Class A common stock. Shares issued upon the exercise of stock options outstanding under our equity incentive plans or pursuant to future awards granted under those plans will become available for sale in the public market to the extent permitted by the provisions of applicable vesting schedules, any applicable market standoff and lock-up agreements, and Rule 144 and Rule 701 under the Securities Act of 1933, as amended, or the Securities Act.

We have not paid dividends in the past and do not expect to pay dividends in the future, and, as a result, any return on investment may be limited to the value of our stock.

You should not rely on an investment in our Class A common stock to provide dividend income. We do not anticipate that we will pay any dividends to holders of our Class A common stock in the foreseeable future. Instead, we plan to retain any earnings to maintain and expand our existing operations, fund our research and development programs and continue to invest in our commercial infrastructure. In addition, any future credit facility or financing we obtain may contain terms prohibiting or limiting the amount of dividends that may be declared or paid on our Class A common stock. Accordingly, investors must rely on sales of their Class A common stock after price appreciation, which may never occur, as the only way to realize any return on their investment. As a result, investors seeking cash dividends should not purchase our Class A common stock.

Our amended and restated bylaws designate a state or federal court located within the State of Delaware as the exclusive forum for substantially all disputes between us and our stockholders, and also provide that the federal district courts will be the exclusive forum for resolving any complaint asserting a cause of action arising under the Securities Act of 1933, as amended, each of which could limit our stockholders' ability to choose the judicial forum for disputes with us or our directors, officers, stockholders, or employees.

Our amended and restated certificate of incorporation specifies that, unless we consent in writing to the selection of an alternative forum, the sole and exclusive forum for (a) any derivative action or proceeding brought on our behalf, (b) any action asserting a claim of breach of a fiduciary duty owed by any of our current or former directors, stockholders, officers, or other employees to us or our stockholders, (c) any action or proceeding asserting a claim arising pursuant to, or seeking to enforce any right, obligation or remedy under, any provision of the Delaware General Corporation Law, our amended and restated certificate of incorporation, or our amended and restated bylaws, (d) any action or proceeding as to which the Delaware General Corporation Law confers jurisdiction on the Court of Chancery of the State of Delaware, or (e) any action or proceeding asserting a claim that is governed by the internal affairs doctrine shall be the Court of Chancery of the State of Delaware (or, if the Court of Chancery does not have jurisdiction, another state court in Delaware or, if no state court in Delaware has jurisdiction, the federal district court for the District of Delaware) and any appellate court therefrom, in all cases subject to the court having jurisdiction over the claims at issue and the indispensable parties; provided that the exclusive forum provision will not apply to suits brought to enforce any liability or duty created by the Exchange Act.

Section 22 of the Securities Act of 1933, as amended (the Securities Act), creates concurrent jurisdiction for federal and state courts over all such Securities Act actions. Accordingly, both state and federal courts have jurisdiction to entertain such claims. To prevent having to litigate claims in multiple jurisdictions and the threat of inconsistent or contrary rulings by different courts, among other considerations, our amended and restated bylaws also provide that the federal district courts of the United States of America will be the exclusive forum for resolving any complaint asserting a cause of action arising under the Securities Act.

Any person or entity purchasing or otherwise acquiring or holding or owning (or continuing to hold or own) any interest in any of our securities shall be deemed to have notice of and consented to the foregoing bylaw provisions. Although we believe these exclusive forum provisions benefit us by providing increased consistency in the

application of Delaware law and federal securities laws in the types of lawsuits to which each applies, the exclusive forum provisions may limit a stockholder's ability to bring a claim in a judicial forum of its choosing for disputes with us or any of our directors, officers, stockholders, or other employees, which may discourage lawsuits with respect to such claims against us and our current and former directors, officers, stockholders, or other employees. Our stockholders will not be deemed to have waived our compliance with the federal securities laws and the rules and regulations thereunder as a result of our exclusive forum provisions. Further, in the event a court finds either exclusive forum provision contained in our amended and restated bylaws to be unenforceable or inapplicable in an action, we may incur additional costs associated with resolving such action in other jurisdictions, which could harm our results of operations.

Delaware law and provisions in our amended and restated certificate of incorporation and amended and restated bylaws might discourage, delay or prevent a change in control of our company or changes in our management and, therefore, depress the trading price of our Class A common stock.

Our status as a Delaware corporation and the anti-takeover provisions of the Delaware General Corporation Law may discourage, delay or prevent a change in control by prohibiting us from engaging in a business combination with an interested stockholder for a period of three years after the person becomes an interested stockholder, even if a change of control would be beneficial to our existing stockholders. In addition, our restated certificate of incorporation and restated bylaws contain provisions that may make the acquisition of our company more difficult, including the following:

- any transaction that would result in a change in control of our company requires the approval of a majority of our outstanding Class B common stock voting as a separate class;
- our multi-class common stock structure provides our holders of Class B common stock with the ability to significantly influence the outcome of matters requiring stockholder approval, even if they own significantly less than a majority of the shares of our outstanding Class A common stock and Class B common stock;
- our board of directors is classified into three classes of directors with staggered three-year terms and directors will only be able to be removed from office for cause by the affirmative vote of holders of at least two-thirds of the voting power of our then outstanding capital stock;
- certain amendments to our amended and restated certificate of incorporation require the approval of stockholders holding two-thirds of the voting power of our then outstanding capital stock;
- any stockholder-proposed amendment to our amended and restated bylaws require the approval of stockholders holding two-thirds of the voting power of our then outstanding capital stock;
- our stockholders may only be able to take action at a meeting of stockholders and may not be able to take action by written consent for any matter;
- our stockholders are able to act by written consent only if the action is first recommended or approved by the board of directors;
- vacancies on our board of directors may be filled only by our board of directors and not by stockholders;
- only the chair of the board of directors, chief executive officer or a majority of the board of directors are authorized to call a special meeting of stockholders;
- certain litigation against us can only be brought in Delaware;
- our restated certificate of incorporation authorizes undesignated preferred stock, the terms of which may be established and shares of which may be issued, without the approval of the holders of our capital stock; and
- advance notice procedures apply for stockholders to nominate candidates for election as directors or to bring matters before an annual meeting of stockholders.

These anti-takeover defenses could discourage, delay, or prevent a transaction involving a change in control of our company. These provisions could also discourage proxy contests and make it more difficult for stockholders to elect directors of their choosing and to cause us to take other corporate actions they desire, any of which, under certain circumstances, could limit the opportunity for our stockholders to receive a premium for their shares of our capital stock and could also affect the price that some investors are willing to pay for our Class A common stock.

Our ability to use net operating losses to offset future taxable income may be subject to certain limitations, and changes to U.S. tax laws may cause us to make adjustments to our financial statements.

As of December 31, 2022, we had U.S. federal and state net operating loss carryforwards (NOLs) of $119.4 million and $122.5 million, respectively, which if not utilized will expire in 2035 for state purposes. We may use these NOLs to offset against taxable income for U.S. federal and state income tax purposes. However, Section 382 of the Internal Revenue Code of 1986, as amended, may limit the NOLs we may use in any year for U.S. federal income tax purposes in the event of certain changes in ownership of our company. A Section 382 "ownership change" generally occurs if one or more stockholders or groups of stockholders who own at least 5% of a company's stock increase their ownership by more than 50 percentage points over their lowest ownership percentage within a rolling three-year period. Similar rules may apply under state tax laws. We have not conducted a 382 study to determine whether the use of our NOLs is impaired. We may have previously undergone multiple "ownership changes." In addition, future issuances or sales of our stock, including certain transactions involving our stock that are outside of our control, could result in future "ownership changes." "Ownership changes" that have occurred in the past or that may occur in the future could result in the imposition of an annual limit on the amount of pre-ownership change NOLs and other tax attributes we can use to reduce our taxable income, potentially increasing and accelerating our liability for income taxes, and also potentially causing those tax attributes to expire unused. States may impose other limitations on the use of our NOLs. Any changes in U.S. tax laws or limitations on using NOLs could, depending on the extent of such limitation and the NOLs previously used, result in our retaining less cash after payment of U.S. federal and state income taxes during any year in which we have taxable income, rather than losses, than we would be entitled to retain if such NOLs were available as an offset against such income for U.S. federal and state income tax reporting purposes, which could adversely impact our operating results.

We continue to incur significant increased costs and management resources as a result of operating as a public company.

As a public company, we continue to incur significant legal, accounting, compliance, insurance and other expenses that we did not incur as a private company. Our management and other personnel need to devote a substantial amount of time and incur significant expense in connection with compliance initiatives. As a public company, we continue to bear all of the internal and external costs of preparing and distributing periodic public reports in compliance with our obligations under the securities laws.

In addition, regulations and standards relating to corporate governance and public disclosure, including SOX, and the related rules and regulations implemented by the SEC and the Nasdaq Stock Market, LLC (Nasdaq) have increased legal and financial compliance costs and make some compliance activities more time-consuming. We intend to invest resources to comply with evolving laws, regulations and standards, and this investment will result in increased general and administrative expenses and may divert management's time and attention from our other business activities. If our efforts to comply with new laws, regulations and standards differ from the activities intended by regulatory or governing bodies due to ambiguities related to practice, regulatory authorities may initiate legal proceedings against us, and our business may be harmed. In the future, it may be more expensive or more difficult for us to obtain director and officer liability insurance, and we may be required to accept reduced coverage or incur substantially higher costs to obtain coverage. These factors could also make it more difficult for us to attract and retain qualified members of our board of directors, particularly to serve on our audit committee and compensation committee, and qualified executive officers.

General Risks

Environmental, social, and governance (ESG) matters are subject to increasing scrutiny and evolving expectations from customers, regulators, investors and other stakeholders and may expose us to reputational, cost and other risks.

Companies across all industries are subject to increasing scrutiny and evolving expectations regarding ESG matters. In particular, customers, regulators, investors and other stakeholders are increasingly focusing on environmental issues, including climate change, energy use, industrial waste, and other sustainability concerns. Failure to implement sufficient standards and practices for responsible corporate citizenship, support for local communities, employee diversity and human capital management, health and safety practices, supply chain management, and corporate governance can increase our costs of production, decrease our revenue, and negatively affect our reputation, employee retention, and the general willingness of customers and suppliers to do business with us and investors to invest in us. If we do not adapt to or comply with evolving ESG standards and regulations, the resulting consequences could have a material adverse effect on our reputation, business and financial condition.

If our facilities or our third-party manufacturers' facilities become unavailable or inoperable, our research and development program and commercialization plan could be adversely impacted and manufacturing of our instruments and consumables could be interrupted.

Our Redwood City, California, facilities house our corporate, research and development, NP manufacturing and quality assurance teams. Our instruments are manufactured at our third-party manufacturer's facilities in Nevada, and our consumables are manufactured at various locations in the United States and internationally.

Our facilities in Redwood City and those of our third-party manufacturers are vulnerable to natural disasters, public health crises, including the impact of health epidemics such as the COVID-19 pandemic, climate change and catastrophic events. For example, our Redwood City facilities are located near earthquake fault zones and are vulnerable to damage from earthquakes as well as other types of disasters, including fires, wildfires, floods, power loss, communications failures and similar events. If any disaster, public health crisis or catastrophic event were to occur, our ability to operate our business would be seriously, or potentially completely, impaired. If our facilities or our third-party manufacturer's facilities become unavailable for any reason, we cannot provide assurances that we will be able to secure alternative manufacturing facilities with the necessary capabilities and equipment on acceptable terms, if at all. We may encounter particular difficulties in replacing our Redwood City facilities given the specialized equipment housed within it. The inability to manufacture our instruments or consumables, combined with our limited inventory of manufactured instruments and consumables, may result in the loss of future customers or harm our reputation, and we may be unable to re-establish relationships with those customers in the future. Because some of our NPs are perishable and must be kept in temperature controlled storage, the loss of power to our facilities, mechanical or other issues with our storage facilities or other events that impact our temperature controlled storage could result in the loss of some or all of such NPs, and we may not be able to replace them without disruption to our customers or at all.

If our research and development program or commercialization program were disrupted by a disaster or catastrophe, the launch of new products, including the Proteograph Product Suite, and the timing of improvements to our products could be significantly delayed and could adversely impact our ability to compete with other available products and solutions. If our or our third-party manufacturer's capabilities are impaired, we may not be able to manufacture and ship our products in a timely manner, which would adversely impact our business. Although we possess insurance for damage to our property and the disruption of our business, and self-insure for earthquake risk, this insurance may not be sufficient to cover all of our potential losses and may not continue to be available to us on acceptable terms, or at all.

If we, or our vendors, partners or customers, experience a significant disruption in our information technology systems or breaches of data security, our business could be adversely affected.

We rely, or will rely, on information technology systems to keep financial records, facilitate our research and development initiatives, manage our manufacturing operations, maintain quality control, fulfill customer orders, maintain corporate records, communicate with staff and external parties and operate other critical functions. Our

information technology systems and those of our vendors, partners and customers are potentially vulnerable to disruption due to breakdown, malicious intrusion and computer viruses or other disruptive events, including, but not limited to, natural disasters and catastrophes. Cyberattacks (including denial of service, ransomware, and other attacks) and other malicious internet-based activity continue to increase and cloud-based platform providers of services have been and are expected to continue to be targeted. Methods of attacks on information technology systems and data security breaches change frequently, are increasingly complex and sophisticated, including social engineering and phishing scams, and can originate from a wide variety of sources. In addition to traditional computer "hackers," malicious code, such as viruses and worms, employee theft or misuse, denial-of-service attacks and sophisticated nation-state and nation-state supported actors now engage in attacks, including advanced persistent threat intrusions. Despite our efforts to create security barriers to such threats, it is virtually impossible for us to entirely mitigate these risks. In addition, we have not finalized our information technology and data security procedures and therefore, our information technology systems may be more susceptible to cybersecurity attacks than if such security procedures were finalized. Despite any of our current or future efforts to protect against cybersecurity attacks and data security breaches, there is no guarantee that our efforts are adequate to safeguard against all such attacks and breaches. Moreover, it is possible that we may not be able to anticipate, detect, appropriately react and respond to, or implement effective preventative measures against, all cybersecurity incidents. In addition, our information technology strategy encompasses multi-vendor, multi-cloud infrastructure, systems and applications. We have a shared responsibility model with our information technology vendors and rely on their security measures and controls. We have not conducted a comprehensive evaluation of all vendors to understand their security postures.

If our security measures, or those of our vendors, partners and customers, are compromised due to any cybersecurity attacks or data security breaches, including as a result of third-party action, employee or customer error, malfeasance, stolen or fraudulently obtained log-in credentials or otherwise, our reputation could be damaged, our business and reputation may be harmed, we could become subject to litigation and we could incur significant liability. If we were to lose data or experience a prolonged system disruption in our information technology systems or those of certain of our vendors and partners, it could negatively impact our ability to serve our customers, which could adversely impact our business, financial condition, results of operations and prospects. If operations at our facilities were disrupted, it may cause a material disruption in our business if we are not capable of restoring functionality on an acceptable timeframe.

In addition, our information technology systems, and those of our vendors, partners and customers, are potentially vulnerable to data security breaches, whether by internal bad actors, such as employees or other third parties with legitimate access to our or our third-party providers' systems, or external bad actors, which could lead to the loss or exposure of personal data, sensitive data and confidential information to unauthorized persons. Any such data security breaches could lead to the loss of trade secrets or other intellectual property, the exposure of personal information, including sensitive personal information, of our employees, customers and others, or could prevent us from accessing critical information, any of which could expose us to liability and have a material adverse effect on our business, reputation, financial condition and results of operations. Moreover, due to the inherent features and technical limitations of information technology systems and infrastructure, our products and services may be impacted by cyberattacks or other disruptions, including efforts to penetrate our customers' network security, sabotage or otherwise disable our instruments and services, including instruments at our customers' sites, misappropriate our customers' proprietary information, or cause interruptions of our or our customers' internal operations, systems and services. Any such breach could compromise our customers' networks and the information stored there could be accessed, publicly disclosed, lost or stolen.

In addition, any such access, disclosure or other loss or unauthorized use of information or data could result in legal claims or proceedings, regulatory investigations or actions, and other types of liability under laws that protect the privacy and security of personal information, including federal, state and foreign data protection and privacy regulations, violations of which could result in significant penalties and fines. Additionally, a new privacy law, the California Privacy Rights Act (CPRA), went into effect on January 1, 2023. The CPRA modifies the California Consumer Privacy Act (CCPA) significantly, potentially resulting in further uncertainty and requiring us to incur additional costs and expenses in an effort to comply. The CPRA restricts use of certain categories of sensitive personal information that we may handle, establish restrictions on the retention of personal information, expand the

types of data breaches subject to the private right of action, and establish the California Privacy Protection Agency to implement and enforce the new law and impose administrative fines. Additional compliance investment and potential business process changes will likely be required. Similar laws have been proposed in other states and at the federal level, reflecting a trend toward more stringent data privacy and security legislation in the United States. For example, on March 2, 2021, Virginia enacted the Virginia Consumer Data Protection Act, or CDPA, which took effect on January 1, 2023, on June 8, 2021, Colorado enacted the Colorado Privacy Act, or CPA, which takes effect on July 1, 2023, and on March 24, 2022, Utah enacted the Utah Consumer Privacy Act, or UCPA, which takes effect on December 31, 2023; and on May 10, 2022, Connecticut enacted the Connecticut Data Privacy Act, or CTDPA, which takes effect on July 1, 2023. The CPA, CDPA, UCPA, and CTDPA share similarities with and differences from the CPRA and legislation proposed in other states. Aspects of these state privacy statutes remain unclear, resulting in further uncertainty and potentially requiring us to modify our data practices and policies and to incur substantial additional costs and expenses in an effort to comply. In addition, U.S. and international laws and regulations that have been applied to protect user privacy (including laws regarding unfair and deceptive practices in the U.S. and GDPR in the EU) may be subject to evolving interpretations or applications. Furthermore, defending a suit, regardless of its merit, could be costly, divert management's attention and harm our reputation. In addition, although we seek to detect and investigate all data security incidents, security breaches and other incidents of unauthorized access to our information technology systems and data can be difficult to detect and any delay in identifying such breaches or incidents may lead to increased harm and legal exposure of the type described above. Moreover, there could be public announcements regarding any cybersecurity incidents and any steps we take to respond to or remediate such incidents, and if securities analysts or investors perceive these announcements to be negative, it could, among other things, have a material adverse effect on the price of our Class A common stock.

The cost of protecting against, investigating, mitigating and responding to potential breaches of our information technology systems and data security breaches and complying with applicable breach notification obligations to individuals, regulators, partners and others can be significant. As cybersecurity incidents continue to evolve, we may be required to expend significant additional resources to continue to modify or enhance our protective measures or to investigate and remediate any information security vulnerabilities. The inability to implement, maintain and upgrade adequate safeguards could have a material adverse effect on our business, financial condition, results of operations and prospects. Our insurance policies may not be adequate to compensate us for the potential costs and other losses arising from such disruptions, failures or security breaches. In addition, such insurance may not be available to us in the future on economically reasonable terms, or at all, or that any insurer will not deny coverage as to any future claim. The successful assertion of one or more large claims against us that exceed available insurance coverage, or the occurrence of changes in our insurance policies, including premium increases or the imposition of large deductible or co-insurance requirements, could have a material adverse effect on our business, financial condition, results of operations and prospects.

We are currently subject to, and may in the future become subject to additional international and U.S. federal and state laws and regulations imposing obligations on how we collect, store and process personal information. Our actual or perceived failure to comply with such obligations could harm our business. Ensuring compliance with such laws could also impair our efforts to maintain and expand our future customer base, and thereby decrease our revenue.

In the ordinary course of our business, we currently, and in the future will, collect, store, transfer, use or process sensitive data, including personally identifiable information of employees, and intellectual property and proprietary business information owned or controlled by ourselves and other parties. The secure processing, storage, maintenance, and transmission of this critical information are vital to our operations and business strategy. We are, and may increasingly become, subject to various international and domestic laws and regulation relating to data privacy and security in the jurisdictions in which we operate. We also may be subject to contractual obligations and may be, or may be asserted to be, subject to industry standards relating to privacy and data security. The regulatory environment related to data privacy and security is increasingly rigorous, with new and constantly changing requirements applicable to our business, and enforcement practices are likely to remain uncertain for the foreseeable future. These laws and regulations may be interpreted and applied differently over time and from jurisdiction to

jurisdiction, and it is possible that they will be interpreted and applied in ways that may have a material adverse effect on our business, financial condition, results of operations and prospects.

In the United States, various federal and state regulators, including governmental agencies like the Consumer Financial Protection Bureau and the Federal Trade Commission, have adopted, or are considering adopting, laws and regulations concerning personal information and data security. Certain state laws may be more stringent or broader in scope, or offer greater individual rights, with respect to personal information than federal, international or other state laws, and such laws may differ from each other, all of which may complicate compliance efforts. For example, the CCPA, which increases privacy rights for California residents and imposes obligations on companies that process their personal information, came into effect on January 1, 2020, and CPRA, which increases such rights and responsibilities, came into effect on January 1, 2023. Among other things, the CCPA requires covered companies to provide new disclosures to California consumers and provide such consumers new data protection and privacy rights, including the ability to opt-out of certain sales of personal information. The CCPA provides for civil penalties for violations, as well as a private right of action for certain data breaches that result in the loss of personal information. This private right of action may increase the likelihood of, and risks associated with, data breach litigation. In addition, laws in all 50 U.S. states require businesses to provide notice to consumers whose personal information has been disclosed as a result of a data breach. State laws are changing rapidly and there is discussion in the U.S. Congress of a new comprehensive federal data privacy law to which we would become subject if it is enacted.

Furthermore, regulations promulgated pursuant to the Health Insurance Portability and Accountability Act of 1996 (HIPAA), establish privacy and security standards that limit the use and disclosure of individually identifiable health information (known as "protected health information") and require the implementation of administrative, physical and technological safeguards to protect the privacy of protected health information and ensure the confidentiality, integrity and availability of electronic protected health information. Determining whether protected health information has been handled in compliance with applicable privacy standards and our contractual obligations can require complex factual and statistical analyses and may be subject to changing interpretation. Although we take measures to protect sensitive data from unauthorized access, use or disclosure, our information technology and infrastructure may be vulnerable to attacks by hackers or viruses or breached due to employee error, malfeasance or other malicious or inadvertent disruptions. Any such breach or interruption could compromise our networks and the information stored there could be accessed by unauthorized parties, manipulated, publicly disclosed, lost or stolen. Any such access, breach or other loss of information could result in legal claims or proceedings, and liability under federal or state laws that protect the privacy of personal information, such as the HIPAA, the Health Information Technology for Economic and Clinical Health Act (HITECH), and regulatory penalties. Notice of breaches must be made to affected individuals, the Secretary of the Department of Health and Human Services, and for extensive breaches, notice may need to be made to the media or State Attorneys General. Such a notice could harm our reputation and our ability to compete.

We are in the process of evaluating compliance needs, but do not currently have in place formal policies and procedures related to the storage, collection and processing of information, and have not conducted any internal or external data privacy audits, to ensure our compliance with all applicable data protection laws and regulations. Additionally, we do not currently have policies and procedures in place for assessing our third-party vendors' compliance with applicable data protection laws and regulations. All of these evolving compliance and operational requirements impose significant costs, such as costs related to organizational changes, implementing additional protection technologies, training employees and engaging consultants, which are likely to increase over time. In addition, such requirements may require us to modify our data processing practices and policies, distract management or divert resources from other initiatives and projects, all of which could have a material adverse effect on our business, financial condition, results of operations and prospects. Any failure or perceived failure by us or our third-party vendors, collaborators, contractors and consultants to comply with any applicable federal, state or similar foreign laws and regulations relating to data privacy and security, or could result in damage to our reputation, as well as proceedings or litigation by governmental agencies or other third parties, including class action privacy litigation in certain jurisdictions, which would subject us to significant fines, sanctions, awards, penalties or judgments, all of which could have a material adverse effect on our business, financial condition, results of operations and prospects.

Item 1B. Unresolved Staff Comments

None.

Item 2. Properties

Our corporate headquarters, research and development facilities, and manufacturing and distribution centers are located at 3800 Bridge Parkway, Redwood City, CA 94065. The facility is approximately 51,000 square feet and is compliant with all relevant state and federal requirements. Our lease on this facility runs through September 2032. In addition, we lease approximately 6,000 square of office space in San Diego, California under a lease that runs through September 2024. We do not own any real property and believe that our current facilities are sufficient to meet our ongoing needs and that, if we require additional space, we will be able to obtain additional facilities on commercially reasonable terms.

Item 3. Legal Proceedings

We are not currently a party to any material legal proceedings. From time to time we may be involved in legal proceedings or investigations, which could have an adverse impact on our reputation, business and financial condition and divert the attention of our management from the operation of our business.

Item 4. Mine Safety Disclosures

Not applicable.

PART II.

Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities

Market Information

Our Class A common stock has been listed on the Nasdaq Global Select Market under the symbol "SEER" since December 4, 2020. Prior to that date, there was no public trading market for our Class A common stock.

Our Class B common stock is not listed or traded on any stock exchange.

Holders of Common Stock

As of March 2, 2023, there were 30 holders of record of our Class A common stock and 6 holders of record of our Class B common stock. The actual number of stockholders is greater than this number of record holders and includes stockholders who are beneficial owners but whose shares are held in street name by brokers and other nominees.

Dividend Policy

We have not declared or paid any cash dividends on our capital stock since our inception. We intend to retain future earnings, if any, to finance the operation and expansion of our business and do not anticipate paying any cash dividends in the foreseeable future. Payment of future cash dividends, if any, will be at the discretion of our board of directors after taking into account various factors, including our financial condition, operating results, current and anticipated cash needs, the requirements and contractual restrictions of then-existing debt instruments and other factors that our board of directors deems relevant.

Unregistered Sales of Equity Securities

None.

Item 6. [Reserved]

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations

You should read the following discussion and analysis of our financial condition and results of operations together with our audited consolidated financial statements and related notes included elsewhere in this Annual Report. This discussion contains forward-looking statements that involve risks and uncertainties, including those described in the section titled "Special Note Regarding Forward Looking Statements." Our actual results and the timing of selected events could differ materially from those discussed below. Factors that could cause or contribute to such differences include, but are not limited to, those identified below and those set forth under the section titled "Risk Factors."

Overview

Our mission is to imagine and pioneer new ways to decode the secrets of the proteome to improve human health. Our first product, the Proteograph™ Product Suite (Proteograph), leverages our proprietary engineered nanoparticle (NP) technology to provide unbiased, deep, rapid and large-scale access to the proteome. The Proteograph Product Suite is an integrated solution that includes consumables, an automation instrument and software.

We believe that broader access to the proteome is essential, not only to understanding its complexity and accelerating biological insights, but also to expanding end-markets. These markets may include basic research and discovery, translational research, diagnostics and applied applications. To comprehend the complexity and dynamic nature of the proteome, researchers must perform population-scale, deep, unbiased interrogation of biological samples over time. We believe that this level of interrogation was not previously feasible and that the Proteograph can enable researchers to perform these types of proteomics studies.

Since we were incorporated in 2017, we have devoted substantially all of our resources to research and development activities, including with respect to the Proteograph Product Suite, building our commercial infrastructure including manufacturing, operations, sales and marketing and service and support functions, establishing and maintaining our intellectual property portfolio, hiring personnel, raising capital, becoming a publicly-traded company, and providing general and administrative support for these activities.

Our ability to generate product revenue sufficient to achieve profitability, if ever, will depend on the successful commercialization of the Proteograph Product Suite. We are commercializing the Proteograph Product Suite as an integrated solution comprised of consumables, our SP100 automation instrument and software. Our commercial strategy is focused on growing adoption by the research community of the Proteograph, expanding the installed base and increasing utilization to generate revenue from the purchase of Proteograph consumables. We expect a highly efficient sales model because our workflow integrates with most existing proteomics laboratories' workflows and also complements large-scale genomics research.

We are broadly commercializing the Proteograph Product Suite through a direct sales channel in the United States, and through both direct and distributor sales channels in regions outside the United States. Since we are in the early stages of commercialization, we have built, and will continue to build our sales, marketing, support and product distribution capabilities. In addition, we will continue to build the necessary infrastructure for these activities in the United States, European Union, the United Kingdom, and other countries and regions, including Asia-Pacific, as we execute on our commercialization strategy for the Proteograph.

We leverage well-established unit operations to formulate and manufacture our NPs at our facilities in Redwood City, California. We procure certain components of our consumables from third-party manufacturers, which includes the commonly-available raw materials needed for manufacturing our proprietary engineered NPs. We are currently manufacturing using our production-scale and pilot lines and continue to build out our manufacturing capabilities to support broad commercial availability of our products. We obtain some of the reagents and components used in the Proteograph workflow from third-party suppliers. While some of these reagents and components are currently sourced from a single supplier, these products are readily available from numerous suppliers. While we currently perform some filling and packaging of the Proteograph assay and the related consumables, we may eventually have

our filling and packaging outsourced to a third party. We conduct vendor and component qualification for components provided by third-party suppliers and quality control tests on our NPs.

We designed the SP100 automation instrument and have outsourced its manufacturing to Hamilton Company, a leading manufacturer of automated liquid handling workstations. We have entered into a non-exclusive agreement with Hamilton that covers the manufacturing of the SP100 automation instrument and its continued supply on a purchase order basis. The agreement has an initial term that runs three years following our commercial launch. We have the option to extend the term of the agreement with Hamilton upon written notice at the end of the initial term; provided that prices are only fixed during the initial term of the agreement. Hamilton has represented to us that it maintains ISO 9001 and ISO 13485 certification.

On December 8, 2020, we completed our IPO, in which we sold 10,592,106 shares of Class A common stock at a price to the public of $19.00 per share, resulting in net proceeds of $183.9 million after deducting offering costs, underwriting discounts and commissions. Concurrent with the IPO, we issued 7,105,262 shares of our Class A common stock in a private placement for net proceeds of $130.3 million after deducting underwriting discounts and commissions. On February 1, 2021, we completed an underwritten public offering of 1,650,000 shares of our Class A common stock at a public offering price of $67.00 per share. We received net proceeds of $103.0 million after deducting offering costs, underwriting discounts and commissions.

During the years ended December 31, 2022 and 2021, we incurred a net loss of $93.0 million and $71.2 million and used $60.8 million and $46.3 million of cash in operations, respectively. As of December 31, 2022, we had an accumulated deficit of $219.5 million and cash, cash equivalents, and investments of $426.4 million. We expect to continue to incur significant and increasing losses and do not expect positive cash flows from operations for the foreseeable future.

We expect our expenses to increase significantly in connection with our ongoing activities, as we:

- broadly commercialize the Proteograph Product Suite;
- attract, hire and retain qualified personnel;
- continue to build our sales, marketing, service, support and distribution infrastructure as part of our commercialization efforts;
- build-out and expand our in-house NP manufacturing capabilities;
- continue to engage in research and development of other products and enhancements to the Proteograph Product Suite;
- implement operational, financial and management information systems;
- obtain, maintain, expand, and protect our intellectual property portfolio; and
- build the infrastructure to operate and scale as a public company.

PrognomiQ

In August 2020, we transferred certain assets related to human disease testing to PrognomiQ, Inc. (PrognomiQ), a new wholly-owned subsidiary, in exchange for all of its outstanding equity interests. Following the transfer, we completed a pro-rata distribution to our stockholders of most of the shares of capital stock of PrognomiQ. Following the distribution and two subsequent equity financings of PrognomiQ totaling $102 million, we hold approximately 15% of the outstanding capital stock in PrognomiQ as of December 31, 2022.

The rationale for this transaction was to enable the growth of ecosystems around new applications that leverage unbiased, deep and large-scale proteomic information. The transaction allows us to remain focused on our core strategy, which is to be a provider, rather than a consumer, of proteomics solutions to all customers across these ecosystems. By focusing on our role as a provider of proteomics solutions, we are no longer potentially competing

with, or creating the perception that we are competing with, our customers. Our relationship with PrognomiQ does not preclude us from selling the Proteograph Product Suite to any customer in any geography, nor does it preclude our customers from using the Proteograph in any way. PrognomiQ has indicated that it plans to combine the protein data from the Proteograph solution with genomics and other -omics data, to create a multi-omics approach to health and disease testing. We believe PrognomiQ's use of proteomics and the potential for other similar companies which use proteomics in their research and products will help us drive the adoption of the Proteograph Product Suite in these applications. We have entered into certain agreements with PrognomiQ.

Omid Farokhzad, our Chief Executive Officer and President, and Chair of our board of directors, also serves as the Chair of PrognomiQ's board of directors. Philip Ma, Ph.D., our former Chief Business Officer, serves as the Chief Executive Officer and President of PrognomiQ. While Dr. Ma has fully transitioned to PrognomiQ, he will continue to consult until April 2023 at which time, Dr. Ma's consulting agreement will automatically renew for subsequent one year terms unless and until terminated.

We granted PrognomiQ a non-exclusive license to certain patents and patent applications that we own and a non-exclusive sublicense to certain patent applications we exclusively licensed from Brigham and Women's Hospital (BWH), in each case relating to our core technology, to develop, manufacture and commercialize licensed products for the field of human diagnostics on a worldwide basis. In consideration of the non-exclusive sublicense to certain patent applications licensed from BWH, PrognomiQ paid us a low-five digit figure, and would pay a low single digit royalty, in an amount equivalent to what we would have to pay under our license with BWH, on net sales of sublicensed products beginning with the first commercial sale of a sublicensed product during the term of the agreement. We do not view these amounts to be material to our financial condition and results of operations nor do we expect these amounts to be material to us in the future. In accordance with the non-exclusive license agreement with PrognomiQ, we entered into a supply agreement with PrognomiQ in June 2021. The PrognomiQ supply agreement provides that we will supply PrognomiQ with the Proteograph Product Suite and associated consumables.

COVID-19 Pandemic

As a result of the COVID-19 pandemic, we could experience disruptions that could severely impact our business. Pandemic precautions and preventative measures may also impact our commercialization plans due to restrictions on our customers' ability to access laboratories, causing delays in the delivery and installation of the Proteograph products, training such customers on our products, and their ability to conduct research. We have experienced delays in our ability to access customers in certain countries with strict COVID-19 policies to provide installation and training services. Furthermore, COVID-19 has adversely affected the broader economy and financial markets, resulting in an economic downturn that could curtail the research and development budgets of our customers, our ability to hire additional personnel and our financing prospects. Any of the foregoing could harm our operations and we cannot anticipate all the ways in which it could be adversely impacted by health epidemics such as COVID-19.

For additional details, see the section titled "Risk Factors."

Components of Results of Operations

Revenue

We generate revenue from product sales, including sales of the Proteograph Product Suite, which consists of an instrument with embedded software essential to the instrument's functionality and associated consumables as well as our platform evaluation agreements. In addition, we may at times generate revenue from performing services, the receipt of grant revenue for the reimbursement of research-related expenses, and lease arrangements. Our revenue is primarily generated domestically. We intend to focus our commercial efforts in the United States and expect to grow our international presence. A portion of our revenue is generated by sales to related parties and we anticipate a portion of our revenue to continue to be generated by sales to such related parties. Our grant-funded activities are expected to decrease as a percentage of total revenue as we decrease grant-funded activities and continue to ramp up commercialization of the Proteograph Product Suite.

Cost of Revenue

We utilize third-party manufacturers for production of our SP100 instrument and we manufacture our NPs and assemble our assay kits internally. Cost of goods sold consists primarily of costs of the components of the Proteograph Product Suite, including the SP100 instrument with embedded software essential to the instrument's functionality, and consumables, and distribution-related expenses such as logistics and shipping costs. In addition, cost of revenue includes stock-based compensation and related employee benefits, allocated overhead and write-downs or impairments of obsolete inventory.

Research and Development Expenses

Research and development, or R&D, expenses include costs associated with performing services under research and development service contracts and research and development of our technology and product candidates. R&D expenses consist primarily of employee compensation, including stock-based compensation, and related employee benefits, laboratory supplies used for in-house research, consulting costs, costs related to clinical studies for the collection of biological samples for research use and allocated costs, rent, depreciation, information technology, and utilities.

We plan to increase our investment in our R&D efforts related to the Proteograph Product Suite, our product development pipeline and our proprietary engineered NP and other technologies. Therefore, we expect R&D expenses will increase in absolute dollars in future periods as we incur expenses associated with hiring additional personnel, purchasing supplies and materials, and the allocation of facility expense associated with the build-out of our expansion facilities to support our R&D efforts.

Selling, General and Administrative Expenses

Selling, general and administrative expenses consist primarily of employee compensation, including stock-based compensation, and related benefits for executive management, sales and marketing, service and support, finance, administration and human resources, legal, allocated overhead, professional service fees and other general overhead costs to support our operations.

We expect to incur additional selling, general and administrative expenses as we continue to invest in our personnel as we grow our commercial operations and with the additional costs incurred as a result of operating as a public company, including accounting, human resources, legal, insurance and investor relations costs. As a result, we expect selling, general and administrative expenses to increase in absolute dollars in future periods.

Interest Income

Interest income consists of interest earned on cash, cash equivalents and investments.

Results of Operations

Comparisons of the Years Ended December 31, 2022 and 2021

The following table summarizes our results of operations for the periods presented:

	Year ended December 31,		Change	
	2022	2021	Amount	%
	(dollars in thousands)			
Revenue:				
Product	$ 8,557	$ 3,577	$ 4,980	139 %
Service	913	500	413	83 %
Related party	5,215	2,317	2,898	125 %
Grant and other	808	223	585	262 %
Total revenue	15,493	6,617	8,876	134 %
Cost of revenue:				
Product	5,459	2,300	3,159	137 %
Service	495	42	453	1079 %
Related party	1,989	863	1,126	130 %
Grant and other	457	—	457	100 %
Total cost of revenue	8,400	3,205	5,195	162 %
Gross profit	7,093	3,412	3,681	108 %
Operating expenses:				
Research and development	45,797	29,121	16,676	57 %
Selling, general and administrative	58,531	45,764	12,767	28 %
Total operating expenses	104,328	74,885	29,443	39 %
Loss from operations	(97,235)	(71,473)	(25,762)	36 %
Other income (expense):				
Interest income	4,602	326	4,276	1312 %
Interest expense	—	(22)	22	(100)%
Other expense	(333)	—	(333)	(100)%
Total other income	4,269	304	3,965	1304 %
Net loss	$ (92,966)	$ (71,169)	$ (21,797)	31 %

Revenue

	Year ended December 31,		Change	
	2022	2021	Amount	%
	(dollars in thousands)			
Revenue	$ 15,493	$ 6,617	$ 8,876	134 %

Revenue increased by $8.9 million, or 134%, from $6.6 million in 2021 to $15.5 million in 2022, due to sales of products related to the Proteograph Product Suite in the year ended December 31, 2022. Revenue recognized primarily consisted of sales of the Proteograph SP100 instrument, consumable kits and platform evaluations, of which $5.2 million was attributed to related parties. Revenue related to grant and other consisted of our grant-funded activities related to our Small Business Innovation Research (SBIR) grant from the National Institutes of Health Grant (NIH), which increased between the two periods by $45,000 and $0.5 million respectively, and lease arrangements where we are the lessor.

Cost of Revenue

	Year ended December 31,		Change	
	2022	2021	Amount	%
	(dollars in thousands)			
Cost of revenue	$ 8,400	$ 3,205	$ 5,195	162 %

Cost of revenue increased by $5.2 million, or 162%, from $3.2 million in 2021 to $8.4 million in 2022, primarily due to sales of the Proteograph Product Suite. Grant and other cost of revenue was attributed to the lease of the SP100 instruments. Cost of revenue related to the Proteograph Product Suite consists of costs of the SP100 instrument, consumable kits and other related costs, including labor and overhead.

Research and Development

	Year ended December 31,		Change	
	2022	2021	Amount	%
	(dollars in thousands)			
Research and development	$ 45,797	$ 29,121	$ 16,676	57 %

Research and development expenses increased by $16.7 million, or 57%, from $29.1 million in 2021 to $45.8 million in 2022. The increase was primarily due to an increase in product development efforts related to the Proteograph Product Suite including $5.6 million increase in employee compensation costs and other related expenses, and a $4.7 million increase in stock-based compensation, due to growth in research and development personnel, and a $4.0 million increase in allocated overhead related to the allocation of facility expense associated with the build-out of our expansion facilities to support our R&D efforts. Other increases include costs related to general business expenses of $1.0 million, which include IT support services and expensed software, a $0.7 million increase in laboratory expenses and a $0.8 million increase in depreciation of laboratory equipment.

Selling, General and Administrative

	Year ended December 31,		Change	
	2022	2021	Amount	%
	(dollars in thousands)			
Selling, general and administrative	$ 58,531	$ 45,764	$ 12,767	28 %

Selling, general and administrative expenses increased by $12.8 million, or 28%, from $45.8 million in 2021 to $58.5 million in 2022, primarily due to a $4.5 million increase in employee compensation and other related expenses, and a $3.8 million increase in stock-based compensation. Other increases include a $3.4 million increase in professional service and consulting fees primarily related to international expansion, a $0.6 million increase in general business expenses, and a $0.5 million increase in depreciation due to our facility expansion.

Total Other Income

	Year ended December 31,		Change	
	2022	2021	Amount	%
	(dollars in thousands)			
Total other income	$ 4,269	$ 304	$ 3,965	1304 %

Total other income increased by $4.0 million, or 1304%, from $0.3 million in 2021 to $4.3 million in 2022. The increase was due to higher rates of interest earned on cash invested in money market funds, U.S. Treasury securities, commercial paper and corporate securities in 2022.

Liquidity and Capital Resources

Since the date of our incorporation, we have not generated significant revenue from product sales and have incurred significant operating losses and negative cash flows from operations. Our operations have been funded primarily through the sale and issuance of equity securities since inception. We anticipate that we will continue to incur net losses and do not expect positive cash flows from operations for the foreseeable future. However, based on our cash on hand, we believe we will have adequate liquidity over the next twelve months following the date of this Annual Report to operate our business and to meet our cash requirements.

In connection with our IPO that closed on December 8, 2020, we sold 10,592,106 shares of Class A common stock and received net proceeds of $183.9 million after deducting offering costs, underwriting discounts and commissions. Concurrent with the IPO, we issued 7,105,262 shares of our Class A common stock in a private placement for net proceeds of $130.3 million after deducting underwriting discounts and commissions. On February 1, 2021, we completed an underwritten public offering of 1,650,000 shares of our Class A common stock and received net proceeds of $103.0 million after deducting offering costs, underwriting discounts and commissions.

Cash Flows

The following table summarizes our cash flows for the periods indicated:

	Year ended December 31,	
	2022	2021
	(in thousands)	
Net cash used in operating activities	$ (60,780)	$ (46,347)
Net cash used in investing activities	(122,718)	(170,878)
Net cash provided by financing activities	3,893	116,634
Net decrease in cash, cash equivalents and restricted cash	$ (179,605)	$ (100,591)

Operating Activities

In 2022, cash used in operating activities was $60.8 million, attributable to a net loss of $93.0 million, partially offset by a net change in our net operating assets and liabilities of $7.4 million and non-cash charges of $39.6 million. Non-cash charges primarily consisted of stock-based compensation of $33.7 million, $3.9 million of depreciation and amortization and $2.0 million of non-cash operating lease expense. The change in our net operating assets and liabilities was primarily due to an increase in inventory levels of $1.6 million for anticipated revenue growth, an increase in accounts receivable of $2.3 million from higher sales, an increase in prepaid expenses and other current assets of $0.7 million, an increase in other receivables of $0.5 million, an increase in other assets of $0.4 million and a decrease of $1.6 million in accounts payable.

In 2021, cash used in operating activities was $46.3 million, attributable to a net loss of $71.2 million, partially offset by a net change in our net operating assets and liabilities of $5.9 million and non-cash charges of $30.7 million. Non-cash charges primarily consisted of $25.9 million in stock-based compensation, $2.6 million of depreciation and amortization, $1.2 million of net amortization of premiums on available-for-sales securities and $1.0 million of non-cash operating lease expense. The change in our net operating assets and liabilities was primarily due to an increase in inventory levels of $3.6 million, an increase in accounts receivable of $2.5 million and a decrease of $0.6 million in accrued research and development, which was partially offset by an increase in accounts payable of $1.6 million.

Investing Activities

In 2022, cash used in investing activities was $122.7 million, which related to purchases of available-for-sale securities, net of proceeds from maturities, of $112.6 million, in addition to $10.3 million in payments primarily for laboratory equipment.

In 2021, cash used in investing activities was $170.9 million, which related to purchases of available-for-sale securities, net of proceeds from maturities, of $164.0 million, in addition to $6.9 million in payments primarily for laboratory equipment.

Financing Activities

In 2022, cash provided by financing activities was $3.9 million. This was attributable to net proceeds from the exercise of stock options of $3.1 million and $0.8 million of proceeds from the issuance of common stock in connection with our employee stock purchase plan.

In 2021, cash provided by financing activities was $116.6 million. This was attributable to net proceeds of $103.0 million from issuance of common stock upon initial public offering, net of issuance costs, $11.4 million in short-swing profits from a beneficial owner and $1.9 million from the exercise of stock options.

Critical Accounting Policies, Significant Judgments and Use of Estimates

The discussion and analysis of our financial condition and results of operations is based on our consolidated financial statements, which have been prepared in accordance with United States generally accepted accounting principles. The preparation of these consolidated financial statements requires us to make estimates and assumptions that affect the reported amounts of assets, liabilities, and the disclosure of contingent assets and liabilities at the date of the consolidated financial statements, as well as revenue and expenses incurred during the reporting periods. Our estimates are based on our historical experience and on various other factors that we believe are reasonable under the circumstances, the results of which form the basis for making judgments about the carrying value of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions. We believe that the accounting policies discussed below are critical to understanding our historical and future performance, as these policies relate to the more significant areas involving management's judgments and estimates.

While our significant accounting policies are described in the notes to our consolidated financial statements, we believe that the following critical accounting policies are most important to understanding and evaluating our reported financial results.

Revenue Recognition

Our revenue is generated primarily from the sale of products and services. Product revenue consists of sales of an instrument with embedded software essential to the instrument's functionality and consumables as well as platform evaluation agreements. Service revenue primarily consists of revenue received from the generation and analysis of proteomic data on behalf of our customers.

We recognize revenue when control of our products and services is transferred to our customers in an amount that reflects the consideration we expect to receive from our customers in exchange for those products and services. This process involves identifying the contract with a customer, determining the performance obligations in the contract, determining the transaction price, allocating the transaction price to the distinct performance obligations in the contract, and recognizing revenue when the performance obligations have been satisfied. A performance obligation is considered distinct from other obligations in a contract when it provides a benefit to the customer either on its own or together with other resources that are readily available to the customer and is separately identified in the contract. We consider a performance obligation satisfied once we have transferred control of a good or service to the customer, meaning the customer has the ability to use and obtain the benefit of the good or service.

Revenue from product sales is recognized when control of the product is transferred, which is generally upon shipment to the customer. In instances where right of payment or transfer of title is contingent upon the customer's acceptance of the product, revenue is deferred until all acceptance criteria have been met. Revenue from services is recognized once the report is delivered to a customer, which is when the customer obtains benefit of the service.

Revenue is recorded net of discounts and sales taxes collected on behalf of governmental authorities. Customers are invoiced generally upon shipment, or upon order for services, and payment is typically due within 30 or 60 days.

Cash received from customers in advance of product shipment or providing services is recorded as a contract liability. Our contracts with our customer generally do not include rights of return.

At times,we may enter into arrangements with payment terms which exceed one year from the transfer of control of the product or service. In such cases, we assess whether the arrangement contains a significant financing component. If a significant financing component exists, the transaction price is adjusted for the financing portion of the arrangement, which is recorded as interest income over the payment term using the effective interest method. We do not assess whether a significant financing component exists when, at contract inception, the period between the transfer of control to a customer and final payment is one year or less.

We have elected the practical expedient to account for shipping and handling activities that occur after the customer has obtained control as a fulfillment activity. We expense incremental costs of obtaining a contract as and when incurred if the expected amortization period is one year or less or the amount is immaterial. We exclude from the transaction price all taxes assessed by a governmental authority on revenue-producing transactions that are collected by us from a customer.

We regularly enter into contracts that include various combinations of products and services which are generally distinct and accounted for as separate performance obligations. The transaction price is allocated to each performance obligation in proportion to its standalone selling price. We determine standalone selling price using average selling prices with consideration of current market conditions. If the product or service has no history of sales or if the sales volume is not sufficient, we rely upon prices set by management, adjusted for applicable discounts.

A portion of our revenue relates to lease arrangements. Standalone lease arrangements are outside the scope of Accounting Standards Codification (ASC) 606, *Revenue Contracts with Customer* and are therefore accounted for in accordance with ASC 842, *Leases*. Each of these contracts is evaluated as a lease arrangement, either as an operating lease or a sales-type finance lease using the lease classification guidance.

Stock-Based Compensation

We account for stock-based compensation by measuring and recognizing compensation expense for all share-based awards made to employees and non-employees based on estimated grant-date fair values. We use the straight-line method to allocate compensation cost to reporting periods over the requisite service period, which is generally the vesting period. We recognize actual forfeitures by reducing the stock-based compensation in the same period as the forfeitures occur. We estimate the fair value of share-based awards to employees and non-employees using the Black-Scholes option-pricing valuation model. The Black-Scholes model requires the input of subjective assumptions, including fair value of common stock, expected term, expected volatility, risk-free interest rate, and expected dividend yield, which are described in greater detail below.

Estimating the fair value of equity-settled awards as of the grant date using the Black-Scholes option pricing model is affected by assumptions regarding a number of complex variables. Changes in the assumptions can materially affect the fair value and ultimately how much stock-based compensation is recognized. These inputs are subjective and generally require significant analysis and judgment to develop. These inputs are as follows:

- Fair value of common stock—Prior to our IPO, there was no public market for our common stock. As such, the estimated fair value of our common stock and underlying stock options has been determined at each grant date by our board of directors, with input from management, based on the information known to us on the grant date and upon a review of any recent events and their potential impact on the estimated per share fair value of our common stock. As part of these fair value determinations, our board of directors obtained and considered valuation reports prepared by a third-party valuation firm in accordance with the guidance outlined in the American Institute of Certified Public Accountants Technical Practice Aid, *Valuation of Privately-Held-Company Equity Securities Issued as Compensation*. For valuations after the completion of our initial public offering, the fair value of each share of underlying common stock is based on the closing price of our Class A common stock as reported on the date of grant.

- Expected term—The expected term for options granted to employees and directors represents the average period that our options granted are expected to be outstanding and is determined using the simplified method (based on the mid-point between the weighted-average vesting date and the end of the contractual term). We have very limited historical information to develop reasonable expectations about future exercise patterns and post-vesting employment termination behavior for our stock option grants. The expected term for options granted to non-employees is the contractual term.
- Expected volatility—As we had no publicly available stock price information prior to our IPO and limited publicly available stock price information subsequent to our IPO, the expected volatility was estimated based on the historical average volatility for comparable publicly traded life sciences technology companies over a period equal to the expected term of the stock option grants. The comparable companies were chosen based on their similar size, life cycle stage, or area of specialty. We will continue to apply this process until enough historical information regarding the volatility of our own stock price becomes available.
- Risk-free interest rate—The risk-free interest rate is based on the U.S. Treasury zero coupon issues in effect at the time of grant for periods corresponding with the expected term of the options.
- Expected dividend yield—We have never paid dividends on our common stock and have no plans to pay dividends on our common stock. Therefore, we used an expected dividend yield of zero.

We will continue to use judgment in evaluating the expected volatility, expected terms, and interest rates utilized for our stock-based compensation calculations on a prospective basis. Assumptions we used in applying the Black-Scholes option-pricing model to determine the estimated fair value of our stock options granted involve inherent uncertainties and the application of significant judgment. As a result, if factors or expected outcomes change and we use significantly different assumptions or estimates, our equity-based compensation could be materially different.

Recent Accounting Pronouncements

See Note 2 to our consolidated financial statements included elsewhere in this Annual Report for more information about recent accounting pronouncements, the timing of their adoption, and our assessment, to the extent we have made one yet, of their potential impact on our financial condition of results of operations.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

Interest Rate Risk

We have exposure to interest rate risk that relates to our cash and cash equivalents and investments held in money market funds, U.S. Treasury securities, commercial paper and corporate securities. The goals of our investment policy are liquidity and capital preservation. We believe that we do not have any material exposure to changes in the fair value of these assets as a result of changes in interest rates due to the short-term nature of our cash and cash equivalents and investments.

Item 8. Financial Statements and Supplementary Data

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the shareholders and the Board of Directors of Seer, Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Seer, Inc. and subsidiaries (the "Company") as of December 31, 2022 and 2021, the related consolidated statements of operations and comprehensive loss, changes in stockholders' equity, and cash flows, for each of the two years in the period ended December 31, 2022, and the related notes (collectively referred to as the "financial statements"). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2022 and 2021, and the results of its operations and its cash flows for each of the two years in the period ended December 31, 2022, in conformity with accounting principles generally accepted in the United States of America.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audits, we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of the Company’s internal control over financial reporting. Accordingly, we express no such opinion.

Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical Audit Matter

The critical audit matter communicated below is a matter arising from the current-period audit of the financial statements that was communicated or required to be communicated to the audit committee and that (1) relates to accounts or disclosures that are material to the financial statements and (2) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the financial statements, taken as a whole, and we are not, by communicating the critical audit matter below, providing a separate opinion on the critical audit matter or on the accounts or disclosures to which it relates.

Revenue – Revenue Recognition – Product and Services - Refer to Notes 2 and 5 to the financial statements

Critical Audit Matter Description

The Company generates revenue from sales of products and services. The Company’s product, the Proteograph Product Suite, consists of an instrument with embedded software essential to the instrument’s functionality, and consumables as well as platform evaluation agreements. The Company’s services primarily consist of the generation and analysis of proteomic data. The Company recognizes revenue when control of the products and services are transferred to its customers in an amount that reflects the consideration it expects to be entitled to receive from its customers in exchange for those products and services. This process involves identifying the contract with a customer, determining performance obligations in the contract, determining the transaction price, allocating the

transaction price to the distinct performance obligations in the contract, and recognizing revenue when the performance obligations have been satisfied. For the year ended December 31, 2022, the Company recognized product and services revenue of $14.7 million.

The Company regularly enters into contracts that include various combinations of products and services, which are generally distinct and accounted for as separate performance obligations. A performance obligation is considered distinct from other obligations in a contract when it provides a benefit to the customer either on its own or together with other resources that are readily available to the customer and is distinct within the context of the contract. The Company considers a performance obligation satisfied once it has transferred control of a good or service to the customer, meaning the customer has the ability to direct the use and obtain substantially all the economic benefits from the good or service. In instances where right of payment or transfer of title is contingent upon the customer's acceptance of the product, revenue is deferred until all acceptance criteria have been met. The transaction price is allocated to each performance obligation in proportion to its standalone selling price. The Company determines the standalone selling price using average selling prices with consideration of current market conditions. If the product or service has no history of sales or if the sales volume is not sufficient, the Company relies upon prices set by management, adjusted for applicable discounts.

Given the significant judgments made by management to determine whether various combinations of products and services are distinct and accounted for as separate performance obligations, whether performance obligations have been satisfied, and the standalone selling price of performance obligations, performing audit procedures to evaluate the reasonableness of management's judgments in the recognition of product and services revenue required a high degree of auditor judgment and an increased extent of effort, including the involvement of more experienced engagement team members. We have identified the revenue recognition of product and services revenue a critical audit matter.

How the Critical Audit Matter Was Addressed in the Audit

Our audit procedures related to the significant judgments made by management in the recognition of products and services revenue included the following, among others:

- We tested the design and implementation of controls over the Company's revenue recognition process, including those over management's determination of distinct performance obligations, determination of the timing of revenue recognition when performance obligations are satisfied, and determination of the standalone selling prices of performance obligations.
- We evaluated the reasonableness of the Company's significant accounting policies related to product and services revenue recognition.
- We selected a sample of recorded product and services revenue transactions and performed the following procedures:
    - Obtained and read customer source documents such as contracts, master agreements, and/or amendments thereto, to evaluate if relevant contractual terms have been appropriately identified and considered by management in making revenue recognition judgments.
    - Evaluated management's application of the Company's accounting policy and tested revenue recognition for the distinct performance obligations by comparing management's judgments to the underlying source documents.
    - Tested the mathematical accuracy of management's calculations of product and services revenue.
    - Evaluated the appropriateness of management's determination of the timing of revenue recognition and obtained third party evidence of transfer of control of the products and services to the customer.
- We evaluated the reasonableness of management's determination of standalone selling prices by performing the following:

- Evaluated the application of the Company’s accounting policy and mathematical accuracy of the determined standalone selling prices.
- Tested the completeness and accuracy of the source data used in management’s calculations.

/s/ Deloitte and Touche LLP

San Francisco, California

March 6, 2023

We have served as the Company's auditor since 2018.

SEER, INC.
Consolidated Balance Sheets
(in thousands, except share and per share amounts)

	December 31, 2022	December 31, 2021
ASSETS		
Current assets:		
Cash and cash equivalents	$ 53,208	$ 232,813
Short-term investments	368,031	167,261
Accounts receivable, net	4,315	2,495
Related party receivables	1,804	1,283
Other receivables	899	366
Inventory	4,627	4,145
Prepaid expenses and other current assets	2,098	3,336
Total current assets	434,982	411,699
Long-term investments	5,157	93,186
Operating lease right-of-use assets	27,003	20,142
Property and equipment, net	19,408	13,087
Restricted cash	524	524
Other assets	855	501
Total assets	$ 487,929	$ 539,139
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	$ 2,104	$ 3,789
Accrued expenses	8,298	8,394
Deferred revenue	133	376
Operating lease liabilities, current	1,842	864
Other current liabilities	207	—
Total current liabilities	12,584	13,423
Operating lease liabilities, net of current portion	28,032	22,459
Other noncurrent liabilities	320	341
Total liabilities	40,936	36,223
Commitments and contingencies (Note 10)		
Stockholders' equity:		
Preferred stock, $0.00001 par value; 5,000,000 shares authorized as of December 31, 2022 and 2021; zero shares issued and outstanding as of December 31, 2022 and 2021	—	—
Class A common stock, $0.00001 par value; 94,000,000 shares authorized as of December 31, 2022 and 2021; 59,366,077 and 57,493,005 shares issued and outstanding as of December 31, 2022 and 2021, respectively;	1	1
Class B common stock, $0.00001 par value; 6,000,000 shares authorized as of December 31, 2022 and 2021; 4,044,969 and 4,522,478 shares issued and outstanding as of December 31, 2022 and 2021, respectively;	—	—
Additional paid-in capital	667,739	629,981
Accumulated other comprehensive loss	(1,251)	(536)
Accumulated deficit	(219,496)	(126,530)
Total stockholders' equity	446,993	502,916
Total liabilities and stockholders' equity	$ 487,929	$ 539,139

The accompanying notes are an integral part of these consolidated financial statements.

SEER, INC.
Consolidated Statements of Operations and Comprehensive Loss
(in thousands, except share and per share amounts)

	Year Ended December 31,	
	2022	**2021**
Revenue:		
Product	$ 8,557	$ 3,577
Service	913	500
Related party	5,215	2,317
Grant and other	808	223
Total revenue	15,493	6,617
Cost of revenue:		
Product	5,459	2,300
Service	495	42
Related party	1,989	863
Grant and other	457	—
Total cost of revenue	8,400	3,205
Gross profit	7,093	3,412
Operating expenses:		
Research and development	45,797	29,121
Selling, general and administrative	58,531	45,764
Total operating expenses	104,328	74,885
Loss from operations	(97,235)	(71,473)
Other income (expense):		
Interest income	4,602	326
Interest expense	—	(22)
Other expense	(333)	—
Total other income	4,269	304
Net loss	$ (92,966)	$ (71,169)
Other comprehensive loss:		
Unrealized loss on available-for-sale securities	(715)	(590)
Comprehensive loss	$ (93,681)	$ (71,759)
Net loss per share attributable to common stockholders, basic and diluted	$ (1.49)	$ (1.17)
Weighted-average common shares outstanding, basic and diluted	62,433,613	60,863,950

The accompanying notes are an integral part of these consolidated financial statements.

SEER, INC.
Consolidated Statements of Changes in Stockholders' Equity
(in thousands, except share amounts)

	Class A and Class B Common Stock		Additional Paid in Capital	Accumulated Deficit	Accumulated Other Comprehensive Income (Loss)	Total
	Shares	Amount				
Balance at December 31, 2020	59,261,051	$ 1	$ 486,915	$ (55,361)	$ 54	$ 431,609
Issuance of Class A common stock from exercise of options and release of restricted stock units	1,107,059	—	1,885	—	—	1,885
Repurchase of Class A common stock	(20,556)	—	—	—	—	—
Vesting of early exercised stock options and restricted common stock	—	—	470	—	—	470
Issuance of Class A common stock upon follow-on offering, net of issuance costs of $7,591	1,650,000	—	102,959	—	—	102,959
Issuance of Class A common stock in connection with employee stock purchase plan	17,929	—	422	—	—	422
Return of profit	—	—	11,403	—	—	11,403
Stock-based compensation	—	—	25,927	—	—	25,927
Other comprehensive loss	—	—	—	—	(590)	(590)
Net loss	—	—	—	(71,169)	—	(71,169)
Balance at December 31, 2021	62,015,483	$ 1	$ 629,981	$ (126,530)	$ (536)	$ 502,916
Issuance of Class A common stock from exercise of options and release of restricted stock units	1,293,905	—	3,138	—	—	3,138
Repurchase of Class A common stock	(5,841)	—	—	—	—	—
Vesting of early exercised stock options and restricted common stock	—	—	172	—	—	172
Issuance of Class A common stock in connection with employee stock purchase plan	107,499	—	775	—	—	775
Stock-based compensation	—	—	33,673	—	—	33,673
Other comprehensive loss	—	—	—	—	(715)	(715)
Net loss	—	—	—	(92,966)	—	(92,966)
Balance at December 31, 2022	63,411,046	$ 1	$ 667,739	$ (219,496)	$ (1,251)	$ 446,993

The accompanying notes are an integral part of these consolidated financial statements.

SEER, INC.
Consolidated Statements of Cash Flows
(in thousands)

	Year Ended December 31,	
	2022	**2021**
OPERATING ACTIVITIES		
Net loss	$ (92,966)	$ (71,169)
Adjustments to reconcile net loss to net cash used in operating activities:		
Stock-based compensation	33,673	25,927
Depreciation and amortization	3,942	2,558
Loss on disposal of property and equipment	332	—
Net amortization of premium on available-for-sale securities	(833)	1,197
Provision for inventory excess and obsolescence	507	—
Non-cash operating lease expense	1,959	1,005
Changes in operating assets and liabilities:		
Accounts receivable, net	(1,820)	(2,495)
Related party receivables	(521)	(1,184)
Other receivables	(533)	(203)
Prepaid expenses and other current assets	(727)	(2,884)
Inventory	(1,590)	(3,594)
Other assets	(354)	(94)
Accounts payable	(1,553)	1,603
Deferred revenue	(243)	126
Deferred rent	—	—
Accrued expenses	40	2,277
Accrued research and development	—	627
Operating lease liabilities	(304)	91
Other current liabilities	207	—
Other noncurrent liabilities	4	(135)
Net cash used in operating activities	(60,780)	(46,347)
INVESTING ACTIVITIES		
Purchases of property and equipment	(10,265)	(6,922)
Proceeds from disposal of property and equipment	170	—
Purchase of available-for-sale securities	(366,268)	(279,956)
Proceeds from maturities of available-for-sale securities	253,645	116,000
Net cash used in investing activities	(122,718)	(170,878)
FINANCING ACTIVITIES		
Proceeds from issuance of common stock upon follow-on public offering, net of issuance costs	—	102,959
Proceeds from return of profit	—	11,403
Repurchase of Class A common stock	(20)	(35)
Proceeds from exercise of Class A common stock options including early exercised options	3,138	1,885
Proceeds from issuance of common stock in connection with employee stock purchase plan	775	422
Net cash provided by financing activities	3,893	116,634
Net decrease in cash, cash equivalents and restricted cash	(179,605)	(100,591)
Cash, cash equivalents and restricted cash, beginning of period	233,337	333,928
Cash, cash equivalents and restricted cash, end of period	$ 53,732	$ 233,337
SUPPLEMENTAL DISCLOSURE OF CASH FLOW INFORMATION		
Cash paid for income taxes	$ 232	$ 645
SUPPLEMENTAL DISCLOSURE OF NON-CASH ACTIVITIES		
Property and equipment purchases included in accounts payable	$ 54	$ 186
Property and equipment purchases included in accrued expenses	$ 300	$ 269
Inventory transferred to property and equipment	$ 928	$ —
Lease liability obtained in exchange for right-of-use assets	$ 6,855	$ 23,232

The accompanying notes are an integral part of these consolidated financial statements.

1. ORGANIZATION AND DESCRIPTION OF THE BUSINESS

Seer, Inc. (the Company) was incorporated in Delaware on March 16, 2017, and is headquartered in Redwood City, California. In December 2020, the Company formed the wholly-owned subsidiary, Seer Securities Corporation, located in Massachusetts. On May 25, 2022, the Company incorporated Seer Bio UK Limited, a wholly-owned subsidiary, under the laws of United Kingdom. The Company is a life sciences company focused on capturing deep molecular insights from the proteome to enable novel insights and breakthroughs in the understanding of biology and disease. Since inception, the Company has devoted its efforts principally to research, development and commercialization of its technology and products, recruiting management and technical staff, acquiring operating assets, and raising capital.

The Company is subject to a number of risks, similar to other early-stage life science companies, including, but not limited to, development and commercialization of its products, market acceptance of its products, development by its competitors of new technological innovations, protection of its intellectual property, and raising additional capital.

Public Offering

On February 1, 2021, the Company completed an underwritten public offering of 1,650,000 shares of its Class A common stock at a public offering price of $67.00 per share. The Company received net proceeds of $103.0 million after deducting offering costs, underwriting discounts, and commissions of $7.6 million.

Liquidity

As of December 31, 2022, the Company has incurred significant losses and has had negative cash flows from operations. As of December 31, 2022, the Company had cash and cash equivalents and investments of $426.4 million and an accumulated deficit of $219.5 million. Management expects to continue to incur significant expenses for the foreseeable future and to incur operating losses in the near term while the Company makes investments to support its anticipated growth. The Company believes that its cash and cash equivalents and investments as of December 31, 2022 provides sufficient capital resources to continue its operations for at least 12 months from the issuance date of the accompanying consolidated financial statements.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES AND BASIS OF PRESENTATION

Basis of Presentation and Principles of Consolidation

The consolidated financial statements have been prepared in accordance with accounting principles generally accepted in the United States of America (U.S. GAAP). The Company has issued shares of Class A common stock herein referred to as “Class A common stock” or “Class A” and Class B common stock herein referred to as “Class B common stock” or “Class B,” and collectively as “common stock.” The consolidated financial statements include the accounts of Seer, Inc. and its wholly-owned subsidiaries. All intercompany transactions and balances have been eliminated.

Use of Estimates

The preparation of consolidated financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts of assets, liabilities, and the disclosure of contingent assets and liabilities at the date of the consolidated financial statements and the reported amounts of expenses during the reporting period. On an ongoing basis, the Company evaluates its estimates and assumptions, including, but not limited to, those related to the determination of stand-alone selling price for revenue recognition, the fair value of common stock, stock-based compensation, accrued research and development expenses, allowance for credit losses for accounts receivables and unbilled receivables, inventory valuation, receivable from investment in sales-type leases, operating lease right-of use assets and liabilities, useful lives and valuation of property and equipment, income tax uncertainties, and tax valuation allowances.

Management bases its estimates on historical experience and on various other assumptions that are believed to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying

values of assets and liabilities that are not readily apparent from other sources. Actual results may differ materially from those estimates.

Concentration of Credit Risk and Other Risks and Uncertainties

Financial instruments that potentially subject the Company to significant concentrations of credit risk consist primarily of cash, cash equivalents, and investments. The Company maintains bank deposits in federally insured financial institutions, and these deposits may exceed federally insured limits. The Company is exposed to credit risk in the event of default by the financial institutions holding its cash and cash equivalents and issuers of investments to the extent recorded in the consolidated balance sheets.

The Company recognized revenue from a related party that represented 32% and 35% of the Company's total revenue in 2022 and 2021, respectively. In addition, the Company recognized revenue that represented 12% of total revenue from one customer in 2021.

In fiscal year 2022, 26% of the total revenue was generated outside of the United States, primarily from countries in Asia and Europe. In fiscal year 2021, 21% of the total revenue was generated outside of the United States, primarily from countries in Asia.

As of December 31, 2022, there were three customers which represented 25%, 12%, and 10% of the total accounts receivable balance, including related party receivables. As of December 31, 2021, there were three customers which represented 34%, 23%, and 19% of the total accounts receivable balance, including related party receivables.

The Company is subject to a number of risks similar to other early-stage life science companies, including, but not limited to its competitors developing new technological innovations, the need to successfully commercialize and gain market acceptance of the Company's products, protection of its proprietary technology, and the need to secure and maintain adequate product inventory through its own manufacturing and through manufacturing arrangements with third parties. If the Company does not successfully commercialize or partner any of its products, it will be unable to generate product revenue sufficient to achieve profitability.

Impact of the COVID-19 Pandemic

As a result of the COVID-19 pandemic (COVID-19), the Company's operations experienced disruptions and restrictions on employees' ability to work and on the hiring of additional personnel. The Company's personnel has experienced delays in accessing customers in certain countries with strict COVID-19 policies to provide installation and training services. Continued disruptions from COVID-19 could harm the Company's operations and the Company cannot anticipate all the ways in which it could be adversely impacted by health epidemics such as COVID-19. The Company continues to monitor and assess the effects of the COVID-19 pandemic on its business, financial condition, results of operations and cash flows.

Variable Interest Entities and Voting Interest Entities

The Company consolidates those entities in which it has direct, or indirect controlling financial interest based on either the Variable Interest Entity (VIE) model or the Voting Interest Entity (VOE) model.

VIEs are primarily entities that, by design, either lack sufficient equity-at-risk to finance their activities without additional subordinated financial support from other parties or whose equity-at-risk holders, as a group, lack one or more of the following characteristics: (i) direct or indirect ability to make decisions (ii) obligation to absorb expected losses or (iii) right to receive expected residual returns. VIEs must be evaluated quantitatively and qualitatively to determine the primary beneficiary, which is the reporting entity that has (a) the power to direct activities of a VIE that most significantly impact the VIE's economic performance and (b) the obligation to absorb losses of the VIE that could potentially be significant to the VIE or the right to receive benefits from the VIE that could potentially be significant to the VIE. The primary beneficiary of a VIE is required to consolidate the assets and liabilities of the VIE. To determine a VIE's primary beneficiary, the Company performs a qualitative assessment to determine which party, if any, has the power to direct activities of the VIE and the obligation to absorb its losses or receive its

benefits. This assessment involves identifying the activities that most significantly impact the VIE's economic performance and determining whether the Company, or another party, have the power to direct those activities.

To assess whether the Company has the power to direct the activities of a VIE that most significantly impact the VIE's economic performance, the Company considers all the facts and circumstances, including its role in establishing the VIE and its ongoing rights and responsibilities. In general, the parties that make the most significant decisions affecting the VIE (management and representation on the board of directors) and have the right to unilaterally remove those decision-makers are deemed to have the power to direct the activities of a VIE.

To assess whether the Company has the obligation to absorb losses of the VIE or the right to receive benefits from the VIE that could potentially be significant to the VIE, the Company considers all of its economic interests, which typically include equity investments in preferred and common stock that are deemed to be variable interests in the VIE. This assessment requires the Company to apply judgment in determining whether these interests, in the aggregate, are considered potentially significant to the VIE. Factors considered in assessing the significance include: the design of the VIE, including its capitalization structure; subordination of interests; payment priority; relative share of interests held across various classes within the VIE's capital structure; and the reasons why the interests are held by the Company.

At the VIE's inception, the Company determines whether it is the primary beneficiary and if the VIE should be consolidated based on the facts and circumstances. The Company then performs on-going reassessments of the VIE based on reconsideration events and reevaluates whether a change to the consolidation conclusion is required at each reporting period.

Entities that do not qualify as a VIE are assessed for consolidation under the VOE model. Under the VOE model, the Company consolidates the entity if it determines that it, directly or indirectly, has greater than 50% of the voting shares and that other equity holders do not have substantive voting, participating or liquidation rights.

Equity Method Investments

The Company utilizes the equity method to account for investments when it possesses the ability to exercise significant influence, but not control, over the operating and financial decisions of the investee.

In applying the equity method, the Company records the investment at cost and subsequently increases or decreases the carrying amount of the investment by its proportionate share of the net earnings or losses and other comprehensive income of the investee based on its percentage of common stock ownership during the respective reporting period. Payments to investees such as additional investments and payments from investees such as dividends are recorded as adjustments to the carrying value of the investment. In the event that net losses of the investee reduce the carrying amount to zero, no additional net losses are recorded unless the Company makes additional investment in the investee, has guaranteed obligations of the investee, or is otherwise committed to provide further financial support for the investee.

As of December 31, 2022, the Company has an equity method investment in PrognomiQ. Refer to Note 11 for additional information.

Cash, Cash Equivalents and Restricted Cash

The Company considers all highly liquid investments with an original maturity of three months or less at the date of purchase to be cash equivalents. As of December 31, 2022 and 2021, all amounts recorded as cash and cash equivalents consist of money market funds and are stated at fair value.

Restricted cash as of December 31, 2022 and 2021 represents cash held by a financial institution as security for a letter of credit issued to the lessor for one of the Company's operating leases and is classified as noncurrent.

The following table provides a reconciliation of cash, cash equivalents, and restricted cash reported within the consolidated balance sheets that sum to the total of the same amounts shown in the consolidated statements of cash flows (in thousands):

	December 31,	
	2022	2021
Cash and cash equivalents	$ 53,208	$ 232,813
Restricted cash	524	524
Total cash, cash equivalents and restricted cash	$ 53,732	$ 233,337

Segment Information

The Company operates as a single operating segment. The Company's chief operating decision maker, its Chief Executive Officer, manages the Company's operations on a consolidated basis for the purposes of allocating resources, making operating decisions and evaluating financial performance.

Investments

The Company has designated all investments, which includes U.S. Treasury securities and commercial paper as available-for-sale, and therefore, such investments are reported at fair value, with unrealized gains and losses excluded from earnings and reported as a component of other comprehensive loss. The cost of available-for-sale securities is adjusted for the amortization of premiums and accretion of discounts to expected maturity. Such amortization and accretion are included in other income (expense) on the consolidated statements of operations and comprehensive loss. Realized gains and losses and interest income on available-for-sale securities are also included in other income (expense). The cost of securities sold is based on the specific identification method. The Company determines the appropriate classification of its investments in debt securities at the time of purchase and reevaluates such designation at each balance sheet date. As of December 31, 2022, the Company classifies its available-for-sale securities as short-term investments or long-term investments based on the remaining contractual maturity of the securities.

All of the Company's investments are subject to a periodic impairment review. The Company recognizes an impairment charge when a decline in the fair value of its investments below the cost basis is judged to be other than temporary. Factors considered in determining whether a loss is temporary include the length of time and extent to which an investment's fair value has been less than its cost basis, the financial condition and near-term prospects of the investee, extent of the loss related to credit of the issuer, the expected cash flows from the security, the Company's intent to sell the security and whether or not the Company will be required to sell the security before the recovery of its amortized cost. During the year ended December 31, 2022, the Company did not recognize any impairment charges on its investments.

Any unrealized losses on available-for-sale debt securities that are attributed to credit risk are recorded to the consolidated statements of operations and comprehensive loss through an allowance for credit losses. During the year ended December 31, 2022, the Company did not recognize any such impairment charges on its investments.

Accounts Receivable, Net

Accounts receivable consist of amounts due from customers for the sales of products and services, net of any allowance for credit losses. The Company's expected loss allowance methodology for receivables is developed using its historical collection experience, current and future economic market conditions and a review of the current aging status and financial condition of its customers. Balances are written off when they are ultimately determined to be uncollectible. There was $30,000 and no allowance for credit losses related to accounts receivable as of December 31, 2022 and 2021, respectively.

Inventory

Inventory is recorded at the lower of standard cost, which approximates actual cost on a weighted-average basis, or net realizable value, on a first-in, first-out basis. Provisions for slow-moving, excess or obsolete inventories are recorded when required to reduce inventory values to their estimated net realizable values based on product expiration, development plans, or quality issues. The Company writes down specifically identified unusable, obsolete, slow-moving or known unsalable inventory in the period that it is first recognized by using a number of factors including product expiration dates, open and unfulfilled orders and sales forecasts. Any write-down of its inventory to net realizable value establishes a new cost basis and will be maintained even if certain circumstances suggest that the inventory is recoverable in subsequent periods. Costs associated with the write-down of inventory are recorded to cost of revenue on the Company's consolidated statements of operations.

Property and Equipment

Property and equipment are recorded at cost, net of accumulated depreciation and amortization. Depreciation is recorded using the straight-line method over the estimated useful lives of the assets. Estimated useful lives for financial reporting purposes are as follows: laboratory equipment and furniture and fixtures, five years and computer equipment and software, three years. Leasehold improvements are capitalized and amortized over the shorter of the lease term or the estimated useful life of the related asset. Major replacements and improvements are capitalized, while general repairs and maintenance are expensed as incurred. Construction-in-process assets consist primarily of tools and equipment that have not yet been placed in service. These assets are stated at cost and are not depreciated. Once the assets are placed into service, assets are reclassified to the appropriate asset class on their nature and depreciated in accordance with the useful lives above. When assets are retired or otherwise disposed of, the cost and related accumulated depreciation and amortization are removed from the consolidated balance sheet and any resulting gain or loss is included as a part of income (loss) from operations within the consolidated statements of operations and comprehensive loss.

Impairment of Long-Lived Assets

The Company evaluates the carrying amount of its long-lived assets whenever events or changes in circumstances indicate that the assets may not be recoverable. If indicators of impairment exist and the undiscounted future net cash flows expected to be generated by such assets are less than the carrying amount of the asset, an impairment loss is recorded to write the asset down to its estimated fair value based on a discounted future cash flow approach or quoted market values. There have been no such impairment losses for the periods presented.

Leases

The Company adopted Accounting Standards Codification (ASC) Topic 842, *Leases* (ASC 842) during the fourth quarter of 2021 effective as of January 1, 2021. Under ASC 842, the Company determines if an arrangement is or contains a lease at contract inception.

Operating lease right-of-use (ROU) assets represent the Company's right to use an underlying asset for the lease term and lease liabilities represent the Company's obligation to make lease payments arising from the lease. Operating lease ROU assets and liabilities are recognized based on the present value of lease payments over the lease term at the commencement date of the lease. ROU assets also include any initial direct costs incurred and any lease payments made at or before the lease commencement date, less any lease incentive received. The Company uses its incremental borrowing rate in determining the present value of lease payments based on the information available at the date of lease commencement. The incremental borrowing rate reflects the rate of interest that a lessee would have to pay to borrow, on a collateralized basis over a similar term, an amount equal to the lease payments in a similar economic environment. Lease expense for an operating lease is recognized on a straight-line basis over the lease term.

The Company elected to not separate non-lease components from the associated lease components and to not recognize ROU assets and lease liabilities for leases with a term of twelve months or less. Variable lease payments

are primarily related to property taxes, insurance and common area maintenance, and are recognized as lease costs when incurred.

A portion of the revenue relates to lease arrangements where the Company is the lessor. Standalone lease arrangements are outside the scope of ASC Topic 606, *Revenue Contracts with Customers*, and are therefore accounted for in accordance with ASC Topic 842. Each of these contracts is evaluated as a lease arrangement, either as an operating lease or a sales-type lease using the lease classification guidance. In a lease arrangement that is a multiple-element arrangement that contains equipment leases and the supply of consumables, the revenue associated with the instrument rental is treated under the lease accounting standard ASC 842, whereas the revenue associated with the consumables, the non-lease component, is recognized in accordance with the ASC 606 revenue standard.

The total consideration in a lease arrangement is allocated between lease and non-lease components on their relative stand-alone selling prices. The stand-alone selling price is based on the price the Company would sell that promised good or service separately to a customer. If a stand-alone price is not available for a component, it should be estimated using the best information available.

Revenue Recognition

The Company generates revenue from sales of products and services. The Company's product, the Proteograph Product Suite, consists of an instrument with embedded software essential to the instrument's functionality, and consumables as well as platform evaluation agreements. The Company began recognizing revenue from shipments of its Proteograph Product Suite during the second quarter of 2021. The service revenue primarily consists of revenue received from the generation and analysis of proteomic data on behalf of the customer and revenue is recognized upon delivery of the reports.

The Company recognizes revenue when control of the products and services is transferred to its customers in an amount that reflects the consideration it expects to be entitled to receive from its customers in exchange for those products and services. This process involves identifying the contract with a customer, determining the performance obligations in the contract, determining the transaction price, allocating the transaction price to the distinct performance obligations in the contract, and recognizing revenue when the performance obligations have been satisfied. A performance obligation is considered distinct from other obligations in a contract when it provides a benefit to the customer either on its own or together with other resources that are readily available to the customer and is distinct with the context of the contract. The Company considers a performance obligation satisfied once it has transferred control of a good or service to the customer, meaning the customer has the ability to direct the use and obtain substantially all the economic benefits from the good or service.

Revenue is recorded net of discounts and sales taxes collected on behalf of governmental authorities. Customers are invoiced generally upon shipment, or upon order for services, and payment is typically due within 30 or 60 days. Cash received from customers in advance of product shipment or providing services is recorded as a contract liability. The Company's contracts with its customers generally do not include rights of return.

At times, the Company may enter into arrangements with payment terms which exceed one year from the transfer of control of the product or service. In such cases, the Company assesses whether the arrangement contains a significant financing component. If a significant financing component exists, the transaction price is adjusted for the financing portion of the arrangement, which is recorded as interest income over the payment term using the effective interest method. The Company does not assess whether a significant financing component exists when, at contract inception, the period between the transfer of control to a customer and final payment is one year or less.

The Company elected the practical expedient to account for shipping and handling activities that occur after the customer has obtained control as a fulfillment activity and not a separate performance obligation. The Company expenses incremental costs of obtaining a contract as and when incurred if the expected amortization period is one year or less or the amount is immaterial. The Company excludes from the transaction price all taxes assessed by a governmental authority on revenue-producing transactions that are collected by the Company from a customer.

The Company regularly enters into contracts that include various combinations of products and services, which are generally distinct and accounted for as separate performance obligations. The transaction price is allocated to each

performance obligation in proportion to its standalone selling price. The Company determines the standalone selling price using average selling prices with consideration of current market conditions. If the product or service has no history of sales or if the sales volume is not sufficient, the Company relies upon prices set by management, adjusted for applicable discounts.

Grant and Other Revenue

Grant revenue represents funding under cost reimbursement programs from federal foundation sources for qualified research and development activities performed by the Company and are not based on estimates that are subject to change. Grants received are assessed to determine if the agreement should be accounted for as an exchange transaction or a contribution. An agreement is accounted for as a contribution if the resource provider does not receive commensurate value in return for the assets transferred. Such amounts are recorded as revenue as grant-funded activities are performed up to the amount of expenses incurred. Any advance funding payments are recorded as deferred revenue until the activities are performed.

The Company recognizes revenue for research and development services contracts when control is transferred, which is upon completion of the services and when results of the services have been transferred to the customer. Upfront payments and fees received are recorded as deferred revenue until the Company performs its obligations under its arrangements. Amounts payable to the Company are recorded as other receivables when its right to consideration is unconditional.

A portion of the Company's revenue relates to lease arrangements. Standalone lease arrangements are outside the scope of ASC 606 and are therefore accounted for in accordance with ASC 842. Each of these contracts is evaluated as a lease arrangement, either as an operating lease or a sales-type lease using the lease classification guidance.

Shipping and Handling Costs

Shipping and handling costs are included in cost of revenue.

Research and Development Expenses

Research and development costs, which includes costs associated with performing services under research and development service contracts and research and development of the Company's technology and product candidates, are expensed as incurred. Research and development expenses primarily consist of employee compensation, including stock-based compensation, and related benefits, laboratory supplies, consulting costs, costs related to clinical studies for the collection of biological samples for research use and allocated costs, rent, depreciation, information technology, and utilities. Advance payments for goods or services for future research and development activities are deferred as prepaid expenses and expensed as the goods are delivered or the related services are performed.

Accrued Research and Development Expenses

Goods or services for research and development activities that have not yet been invoiced are recorded as liabilities within accrued research and development on the consolidated balance sheets. The Company estimates clinical discovery studies expenses based on the services performed related to clinical studies for the collection of biological samples for research use. In accruing service fees, the Company estimates the period over which services will be performed and the level of effort to be expended in each period. These estimates are based on communications with the service provider and the Company's estimates of services performed based on information available at each balance sheet date determined through analysis with internal personnel and external service providers as to the progress or stage of completion of the associated services. Although the Company does not expect its estimates to be materially different from amounts actually incurred, the Company's estimate of the status and timing of services performed relative to the actual status and timing of services performed may vary. Through December 31, 2022, there have been no material differences from the Company's estimated accrued research and development expenses to actual expenses.

General and Administrative

General and administrative expenses include employee compensation, including stock-based compensation, and related benefits for executive management, finance, legal, administration and human resources, allocated costs, including rent, depreciation, information technology, insurance, utilities, professional service fees, and other general overhead costs to support the Company's operations.

Stock-Based Compensation

The Company accounts for stock-based compensation, including from restricted common stock awards (RSAs), grants of restricted stock units (RSUs), and stock options that may be settled in shares of our common stock, based on the fair values of the equity instruments issued. The fair value is determined on the measurement date, which is generally the date of grant. The fair value of RSAs is the difference between the fair value of the underlying stock at the measurement date and the purchase price. The fair value of RSUs is the fair value of the underlying stock at the measurement date. The fair value for our stock option awards is determined at the grant date using the Black-Scholes valuation model. For share-based payment awards that vest subject to the satisfaction of a service requirement, the fair value of the awards is recognized as expense on a straight-line basis over the requisite service period in which the awards are expected to vest. For share-based payment awards with performance-based vesting conditions, the fair value of the awards is recognized as expense using the accelerated attribution method over the vesting period. Forfeitures are accounted for in the period in which they occur. Share-based payment awards that include a service condition and a performance condition are expected to vest when the performance condition is probable of being met.

The Black-Scholes model considers several variables and assumptions in estimating the fair value of stock-based awards that require judgment, for which changes if they occur can materially affect the resulting estimates of fair value. These assumptions include the per share fair value of the underlying common stock, exercise price, expected term, risk-free interest rate, expected annual dividend yield, and the expected stock price volatility over the expected term as follows:

Fair Value of Common Stock

For grants prior to the Company's IPO in December 2020, the grant-date fair market value of the shares of common stock underlying stock options was determined by the Company's Board of Directors with assistance of third-party valuation specialists. Because there was no public market for the Company's common stock, the Board of Directors exercised reasonable judgment and considered a number of objective and subjective factors to determine the best estimate of the fair market value, which include important developments in the Company's operations, the prices at which the Company sold shares of its convertible preferred stock, the rights, preferences and privileges of the Company's convertible preferred stock relative to those of the Company's common stock, actual operating results, financial performance, external market conditions in the life sciences industry, general U.S. market conditions, equity market conditions of comparable public companies, and the lack of marketability of the Company's common stock. For all grants subsequent to the IPO, the fair value of common stock was determined by using the closing price per share of common stock as reported on the Nasdaq Global Select Market.

Expected Volatility

The Company had no publicly available stock price information prior to its IPO and limited publicly available stock price information subsequent to its IPO and therefore the Company has used the historical volatility of the stock price of similar publicly traded peer companies. The historical volatility is calculated based on a period of time commensurate with the expected term assumptions.

Expected Term

For stock options granted to employees and directors, the expected term is calculated using the simplified method for "plain vanilla" stock option awards. The expected term for stock options granted to non-employees is the contractual term.

Risk-Free Interest Rate

The risk-free interest rate is based on the yield available on U.S. Treasury zero-coupon issues similar in duration to the expected term of the equity-settled award.

Expected Dividends

The expected dividend yield is assumed to be zero as the Company has never paid dividends and has no current plans to pay dividends on its common stock.

Income Taxes

The Company accounts for income taxes using the asset and liability method. The Company recognizes deferred tax assets and liabilities for the expected future tax consequences of events that have been included in the consolidated financial statements or tax returns. Deferred tax assets and liabilities are determined based on the difference between the financial statement and tax basis of assets and liabilities using enacted tax rates in effect for the year in which the differences are expected to reverse.

A valuation allowance is recorded for deferred tax assets if it is more likely than not that some portion or all of the deferred tax assets will not be realized. In evaluating the ability to recover its deferred income tax assets, the Company considers all available positive and negative evidence, including its operating results, ongoing tax planning, and forecasts of future taxable income on a jurisdiction-by-jurisdiction basis. In the event the Company determines that it would be able to realize its deferred income tax assets in the future in excess of their net recorded amount, it would make an adjustment to the valuation allowance that would reduce the provision for income taxes. Conversely, in the event that all or part of the net deferred tax assets are determined not to be realizable in the future, an adjustment to the valuation allowance would increase the provision for income taxes in the period when such determination is made.

The Company records uncertain tax positions in accordance with ASC 740, *Income Taxes* on the basis of a two-step process in which (1) we determine whether it is more likely than not that the tax positions will be sustained on the basis of the technical merits of the position and (2) for those tax positions that meet the more-likely-than-not recognition threshold, we recognize the largest amount of tax benefit that is more likely than 50 percent likely to be realized. Interest and penalties related to unrecognized tax benefits are included within the provision for income tax. For the years ended December 31, 2022 and 2021, there were no interest and penalties.

Net Loss Per Share Attributable to Common Stockholders

Net loss per share of common stock is computed using the two-class method required for multiple classes of common stock and participating securities based upon their respective rights to receive dividends as if all income for the period has been distributed. The rights, including the liquidation and dividend rights and sharing of losses, of the Class A and Class B common stock are identical, other than voting rights. As the liquidation and dividend rights and sharing of losses are identical, the undistributed earnings are allocated on a proportionate basis and the resulting net loss per share attributed to common stockholders is therefore the same for Class A and Class B common stock on an individual or combined basis.

The Company also considers any shares issued on the early exercise of stock options subject to repurchase to be participating securities because holders of such shares have non-forfeitable dividend rights in the event a dividend is paid on common stock. The holders of early exercised shares subject to repurchase do not have a contractual obligation to share in losses.

Basic net loss per share attributable to common stockholders is calculated by dividing the net loss attributable to common stockholders by the weighted-average number of shares of common stock outstanding during the period, adjusted for outstanding shares that are subject to repurchase.

Diluted net loss per share is computed by giving effect to all potentially dilutive securities outstanding for the period using the treasury stock method or the if-converted method based on the nature of such securities. For periods in which the Company reports net losses, diluted net loss per common share attributable to common stockholders is the

same as basic net loss per common share attributable to common stockholders, because potentially dilutive common shares are not assumed to have been issued if their effect is anti-dilutive.

Commitments and Contingencies

Liabilities for loss contingencies arising from claims, assessments, litigation, fines, penalties, and other sources are recorded when it is probable that a liability has been incurred and the amount can be reasonably estimated. Legal costs incurred in connection with loss contingencies are expensed as incurred.

Comprehensive Loss

Comprehensive loss is comprised of net loss and changes in accumulated other comprehensive loss on the Company's available-for-sale investments related to unrealized gains and losses.

Fair Value Measurement

Fair value is defined as the exchange price that would be received for an asset or paid to transfer a liability, or an exit price, in the principal or most advantageous market for that asset or liability in an orderly transaction between market participants on the measurement date. Fair value measurement establishes a fair value hierarchy that requires an entity to maximize the use of observable inputs, where available, and minimize the use of unobservable inputs when measuring fair value.

The Company determined the fair value of financial assets and liabilities using the fair value hierarchy that describes three levels of inputs that may be used to measure fair value, as follows:

Level 1—Quoted prices in active markets for identical assets and liabilities;

Level 2—Inputs other than Level 1 that are observable, either directly or indirectly, such as quoted prices for similar assets or liabilities, quoted prices in markets that are not active, or other inputs that are observable or can be corroborated by observable market data for substantially the full term of the assets or liabilities; and

Level 3—Unobservable inputs that are supported by little or no market activity and that are significant to the fair value of the assets or liabilities.

To the extent that the valuation is based on models or inputs that are less observable or unobservable in the market, the determination of fair value requires more judgment. Accordingly, the degree of judgment exercised by the Company in determining fair value is greatest for instruments categorized in Level 3. A financial instrument's level within the fair value hierarchy is based on the lowest level of any input that is significant to the fair value measurement.

Prior Period Reclassifications

The Company included accrued research and development within accrued expenses for the prior period in order to conform to current year presentation for the Company's consolidated balance sheets. This reclassification had no effect on the Company's previously reported financial position.

Recently Adopted Accounting Pronouncements

In November 2021, the FASB issued Accounting Standards Update (ASU) No. 2021-10, *Government Assistance (ASC Topic 832): Disclosures by Business Entities about Government Assistance,* which contains amendments that require annual disclosures about government that are accounted for by applying a grant or contribution accounting model. The amendments set forth in this ASU are effective for all entities for annual periods beginning after December 15, 2021. Early application of the amendments in this ASU is permitted. The Company adopted this standard prospectively on January 1, 2022, which did not have a material impact on its financial statements as of the adoption date.

3. FAIR VALUE MEASUREMENTS AND FAIR VALUE OF FINANCIAL INSTRUMENTS

The following tables set forth the fair value of the Company's financial assets that were measured at fair value on a recurring basis by level within the fair value hierarchy (in thousands).

	December 31, 2022			
	Level 1	Level 2	Level 3	Total
Assets:				
Cash equivalents:				
Money market funds	$ 53,208	$ —	$ —	$ 53,208
Total cash equivalents	53,208	—	—	53,208
Investments:				
U.S. Treasury securities	—	227,692	—	227,692
U.S. Non-Treasury securities	—	10,702	—	10,702
Commercial paper	—	55,433	—	55,433
Corporate debt securities	—	79,361	—	79,361
Total investments	—	373,188	—	373,188
Total assets measured at fair value	$ 53,208	$ 373,188	$ —	$ 426,396

	December 31, 2021			
	Level 1	Level 2	Level 3	Total
Assets:				
Cash equivalents:				
Money market funds	$ 232,813	$ —	$ —	$ 232,813
Total cash equivalents	232,813	—	—	232,813
Investments:				
U.S. Treasury securities	—	260,447	—	260,447
Total investments	—	260,447	—	260,447
Total assets measured at fair value	$ 232,813	$ 260,447	$ —	$ 493,260

There were no financial liabilities measured at fair value. The Company classifies money market funds within Level 1 of the fair value hierarchy because they are valued using quoted market prices. The Company classifies its investments in U.S. Treasury securities (Treasury bills, Treasury notes, and Treasury bonds) as Level 2 instruments and obtains fair value from an independent pricing service, which may use quoted market prices for identical or comparable instruments or model-driven valuations using observable market data or inputs corroborated by observable market data.

The carrying amount of the Company's accounts receivable, other receivables, prepaid expenses and other current assets, accounts payable, and accrued expenses approximate fair value due to their short maturities.

The following is a summary of the Company's cash equivalents and investments and the gross unrealized holding gains and losses (in thousands):

	December 31, 2022			
	Amortized Cost Basis	Unrealized Gains	Unrealized Losses	Fair Value
Assets:				
Cash equivalents:				
Money market funds	$ 53,208	$ —	$ —	$ 53,208
Total cash equivalents	53,208	—	—	53,208
Investments:				
U.S. Treasury securities	228,563	25	(896)	227,692
U.S. Non-Treasury securities	10,699	6	(3)	10,702
Commercial paper	55,561	3	(131)	55,433
Corporate debt securities	79,616	6	(261)	79,361
Total investments	374,439	40	(1,291)	373,188
Total assets measured at fair value	$ 427,647	$ 40	$ (1,291)	$ 426,396

	December 31, 2021			
	Amortized Cost Basis	Unrealized Gains	Unrealized Losses	Fair Value
Assets:				
Cash equivalents:				
Money market funds	$ 232,813	$ —	$ —	$ 232,813
Total cash equivalents	232,813	—	—	232,813
Investments:				
U.S. Treasury securities	260,983	—	(536)	260,447
Total investments	260,983	—	(536)	260,447
Total assets measured at fair value	$ 493,796	$ —	$ (536)	$ 493,260

As of December 31, 2022 and 2021, unrealized losses on available-for-sale investments are not attributable to credit risk and are considered to be temporary. Approximately $0.8 million of the Company's investments have been in a continuous unrealized loss position for 12 months or longer. The Company believes it is more likely than not that investments in an unrealized loss position will be held until maturity or the recovery of the cost basis of the investment. To date, the Company has not recorded any impairment charges on marketable securities related to other-than-temporary declines in market value. As of December 31, 2022, $5.2 million of available-for-sale investments had remaining maturities between one and two years. The remainder of the available-for-sale investments have a remaining maturity of one year or less. As of December 31, 2022 and 2021, the Company recorded $0.6 million and $0.3 million of accrued interest, respectively, related to its available-for-sale investments and is presented as other receivables on the consolidated balance sheets.

4. OTHER FINANCIAL STATEMENT INFORMATION

Inventory

Inventory consists of the following (in thousands):

	December 31,	
	2022	2021
Raw materials	$ 2,129	$ 1,836
Work-in-progress	271	221
Finished goods	2,227	2,088
Total inventory	$ 4,627	$ 4,145

Property and Equipment, Net

Property and equipment, net consists of the following (in thousands):

	December 31,	
	2022	2021
Laboratory equipment	$ 21,122	$ 13,823
Computer equipment and software	876	461
Furniture and fixtures	575	478
Leasehold improvements	3,375	2,449
Construction-in-progress	1,281	784
Property and equipment	27,229	17,995
Less: accumulated depreciation and amortization	(7,821)	(4,908)
Total property and equipment, net	$ 19,408	$ 13,087

Depreciation and amortization expense related to property and equipment was $3.9 million and $2.6 million for the years ended December 31, 2022 and 2021, respectively.

Accrued Expenses

Accrued expenses consists of the following (in thousands):

	December 31,	
	2022	2021
Accrued compensation	$ 6,139	$ 4,730
Accrued professional services	322	388
Accrued property and equipment	300	269
Accrued research and development	235	1,023
Accrued taxes	335	457
Other	967	1,527
Total accrued expenses	$ 8,298	$ 8,394

5. REVENUE AND DEFERRED REVENUE

Product revenue consists of instrument with embedded software essential to the instrument's functionality, consumables and platform evaluation agreements. Service revenue primarily consists of revenue received from the generation and analysis of proteomic data on behalf of the customer. Related party revenue is comprised of both the sale of products and services performed for related parties, as further discussed in Note 11. Grant revenues consist of services performed specifically for the reimbursement of research-related expenses.

Product Revenue

For the years ended December 31, 2022 and 2021, the Company recognized $8.6 million and $3.6 million of product revenue to non-related customers, respectively. As of December 31, 2022 and 2021, the Company recorded $34,000 and $0.4 million of deferred revenue related to product sales, respectively.

Service Revenue

For the years ended December 31, 2022 and 2021 the Company recognized $0.9 million and $0.5 million of service revenue to non-related customers, respectively. As of December 31, 2022 and 2021, there were $0.1 million and $0 of deferred service revenue, respectively.

Deferred revenue activity for the year ended December 31, 2022 and 2021 are as follows (in thousands):

	December 31,	
	2022	2021
Balance, beginning of period	$ 376	$ 250
Additions	233	376
Revenue recognized	(476)	(250)
Balance, end of period	$ 133	$ 376

Transaction price allocated to remaining performance obligations represents contracted revenue that has not yet been recognized, which includes deferred revenue and non-cancelable amounts that will be invoiced and recognized as revenues in future periods. As of December 31, 2022, $2.0 million of revenue is expected to be recognized from the remaining performance obligations, of which 66% is expected to be recognized within 12 months, and the remainder thereafter.

Grant Revenue

In August 2019, the Company received a notice of a Small Business Innovation Research grant award from the National Institutes of Health, which will provide funding of approximately $1.1 million to the Company for its development of research applications. For the years ended December 31, 2022 and 2021, the Company recognized grant revenue of $0.3 million and $0.2 million with respect to the award.

6. CAPITAL STOCK AND STOCKHOLDERS' EQUITY

As of December 31, 2022, the Company is authorized to issue 105,000,000 shares of capital stock consisting of 94,000,000 shares of Class A common stock, 6,000,000 shares of Class B common stock, and 5,000,000 shares of preferred stock.

Common Stock

Common stock issued and outstanding is as follows:

	December 31,	
	2022	2021
Class A common stock	59,366,077	57,493,005
Class B common stock	4,044,969	4,522,478
Total common stock issued and outstanding	63,411,046	62,015,483

Class A and Class B common stock have a par value of $0.00001 per share. Holders of Class A common stock are entitled to one vote per share and holders of Class B common stock are entitled to 10 votes per share. Class B common shares are convertible to Class A common shares at any time at the option of the holder on a one-for-one basis. Holders of common stock are entitled to dividends as declared by the Board of Directors, subject to rights of holders of all classes of stock outstanding having priority rights as to dividends. There have been no dividends declared to date.

Common stock issued and outstanding on the consolidated balance sheets and consolidated statements of changes in stockholders' equity includes shares related to early exercised options and restricted stock that are subject to repurchase.

In the first quarter of 2021, the Company received $11.4 million related to the return of short-swing profits from one of its beneficial owners. These proceeds are recognized as a capital contribution from stockholders as an increase to additional paid-in capital on the consolidated statements of changes in stockholders’ equity and as cash provided by financing activities on the consolidated statements of cash flows.

7. EQUITY INCENTIVE PLANS

In 2017, the Company adopted the 2017 Stock Incentive Plan (2017 Plan), which provided for the granting of awards to employees, directors, and consultants of the Company. Awards issuable under the Plan include incentive stock options (ISO), nonqualified stock options (NSO), and restricted stock awards. In 2020, the Company adopted the 2020 RSU Equity Incentive Plan (2020 RSU Plan), which provided for the granting of RSUs to certain employees of the Company.

In 2020, the Company adopted the 2020 Equity Incentive Plan (2020 Plan), which became effective in connection with the IPO. The Company’s 2017 Plan and 2020 RSU Plan were terminated in connection with the IPO and no further grants will be made under the 2017 Plan and 2020 RSU Plan from the date that the 2020 Plan became effective.

Stock Options

Stock options to purchase the Company’s Class A common stock may be granted at a price not less than the fair market value of the Company’s Class A common stock at the date of grant in the case of both NSOs and ISOs, except for grants of stock options to an employee or non-employee with options who owns more than 10% of the voting power of all classes of stock of the Company, in which case the exercise price shall be no less than 110% of the fair market value per Class A common stock on the grant date. The exercise price for an ISO cannot be less than the fair market value of the Class A common stock on the grant date. Stock options granted under the 2017 Plan and 2020 Plan generally vest over four years and expire no later than 10 years from the date of grant. 5,336,569 shares of Class A common stock were initially reserved for issuance under the 2020 Plan, which includes 516,710 shares that remained available for issuance under the 2017 Plan. As of December 31, 2022, there are 11,400,396 shares of Class A common stock reserved for issuance under the 2020 Plan, 5,649,834 shares of which are available for issuance in connection with grants of future awards.

Stock option activity for the year ended December 31, 2022 is as follows:

	Options Outstanding	Weighted-Average Exercise Price	Weighted-Average Remaining Term (Years)	Aggregate Intrinsic Value (in thousands)
Balance at December 31, 2021	9,832,924	$ 12.49	8.48	$ 139,143
Options granted	3,356,254	13.53		
Options exercised	(974,307)	3.22		
Options forfeited	(2,000,441)	11.55		
Balance at December 31, 2022	10,214,430	$ 13.90	8.00	$ 12,685
Vested and exercisable, December 31, 2022	4,412,694	$ 8.11	7.29	$ 9,323

The weighted-average grant-date fair value of stock options granted to employees during the years ended December 31, 2022 and 2021, was $14.15 and $28.93 per share, respectively. The total intrinsic value of stock options exercised during the years ended December 31, 2022 and 2021, was $12.7 million and $46.5 million, respectively. As of December 31, 2022, the total unrecognized stock-based compensation related to unvested stock options was $51.4 million, which the Company expects to recognize over a remaining weighted-average period of 2.43 years.

The fair value of stock options granted to employees, directors, and non-employees is calculated using the Black-Scholes option pricing model using the following assumptions:

	Year Ended December 31,	
	2022	2021
Risk-free interest rate	1.6% - 4.2%	0.6% - 1.4%
Expected volatility	59.8% - 97.0%	62.5% - 71.4%
Expected term (in years)	5.77 - 6.08	6.00 - 10.00
Expected dividend yield	—	—

Restricted Stock Awards

Certain stock options granted provide stock option holders the right to exercise unvested stock options in exchange for restricted shares of Class A common stock. The Company has also issued restricted shares of Class A common stock to employees and directors. There were 60,787 shares and 174,300 shares of restricted stock that were unvested and subject to repurchase as of December 31, 2022 and 2021, respectively.

Restricted Stock Units

The Company has granted RSUs under the 2020 RSU Plan and the 2020 Plan. Restricted stock units (“RSUs”) are share awards that entitle the holder to receive freely tradable shares of the Company’s common stock upon vesting. The RSUs cannot be transferred and the awards are subject to forfeiture if the holder’s employment terminates prior to the release of the vesting restrictions. The fair value of the RSUs is equal to the closing price of the Company’s

common stock on the grant date. The RSUs generally vest over a two- to three-year period from the vesting start date.

RSU activity for the year ended December 31, 2022 is as follows:

	Number of Shares	Weighted-Average Grant Date Fair Value
Balance at December 31, 2021	740,366	$ 26.49
Granted	1,738,125	14.61
Vested	(319,598)	18.42
Forfeited	(507,917)	17.61
Balance at December 31, 2022	1,650,976	$ 18.23

As of December 31, 2022, the total unrecognized stock-based compensation related to RSUs was $22.5 million, which the Company expects to recognize over a remaining weighted-average period of 2.92 years.

Employee Stock Purchase Plan

In November 2020, the Company's board of directors adopted the 2020 Employee Stock Purchase Plan (ESPP), which was subsequently approved by the Company's stockholders and became effective in connection with the IPO. The ESPP permits participants to purchase common stock through payroll deductions of up to 15% of their eligible compensation.

A total of 1,195,327 shares of Class A common stock are reserved for issuance under the ESPP as of December 31, 2022. During the year ended December 31, 2022, 107,499 shares of Class A common stock were issued under the ESPP. As of December 31, 2022, the total unrecognized stock-based compensation related to the ESPP was $0.2 million, which the Company expects to recognize over a remaining weighted-average period of 0.37 years.

The fair value of the ESPP shares is estimated using the Black-Scholes option pricing model, based on the following assumptions:

	Year Ended December 31,	
	2022	2021
Risk-free interest rate	1.5%-4.5%	0.1%
Expected volatility	79.1%-88.5%	56.9% - 67.4%
Expected term (in years)	0.50	0.34 - 0.50
Expected dividend yield	—	—

Stock-Based Compensation

The following table summarizes the components of stock-based compensation recognized in the Company's consolidated statements of operations and comprehensive loss (in thousands):

	Year Ended December 31,	
	2022	2021
Cost of revenue	$ 1,083	$ 1,800
Research and development	9,125	4,422
Selling, general and administrative	23,465	19,705
Total stock-based compensation	$ 33,673	$ 25,927

In February 2022, in connection with a leave of absence taken by one of the Company's executives, a total of 1,330,892 share-based awards were modified to extend the overall term and change the timing of the vesting of the awards. The total incremental stock-based compensation associated with the modification is $0.9 million, which will be recognized over the next eight years.

On June 21, 2022, the Company's Board of Directors approved an option repricing to reduce the exercise price of certain vested, outstanding, and unexercised stock options with an exercise price greater than $19.00 per share that were held by employees who were not members of the Board of Directors or officers for purposes of Section 16 of the Securities Exchange Act of 1934, as amended ("Non-Section 16 employees") to $19.00 per share, which was the Company's initial public offering price. The Board of Directors also approved the repricing of certain unvested, outstanding, and unexercised stock options with an exercise price greater than $19.00 per share that were held by Non-Section 16 employees to $7.40 per share, which was the closing price of the Company's Class A common stock on the Nasdaq Global Select Market on the date of the approval of the repricing. Except for the exercise price, the amended stock options have the same terms and conditions (including vesting schedule, number of shares, and expiration date) and will continue to be governed by the terms of the 2020 Equity Incentive Plan.

As a result of the option repricing, the Company recorded $4.8 million of incremental compensation expense during the year ended December 31, 2022. The total unrecognized incremental stock-based compensation associated with the option repricing is $1.8 million, which will be recognized over the next three years.

8. EMPLOYEE BENEFIT PLANS

The Company sponsors a qualified 401(k) defined contribution plan covering eligible employees. Participants may contribute a portion of their annual compensation limited to a maximum annual amount set by the Internal Revenue Service. In 2022, the Company implemented a 401(k) match program. During fiscal years 2022 and 2021, the Company contributed $0.4 million and $0, respectively, to the 401(k) plan.

9. LEASES

As a lessee, the Company leases office and laboratory space in Redwood City, California. The lease term commenced in November 2019 and was set to end in September 2032. The Company has an option to renew all leased space for an additional five-year term at then-current market rates. In connection with the lease, the Company maintains a letter of credit issued to the lessor in the amount of $0.5 million as of December 31, 2022 and 2021, respectively, which is secured by restricted cash and is presented as noncurrent at each date based on the term of the underlying lease. In addition, the Company leases approximately 6,000 square of office space in San Diego, California under a lease that runs through September 2024.

As of December 31, 2022, the remaining weighted-average lease term was 9.8 years and the weighted-average incremental borrowing rate used to determine the operating lease liabilities was 6.2%. As of December 31, 2021, the remaining weighted-average lease term was 10.8 years and the weighted-average incremental borrowing rate used to determine the operating lease liabilities was 5.9%.

For the years ended December 31, 2022 and December 31, 2021, the Company incurred $4.6 million and $2.8 million of lease costs, respectively, of which $0.3 million and $0.1 million is related to the Company's short-term lease and $0.6 million and $0.7 million is related to variable lease payments, respectively. The variable lease payments are primarily comprised of common area maintenance and include costs associated with the temporary space. Cash paid for amounts included in the measurement of operating lease liabilities for the years ended December 31, 2022 and December 31, 2021 were $2.2 million and $0.9 million, respectively, and were included in net cash used in operating activities in the Company's consolidated statements of cash flows.

As of December 31, 2022, future minimum commitments under the Company's non-cancelable facility operating lease, in accordance with ASC 842, are as follows:

Years ending December 31,	(in thousands)
2023	$ 3,634
2024	3,738
2025	3,846
2026	3,957
2027	4,072
Thereafter	21,065
Total undiscounted future minimum lease payments	40,312
Present value adjustment for minimum lease commitments	(10,438)
Total operating lease liabilities	$ 29,874

As a lessor, the Company has contracts for equipment leased to customers. The Company accounts for the non-lease component under the revenue recognition ASC 606 guidance and the lease component under ASC 842 guidance. For an arrangement that has been classified as a sales-type lease, revenue is recognized when the transfer of control of the underlying leased asset has occurred and the net investment lease recorded, which is calculated at the present value of the remaining lease payments due from the lessee.

Revenue related to lease components from sales-type leases is presented as grant and other revenue and was $0.5 million and none for the year ended December 31, 2022 and 2021, respectively.

As of December 31, 2022 and 2021, lease receivables related to sales-type leases were $0.5 million and none, respectively, and is presented as prepaid expenses and other current assets on the consolidated balance sheets.

10. COMMITMENTS AND CONTINGENCIES

Purchase Commitments and Obligations

The Company has certain purchase commitments related to its inventory management with certain manufacturing suppliers wherein the Company is required to purchase the amounts forecasted in a blanket purchase order within a certain time period. The contractual obligations represent future cash commitments and liabilities under agreements with third parties and exclude orders for goods and services entered into in the normal course of business that are not enforceable or subject to change. These outstanding commitments amounted to $5.7 million and $5.5 million as of December 31, 2022 and 2021, respectively.

Guarantees and Indemnifications

In the normal course of business, the Company enters into agreements that contain a variety of representations and provide for general indemnification. The Company's exposure under these agreements is unknown because it involves claims that may be made against the Company in the future. The Company has entered into indemnification agreements with certain directors and officers that require the Company, among other things, to indemnify them against certain liabilities that may arise by reason of the status or service as directors or officers. To date, the Company has not paid any claims or been required to defend any action related to its indemnification obligations. As of December 31, 2022 and 2021, the Company does not have any material indemnification claims that were probable or reasonably possible and consequently has not recorded related liabilities.

Contingencies

From time to time, the Company may become involved in legal proceedings arising in the ordinary course of business. The Company is not currently a party to any material legal proceedings.

11. RELATED PARTY TRANSACTIONS

In August 2020, the Company formed a new entity, PrognomiQ, Inc. (PrognomiQ), and entered into a stock purchase agreement with PrognomiQ, pursuant to which the Company transferred to PrognomiQ certain assets that comprise the Company's human diagnostics activities in exchange for all the outstanding equity interests of PrognomiQ. The Company subsequently completed a pro-rata distribution to its stockholders of most of the shares of capital stock of PrognomiQ.

The Company has concluded that PrognomiQ is a VIE due to its reliance on future financing and insufficient equity investment at risk. However, the Company is not the primary beneficiary of the VIE as it does not have the power to direct the activities that most significantly impact the economic performance of PrognomiQ and does not have control over the PrognomiQ board of directors. The Company has determined that it has the ability to exercise significant influence over PrognomiQ and therefore has accounted for its investment in PrognomiQ using the equity method. During the year ended December 31, 2022 and 2021, the carrying value of the Company's investment in PrognomiQ was reduced to nil after recognizing net losses based on its percentage of ownership in PrognomIQ.

PrognomiQ constitutes a related party and, as of December 31, 2022 and 2021, the Company recorded $1.5 million and $1.3 million in related party receivables, respectively, on the consolidated balance sheets representing amounts due from product sales and services and for general transition services and support provided. For the year ended December 31, 2022 and 2021, the Company recognized revenue of $5.0 million and $2.3 million, respectively, from PrognomiQ and is presented as related party revenue on the consolidated statements of operations and comprehensive loss and is comprised of the sale of instruments and consumables, and services performed.

During 2022, a member of the Company's directors served as a board member and an executive officer at a company that is a customer of the Company. As of December 31, 2022, the Company recorded $0.3 million in related party receivables, on the consolidated balance sheets, representing revenue from products sales. Revenue recognized from the sale of consumables was $0.3 million and is presented as related party revenue on the consolidated statements of operations and comprehensive loss. The Company has a contract for equipment leased to this customer that has been classified as a sales-type lease. As of December 31, 2022, the lease receivables related to the sales-type lease is $0.2 million and is presented as prepaid expenses and other current assets on the consolidated balance sheets.

12. NET LOSS PER SHARE ATTRIBUTABLE TO COMMON STOCKHOLDERS

The following table shows the computation of basic and diluted net loss per share (in thousands, except share and per share data):

	Year Ended December 31,	
	2022	2021
Numerator:		
Net loss attributable to common stockholders	$ (92,966)	$ (71,169)
Denominator:		
Weighted-average common shares used in computing net loss per share attributable to common stockholders, basic and diluted	62,433,613	60,863,950
Net loss per share attributable to common stockholders, basic and diluted	$ (1.49)	$ (1.17)

The following outstanding shares of potentially dilutive securities were excluded from the computation of diluted net loss per share attributable to common stockholders for the periods presented, because including them would have been anti-dilutive (on an as-converted basis):

	December 31,	
	2022	2021
Class A common stock options issued and outstanding	10,214,430	9,832,924
Restricted common stock subject to future vesting	60,787	174,300
Restricted stock units	1,650,976	740,366
Estimated ESPP shares to be issued	127,041	41,205
Total	12,053,234	10,788,795

13. INCOME TAXES

Income tax expense differs from the amount computed by applying the statutory federal income tax rate due to the following (in thousands):

	Year Ended December 31,	
	2022	2021
Federal tax benefits at statutory rate	$ (19,523)	$ (14,887)
State taxes, net of federal benefit	(6,181)	(1,275)
Change in valuation allowance	24,828	17,751
Stock-based compensation tax deduction over book expense	131	(2,790)
Permanent differences	615	(47)
Research and development credits	(1,920)	(1,697)
Executive compensation limitations	2,405	2,806
Other	(355)	139
Total income tax expense	$ —	$ —

Deferred income tax reflects the tax effects of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for income tax purposes. The categories that give rise to components of the deferred tax assets are as follows (in thousands):

	December 31,	
	2022	2021
Deferred tax assets:		
Net operating loss carryforwards	$ 33,187	$ 22,385
Accrued expenses and reserves	1,540	1,129
Research and development credits	4,092	2,073
Stock-based compensation	7,790	4,198
Lease liabilities	7,663	6,182
Capitalized research and development	7,819	—
Other	43	56
Gross deferred tax assets	62,134	36,023
Less valuation allowance	(54,991)	(30,194)
Net deferred tax assets	$ 7,143	$ 5,829
Deferred tax liabilities:		
Fixed assets and intangibles	(216)	(490)
Right-of-use assets	(6,927)	(5,339)
Gross deferred tax liabilities	(7,143)	(5,829)
Total net deferred tax assets (liabilities)	$ —	$ —

The tax benefit of net operating losses, temporary differences, and credit carryforwards are recorded as an asset to the extent that management assesses that realization is “more likely than not.” Management assesses the available positive and negative evidence to estimate whether sufficient future taxable income will be generated to permit use of existing deferred. A significant piece of objective negative evidence evaluated was the cumulative loss incurred since the Company’s incorporation in 2017. Such objective evidence limits the ability to recorded against the Company's net deferred tax assets. The amount of the net deferred tax assets considered realizable, could be adjusted as estimates of future taxable income during the carryforward period are reduced or increased or if objective negative evidence in the form of cumulative losses is no longer present and additional weight is given to subjective evidence such as the Company’s projections for growth. For the years ended December 31, 2022 and 2021, the net changes in the net valuation allowance were an increase of $25.0 million and an increase of $18.0 million, respectively.

As of December 31, 2022 and 2021, the Company had federal net operating loss carryforwards of approximately $119.4 million and $94.0 million, respectively, which will carry forward indefinitely for federal tax purposes. At December 31, 2022 and 2021, the Company had state net operating loss carryforwards of approximately $122.5 million and $84.5 million, respectively, which will begin to expire in 2035 for state tax purposes.

As of December 31, 2022 and 2021, the Company had federal research and development credit carryforwards of approximately $3.0 million and $1.5 million, respectively, which begin to expire in 2039 and state research and development credit carryforwards of approximately $3.1 million and $1.6 million, respectively, which will carry forward indefinitely.

Utilization of the Company’s federal and state net operating loss and tax credit carryforwards may be subject to an annual limitation in the event that there is a change in ownership as provided by Section 382 of the Internal Revenue Code and similar state codes. Such limitation could result in a deferral or expiration of the utilization of the net operating loss and tax credit carryforwards. The Company has not performed a Section 382 study in the current year. The Company does not believe that per Section 382 there will be a deferral or limitation on the utilization of the net operating loss and tax credit carryforwards.

As of December 31, 2022 and 2021, the Company had unrecognized tax benefits of approximately $1.6 million and $0.8 million, respectively. The amount of unrecognized tax benefits is not expected to significantly change over the next 12 months. If recognized, unrecognized tax benefits would not have an impact on the Company’s effective tax rate due to the Company’s full valuation allowance position. The beginning and ending unrecognized tax benefits amounts is as follows (in thousands):

	December 31,	
	2022	2021
Beginning balance	$ 839	$ 337
Change related to prior year provisions	99	(154)
Change related to current year provisions	648	656
Ending balance	$ 1,586	$ 839

It is the Company's policy to include any assessed penalties and interest expense related to income taxes as a component of other expense and interest expense, respectively, as necessary. Management determined that no accrual for interest and penalties was required as of December 31, 2022.

For year ended December 31, 2022 and 2021, the Company did not record an income tax expense. The Company will continue to maintain a full valuation allowance against its deferred tax assets as the Company believes it is more likely than not that the related deferred tax asset will not be realized. As a result, the Company's income tax expense will remain at nil as no items that are either estimated or discrete items would impact the tax expense for the period.

The Tax Cuts and Jobs Act included a change in the treatment of research and development (R&D) expenditures for tax purposes under Section 174. Effective for tax years beginning after December 31, 2021, specified R&D expenditures must undergo a 5-year amortization period for domestic spend and a 15-year amortization period for foreign spend. Prior to the effective date (2021 tax year and prior), taxpayers were able to immediately expense R&D costs under Section 174(a) or had the option to capitalize and amortize R&D expenditures over a 5-year recovery period under Section 174(b).

The Company is estimating 2022 capitalization of U.S R&D expenditures net of 2022 amortization of approximately $37.2 million (an add back to estimated 2022 US taxable income). The Company has no foreign R&D expenses.

On August 16, 2022, President Biden signed the Inflation Reduction Act into law, which includes implementation of a new alternative minimum tax, an excise tax on stock buybacks, and significant tax incentives for energy and climate initiatives, among other provisions. The Company does not anticipate these provisions to have a material impact on its consolidated financial statements.

All tax returns will remain open for examination by the federal and state taxing authorities for three and four years, respectively, from the date of utilization of any net operating loss carryforwards or research and development credits.

14. SUBSEQUENT EVENTS

The Company evaluated subsequent events from December 31, 2022, the date of these consolidated financial statements, through March 6, 2023, which represents the date the financial statements were available to be issued for events requiring recording or disclosure in the financial statements for the year ended December 31, 2022. The Company concluded that no events have occurred that would require recognition or disclosure in the consolidated financial statements

Item 9. Changes in and Disagreements With Accountants on Accounting and Financial Disclosure

None.

Item 9A. Controls and Procedures

Evaluation of Disclosure Controls and Procedures

Under the supervision and with the participation of our management, including our Chief Executive Officer (CEO), and Chief Financial Officer (CFO), we evaluated the effectiveness of the design and operation of our disclosure controls and procedures pursuant to Rule 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended (the Exchange Act) as of the end of the period covered by this report. Our disclosure controls and procedures are designed to ensure that information required to be disclosed in the reports we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms, and that such information is accumulated and communicated to our management, including the CEO and the CFO, to allow timely decisions regarding required disclosures. Any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objective and management necessarily applies its judgment in evaluating the cost-benefit relationship of possible controls and procedures. Based on that evaluation, our CEO and CFO have concluded, as of December 31, 2022, our disclosure controls and procedures were effective to provide reasonable assurance that information required to be disclosed in the reports that we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms, and that such information is accumulated and communicated to our management, including our CEO and CFO, as appropriate, to allow timely decisions regarding required disclosures.

Management's Annual Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act). Our internal control system is designed to provide reasonable assurance regarding the preparation and fair presentation of externally-reported consolidated financial statements in accordance with generally accepted accounting principles in the United States (U.S. GAAP). As discussed above, internal control systems, no matter how well designed, have inherent limitations and can provide only reasonable assurance that their objectives have been met.

As of December 31, 2022, our management conducted an evaluation, under the supervision and with the participation of our CEO and CFO, of the effectiveness of our internal control over financial reporting based upon the framework in the *Internal Control -Integrated Framework* (2013), issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based upon that evaluation, our CEO and CFO concluded that our internal control over financial reporting was effective as of December 31, 2022.

We are a smaller reporting company, and therefore our independent registered public accounting firm has not issued a report on the effectiveness of internal control over financial reporting.

Inherent Limitations on Effectiveness of Controls

Our management, including our CEO and CFO, does not expect that our disclosure controls and procedures or our internal control over financial reporting will prevent or detect all error and all fraud. A control system, no matter how well designed and operated, can provide only reasonable, not absolute, assurance that the control system's objectives will be met. The design of a control system must reflect the fact that there are resource constraints, and the benefits of controls must be considered relative to their costs. Further, because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that misstatements due to error or fraud will not occur or that all control issues and instances of fraud, if any, within a company have been detected. These inherent limitations include the realities that judgments in decision-making can be faulty and that breakdowns can occur because of simple error or mistake. Controls can also be circumvented by the individual acts of some persons, by collusion of two or more people or by management override of the controls. The design of any system of controls is based in part on certain assumptions about the likelihood of future events, and there can be no assurance that any design will succeed in achieving its stated goals under all potential future conditions. Projections of any evaluation of controls

effectiveness to future periods are subject to risks. Over time, controls may become inadequate because of changes in conditions or deterioration in the degree of compliance with policies or procedures.

Changes in Internal Control over Financial Reporting

There have been no changes in our internal control over financial reporting that occurred during the year ended December 31, 2022 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Item 9B. Other Information

None.

Item 9C. Disclosure Regarding Foreign Jurisdictions that Prevent Inspections

None.

PART III.

Item 10. Directors, Executive Officers and Corporate Governance

We have adopted a written code of business conduct and ethics that applies to our directors, officers and employees, including our principal executive officer, principal financial officer, principal accounting officer or controller or, persons performing similar functions. The code of business conduct and ethics is available on our website at http://seer.bio. We intend to disclose future amendments to such code, or any waivers of its requirements, applicable to any principal executive officer, principal financial officer, principal accounting officer or controller or persons performing similar functions, or our directors on our website identified above or in a Current Report on Form 8-K. Information contained on the website is not incorporated by reference into this Annual Report.

The remaining information required under this item is incorporated herein by reference to our definitive proxy statement (the "Proxy Statement") pursuant to Regulation 14A under the Securities Exchange Act of 1934, as amended, which Proxy Statement is expected to be filed with Securities and Exchange Commission not later than 120 days after the close of our fiscal year ended December 31, 2022.

Item 11. Executive Compensation

The information required by this item will be set forth in the Proxy Statement and is incorporated herein by reference.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters

The information required by this item will be set forth in the Proxy Statement and is incorporated herein by reference.

Item 13. Certain Relationships and Related Transactions, and Director Independence

The information required by this item will be set forth in the Proxy Statement and is incorporated herein by reference.

Item 14. Principal Accounting Fees and Services

The information required by this item will be set forth in the Proxy Statement and is incorporated herein by reference.

PART IV.

Item 15. Exhibits and Financial Statement Schedules

The following documents are filed as part of this Annual Report:

1. Financial Statements: The financial statements filed as part of this Annual Report are included in Part II, Item 8 of this Annual Report.

2. Financial Statement Schedules: Financial statement schedules have been omitted in this Annual Report because they are not applicable, not required under the instructions or the information requested is set forth in the financial statements or related notes thereto.

3. Exhibits: The list of exhibits filed with this Annual Report on Form 10-K is set forth in the Exhibit Index preceding the signature page and is incorporated herein by reference or filed with this Annual Report on Form 10-K, in each case as indicated therein (numbered in accordance with Item 601 of Regulation S-K).

Exhibit Number	Description	Form	File No.	Exhibit	Filing Date
3.1	Amended and Restated Certificate of Incorporation of the Registrant.	8-K	001-39747	3.1	12/8/2020
3.2	Amended and Restated Bylaws of the Registrant.	8-K	001-39747	3.2	12/8/2020
4.1	Form of common stock certificate of the Registrant.	S-1	333-250035	4.1	11/12/2020
4.2	Amended and Restated Investors' Rights Agreement, by and among the Registrant and certain holders of its capital stock, dated as of December 9, 2020.	S-1	333-252395	4.2	1/25/2021
4.3	Description of the Registrant's securities registered pursuant to Section 12 of the Securities Exchange Act of 1934.	10-K	001-39747	4.3	3/29/2021
10.1+	Form of Indemnification Agreement between the Registrant and each of its directors and executive officers.	S-1	333-250035	10.1	11/12/2020
10.2+	2020 Equity Incentive Plan and related form agreements.	S-1/A	333-250035	10.2	11/30/2020
10.3+	2017 Stock Incentive Plan and related form agreements.	S-1/A	333-250035	10.3	11/30/2020

10.4+	2020 RSU Equity Incentive Plan and related form agreements.	S-1/A	333-250035	10.4	11/30/2020
10.5+	Amended and Restated 2020 Employee Stock Purchase Plan and related form agreements.	10-Q	001-39747	10.1	5/6/2022
10.6+	Key Executive Change in Control and Severance Plan, and form of Participation Agreement thereunder.	S-1/A	333-250035	10.6	11/30/2020
10.7+	Confirmatory Offer Letter between the Registrant and Dr. Omid Farokhzad, dated November 30, 2020.	S-1/A	333-250035	10.7	11/30/2020
10.8+	Confirmatory Offer Letter between the Registrant and Omead Ostadan, dated November 30, 2020.	S-1/A	333-250035	10.8	11/30/2020
10.9+	Confirmatory Offer Letter between the Registrant and David Horn, dated November 30, 2020.	S-1/A	333-250035	10.9	11/30/2020
10.10+	CEO Change in Control and Severance Agreement between the Registrant and Dr. Omid Farokhzad, dated November 30, 2020.	S-1/A	333-250035	10.10	11/30/2020
10.11+	Executive Incentive Compensation Plan.	S-1/A	333-250035	10.11	11/30/2020
10.12+	Outside Director Compensation Policy (as amended on June 15, 2022)	10-Q	001-39747	10.1	8/9/2022
10.13#	Umbrella Development & Supply Agreement between the Registrant and Hamilton Company, dated March 9, 2020.	S-1	333-250035	10.14	11/12/2020
10.14#	Exclusive Patent License Agreement between the Registrant and The Brigham and Women's Hospital, Inc., dated December 18, 2017.	S-1	333-250035	10.15	11/12/2020

10.15	Class A Common Stock Purchase Agreement by and among the Registrant, Fidelity Management & Research Company LLC, SoftBank, certain funds and accounts advised by T. Rowe Price Associates, Inc. and aMoon Fund, dated as of November 12, 2020.	S-1	333-250035	10.15	11/12/2020
10.16	Leave of Absence Agreement between Omead Ostadan and the Company effective October 7, 2021.	8-K	001-39747	10.1	10/13/2021
10.17	Amended Confirmatory Employment Letter between the Company and Omead Ostadan, dated February 18, 2022.	8-K	001-39747	10.1	2/18/2022
10.18	Confirmatory Offer Letter between the Registrant and Scott Thomas, dated March 2, 2022.	8-K	001-39747	10.1	3/18/2022
10.19	Consultant Agreement between the Registrant and Omead Ostadan, dated August 25, 2022.	8-K	001-39747	10.1	8/26/2022
21.1	List of Subsidiaries of the Registrant.				*
23.1	Consent of Deloitte & Touche LLP, independent registered public accounting firm.				*
31.1	Certification of Principal Executive Officer Pursuant to Rules 13a-14(a) and 15d-14(a) under the Securities Exchange Act of 1934, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.				*
31.2	Certification of Principal Financial Officer Pursuant to Rules 13a-14(a) and 15d-14(a) under the Securities Exchange Act of 1934, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.				*
32.1†	Certification of Principal Executive Officer Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.				*
32.2†	Certification of Principal Financial Officer Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.				*
101.INS	Inline XBRL Instance Document				
101.SCH	Inline XBRL Taxonomy Extension Schema Document				

101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document
101.LAB	Inline XBRL Taxonomy Extension Label Linkbase Document
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document
104	Cover Page Interactive Data File - the Cover Page Interactive Data File does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document.

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+ Indicates management contract or compensatory plan.

† The certifications attached as Exhibit 32.1 that accompany this Annual Report on Form 10-K, are deemed furnished and not filed with the Securities and Exchange Commission and are not to be incorporated by reference into any filing of the Registrant under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended, whether made before or after the date of this Annual Report on Form 10-K, irrespective of any general incorporation language contained in such filing.

Confidential treatment has been requested for portions of this exhibit. These portions have been omitted and have been filed separately with the Securities and Exchange Commission.

* Filed herewith

Item 16. Form 10-K Summary

None.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, as amended, the Registrant has duly caused this Report to be signed on its behalf by the undersigned, thereunto duly authorized.

Date: March 6, 2023

SEER, INC.

By: /s/ Omid Farokhzad, M.D.
Omid Farokhzad, M.D.
Chief Executive Officer and President

Pursuant to the requirements of the Securities Exchange Act of 1934, as amended, this Report has been signed below by the following persons on behalf of the Registrant in the capacities and on the dates indicated.

SIGNATURE	TITLE	DATE
/s/ Omid Farokhzad, M.D. Omid Farokhzad, M.D.	Chief Executive Officer, President, and Chair of the Board of Directors (*Principal Executive Officer*)	March 6, 2023
/s/ David R. Horn David R. Horn	Chief Financial Officer (*Principal Financial Officer and Accounting Officer*)	March 6, 2023
/s/ David Hallal David Hallal	Lead Independent Director	March 6, 2023
/s/ Catherine Friedman Catherine Friedman	Director	March 6, 2023
/s/ Meeta Gulyani Meeta Gulyani	Director	March 6, 2023
/s/ Rachel Haurwitz, Ph.D. Rachel Haurwitz, Ph.D.	Director	March 6, 2023
/s/ Robert Langer, Sc.D. Robert Langer, Sc.D.	Director	March 6, 2023
/s/ Terrance McGuire Terrance McGuire	Director	March 6, 2023
/s/ Deep Nishar Deep Nishar	Director	March 6, 2023
/s/ Mostafa Ronaghi, Ph.D. Mostafa Ronaghi, Ph.D.	Director	March 6, 2023

EX-21.1

List of Subsidiaries:

1. Seer Securities Corporation (Massachusetts)
2. Seer Bio UK Limited (United Kingdom)

Ex. 23.1

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in the following Registration Statement No. 333-263268, 333-252534 and 333-251158 on Form S-8 of our report dated March 6, 2023, relating to the financial statements of Seer, Inc. appearing in this Annual Report on Form 10-K for the year ended December 31, 2022.

/s/ Deloitte & Touche LLP
San Francisco, California
March 6, 2023

Ex. 31.1

CERTIFICATION PURSUANT TO RULES 13a-14(a) AND 15d-14(a) UNDER THE SECURITIES EXCHANGE ACT OF 1934, AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Omid Farokhzad, certify that:

1. I have reviewed this Annual Report on Form 10-K of Seer, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Ex. 31.1

Date: March 6, 2023

By: /s/ Omid Farokhzad
Omid Farokhzad
Chief Executive Officer, President and Chair of the Board of Directors
(Principal Executive Officer)

Ex. 31.2

CERTIFICATION PURSUANT TO RULES 13a-14(a) AND 15d-14(a) UNDER THE SECURITIES EXCHANGE ACT OF 1934, AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, David Horn, certify that:

1. I have reviewed this Annual Report on Form 10-K of Seer, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Ex. 31.2

Date: March 6, 2023

By: /s/ David Horn
David Horn
Chief Financial Officer
(Principal Financial and Accounting Officer)

Ex. 32.1

CERTIFICATION OF PRINCIPAL EXECUTIVE OFFICER PURSUANT TO 18 U.S.C. SECTION 1350, AS ADOPTED PURSUANT TO SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Annual Report of Seer, Inc. (the "Company") on Form 10-K for the period ended December 31, 2022 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Omid Farokhzad, hereby certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that:

(1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: March 6, 2023

By: /s/ Omid Farokhzad
Omid Farokhzad
Chief Executive Officer, President and Chair of the Board of Directors
(Principal Executive Officer)

Ex. 32.2

CERTIFICATION OF PRINCIPAL FINANCIAL OFFICER PURSUANT TO 18 U.S.C. SECTION 1350, AS ADOPTED PURSUANT TO SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Annual Report of Seer, Inc. (the "Company") on Form 10-K for the period ended December 31, 2022 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, David Horn, hereby certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that:

(1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: March 6, 2023

By: /s/ David Horn
David Horn
Chief Financial Officer
(Principal Financial Officer and Accounting Officer)