APPLIED DNA SCIENCES INC
Form 424B5
December 19, 2018

The information in this preliminary prospectus supplement is not complete and may be changed. This preliminary prospectus supplement and the accompanying prospectus are not an offer to sell these securities, nor are they soliciting offers to buy these securities in any jurisdiction where the offer or sale is not permitted.

Filed Pursuant to Rule 424(b)(5)

File No. 333-218158

Subject to completion, dated December 19, 2018

PRELIMINARY PROSPECTUS SUPPLEMENT
(To Prospectus dated May 26, 2017)

SHARES OF COMMON STOCK

AND

WARRANTS TO PURCHASE SHARES OF COMMON STOCK

We are offering up to shares of our common stock and warrants to purchase up to shares of our common stock (the "Warrants") in a firm commitment underwritten public offering by Maxim Group LLC, the underwriter. The shares of common stock and the Warrants are being offered pursuant to this prospectus supplement and accompanying prospectus. The Warrants will be issued separately but must be purchased together with the common stock. The combined purchase price for each share of common stock and accompanying Warrant is $. The Warrants will be exercisable beginning on the date of issuance (the "Initial Exercise Date"), at an exercise price of $ per share and will expire on the five-year anniversary of the Initial Exercise Date. The Warrants include an adjustment provision that, subject to certain exceptions, reduces their exercise price if the Company issues common stock or common stock equivalents at a price lower than the then-current exercise price of the Warrants, subject to a minimum exercise price of $ per share. We have also granted the underwriter a period of 45 days to purchase up to an additional

shares of common stock and/or Warrants, which the underwriter may only exercise to cover over-allotments made in connection with this offering.

The aggregate market value of our outstanding shares of common stock held by non-affiliates was $32,872,711 based on 30,112,057 shares of common stock outstanding as of December 18, 2018, of which 26,725,781 shares are held by non-affiliates, and a per share price of $1.23 based on the closing sale price of our common stock on November 7, 2018. Pursuant to General Instruction I.B.6 of Form S-3, in no event will we sell securities in a public primary offering with a value exceeding more than one-third of our public float in any 12-month period so long as our public float remains below $75.0 million. During the 12-month period prior to and including the date of this prospectus supplement, we did not offer any securities pursuant to General Instruction I.B.6 of Form S-3.

Our common stock is listed on The Nasdaq Capital Market under the symbol “APDN.” On December 18, 2018, the last reported sales price of our common stock on The Nasdaq Capital Market was $0.80 per share.

The purchase of the securities offered through this prospectus supplement involves a high degree of risk. You should consider carefully the risk factors beginning on page S-14 of this prospectus supplement, on page 5 of the accompanying base prospectus, and in the documents incorporated by reference into this prospectus supplement before purchasing any of the securities offered by this prospectus.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or passed upon the adequacy or accuracy of this prospectus. Any representation to the contrary is a criminal offense.

	Per Share of Common Stock and Warrant	**Total**
Public offering price	**$**	**$**
Underwriting discounts and commissions [(1)]	**$**	**$**
Proceeds to us, before expenses [(2)]	**$**	**$**

(1) We have agreed to reimburse the underwriter for expenses incurred by it in an amount not to exceed $75,000. We refer you to "Underwriting" beginning on page S-44 of this prospectus supplement for additional information regarding total underwriter compensation.

(2) We have granted the underwriter an option for a period of 45 days to purchase up to an additional shares of common stock and/or an additional Warrants. If the underwriter exercises this option in full, the underwriting discounts and commissions payable by us will be $ and the total proceeds to us, before expenses, will be $.

Maxim Group LLC

Prospectus Supplement dated December , 2018

Table of Contents

ABOUT THIS PROSPECTUS SUPPLEMENT

This prospectus supplement is part of a registration statement that we filed with the Securities and Exchange Commission (SEC) utilizing a "shelf" registration process. Under this shelf registration statement process, we may from time to time offer to sell up to $25,000,000 of our common stock, preferred stock, debt securities, warrants to purchase common stock, preferred stock and/or debt securities, rights to purchase common stock, preferred stock or warrants and units consisting of shares of common stock, preferred stock, warrants, rights or debt securities or any combination of these securities in one or more transactions.

We provide information to you about this offering of our common stock and Warrants in two separate documents that are bound together: (1) this prospectus supplement, which describes the specific details regarding this offering of shares of common stock and Warrants; and (2) the accompanying base prospectus dated May 26, 2017 and is included in our registration statement on Form S-3 (SEC File No. 333-218158) (the "Registration Statement"), which provides general information regarding our shares of common stock, shares of preferred stock, debt securities, warrants to purchase common stock, preferred stock and/or debt securities, rights to purchase common stock, preferred stock or warrants and units consisting of shares of common stock, shares of preferred stock, warrants, rights or debt securities, or any combination of these securities and other information, some of which may not apply to this offering. If information in this prospectus supplement is inconsistent with the accompanying base prospectus, you should rely on this prospectus supplement. If any statement in one of these documents is inconsistent with a statement in another document having a later date, for example, a document incorporated by reference in this prospectus supplement, the statement in the document having the later date modifies or supersedes the earlier statement as our business, financial condition, results of operations and prospects may have changed since the earlier dates.

You should read this prospectus supplement, together with the accompanying base prospectus, the documents incorporated by reference in this prospectus supplement and the base prospectus and any free writing prospectus that we have authorized for use in connection with this offering before making an investment decision. You should also read and consider the information in the documents referred to in the sections of this prospectus supplement and the accompanying base prospectus entitled "Where You Can Find More Information" and "Information Incorporated by Reference." When we refer to this "prospectus", we are referring to both this prospectus supplement and the base prospectus combined.

You should rely only on the information contained or incorporated by reference in this prospectus supplement, the base prospectus, or in any free writing prospectus that we have authorized for use in connection with this offering. We and the underwriters have not authorized anyone to provide you with different information. If anyone provides you with different or inconsistent information, you should not rely on it.

This prospectus supplement and the accompanying prospectus contain summaries of certain provisions contained in some of the documents described herein, but reference is made to the actual documents for complete information. All of the summaries are qualified in their entirety by the actual documents. Copies of some of the documents referred to herein have been filed, will be filed or will be incorporated herein by reference as exhibits to the registration statement, and you may obtain copies of those documents as described below under the section entitled "Where You Can Find More Information."

We further note that the representations, warranties and covenants made by us in any agreement that is filed as an exhibit to any document that is incorporated by reference herein were made solely for the benefit of the parties to such agreement, including, in some cases, for the purpose of allocating risk among the parties to such agreements, and should not be deemed to be a representation, warranty or covenant to you. Moreover, such representations, warranties or covenants were accurate only as of the date when made. Accordingly, such representations, warranties and covenants should not be relied on as accurately representing the current state of our affairs.

We are not making an offer to sell the securities covered by this prospectus supplement in any jurisdiction in which an offer or solicitation is not permitted or in which the person making the offer or solicitation is not qualified to do so or to anyone to whom it is unlawful to make an offer or solicitation.

The information appearing in this prospectus supplement, the documents incorporated by reference in this prospectus supplement, the base prospectus, and in any free writing prospectus that we have authorized for use in connection with this offering is accurate only as of its respective date, regardless of the time of delivery of the respective document or of any sale of securities covered by this prospectus. You should not assume that the information contained in or incorporated by reference in this prospectus supplement, the base prospectus, or in any free writing prospectus that we have authorized for use in connection with this offering, is accurate as of any date other than the respective dates thereof.

Our trademarks in the United States include Applied DNA Sciences®, SigNature® molecular tags, SigNature® T molecular tags, fiberTyping®, DNAnet®, digitalDNA®, SigNify®, BackTrac®, Beacon® and CertainT® All trademarks, service marks and trade names included or incorporated by reference in this prospectus supplement are the property of their respective owners, including, without limitation, the PimaCott®, HomeGrown® LoneStar™ and HomeGrown Acala™ marks owned by Himatsingka America, Inc. and/or its affiliates.

In this prospectus supplement “Applied DNA,” “we,” “us,” the “Company,” and “our” refer to Applied DNA Sciences, Inc. and its subsidiaries.

PROSPECTUS SUPPLEMENT SUMMARY

This summary highlights certain information about us, this offering and information appearing elsewhere in this prospectus supplement, the accompanying base prospectus and in the documents we incorporate by reference in this prospectus supplement. This summary is not complete and does not contain all of the information that you should consider before investing in our securities. After you carefully read this summary, to fully understand our company and this offering and its consequences to you, you should read this entire prospectus supplement, the accompanying base prospectus, and any related free writing prospectus authorized by us, including the information referred to under the heading “Risk Factors” in this prospectus supplement beginning on page S-14, and any related free writing prospectus, as well as the other documents that we incorporate by reference into this prospectus supplement, including our financial statements and the notes to those financial statements, which are incorporated herein by reference from our Annual Report on Form 10-K for the year ended September 30, 2018, filed on December 18, 2018. Please read “Where You Can Find More Information” on page S-49 of this prospectus supplement.

Our Company

Overview

Using our large scale polymerase chain reaction (PCR) based manufacturing platform, we manufacture large quantities of linear DNA for various markets. Whether for supply chain security, brand protection, law enforcement or drug or biologic applications, it is our goal to help establish secure flourishing environments that foster quality, integrity and success. With secure taggants, high-resolution DNA authentication, and comprehensive reporting, our SigNature molecular tag technologies are designed to deliver what we believe to be the greatest levels of security, deterrence and legal recourse strength. Under our wholly owned subsidiary, LineaRx, Inc. (LRx), we supply DNA for use in the in vitro medical diagnostics, preclinical biotechnology and preclinical drug and biologic development and manufacturing markets. We are also engaged in preclinical and animal drug candidate development, directly and with collaborators, focusing on therapeutically relevant DNA constructs manufactured via our PCR-based DNA production platform.

SigNature® molecular tags, SigNature® T molecular tags, fiberTyping®, DNAnet®, SigNify® BackTrac®, Beacon® and CertainT® comprise our principal security technology platform. The large-scale production of specific DNA sequences is used in the diagnostics and reagent industries. Contract research and drug development and commercialization relating to PCR-produced DNA constructs forms the basis of LRx.

SigNature molecular tags, the core of our supply chain security technology platform, are what we believe to be nature's ultimate means of authentication and supply chain security. We believe our precision-engineered molecular tags have not been broken. Additional layers of protection and complexity are added to the mark in a proprietary manner. SigNature molecular tags in various carriers have proven highly resistant to UV radiation, heat, cold, vibration, abrasion and other extreme environments and conditions. We work closely with our customers to develop solutions that will be optimized to their specifications to deliver maximum impact. Our products and technology are protected by what we believe to be a robust portfolio of patents and trademarks.

Using our tagging products and technology, manufacturers, brands, and other stakeholders can ensure authenticity and protect against diversion throughout a product's journey from manufacturer to use.

The core technologies of our supply chain security business are supplied as tag, test and track solutions for large complex supply chains. Our tag, test and track solutions allow our customers to use molecular tags to mark objects in a unique manner that we believe cannot be replicated, and then identify these objects by detecting the absence or presence of the molecular tag. We believe that our disruptive tracking platform offers broad commercial relevance across many industry verticals. Our underlying strategy in the tagging business is to become a solutions provider for supply chains of process industries in which contracts for our products and services are larger and of longer duration as compared to our historic norms, where the benefits to customers and consumers are more significant, and where our forensic security and traceability offer a unique and protected value. Consumers, governments and companies are demanding details about the systems and sources that deliver their goods. They worry about quality, safety, ethics, and the environmental impact. Farsighted organizations are directly addressing new threats and opportunities presented by this question: Where do these goods come from? This is the question and the concerns we are beginning to address for a growing number of companies. We supply key building blocks for creating secure supply chains with traceability of goods, which in turn can help ensure integrity in supply, honest sales and marketing claims, and ethical and sustainable sourcing.

Customers using our PCR-produced linear DNA products and services for use in in vitro medical diagnostics, preclinical biotechnology research and preclinical drug and biologic development and manufacturing receive a DNA product we believe is made cleaner and faster than historical manufacturing methods, thereby offering the opportunity for increased efficiency and turnaround times in their processes. We are also engaged in preclinical and animal drug candidate development activities focusing on therapeutically relevant DNA constructs manufactured via our PCR-based production platform. We seek to develop, acquire and commercialize, alone or with partners, a diverse portfolio of nucleic acid based drugs and biologics based on PCR-produced linear DNA which we believe will improve existing nucleic acid based therapeutics or create new nucleic acid based therapeutics that address unmet medical needs.

Our products and services are offered in the United States, Europe and Asia. At the present time, we are focusing our efforts on textile and apparel, pharmaceuticals and nutraceuticals, microcircuits and other electronics, legal cannabis and PCR-produced linear DNA products, as well as services for in vitro medical diagnostics, preclinical biotechnology research and preclinical biotherapeutic manufacturing. Currently, approximately twenty percent of our annual revenue comes from the textile market. The basic technology we use in various markets is very similar, and we believe our solutions are adaptable for many types of products and markets. In the future, we plan to expand our focus to include additional consumer products, food and beverage and industrial materials. The cotton ginning season in the United States takes place between September and March each year; therefore, revenues from our cotton customer contracts may be seasonal and recognized primarily during our first and fourth fiscal quarters, which may cause operating results to fluctuate significantly quarterly and annually. To date, the substantial portion of our revenues has been generated from sales of our SigNature and SigNature T molecular tags, our principal supply chain security and product authentication solutions. We expect to grow revenues from sales of our SigNature molecular tags, SigNature T molecular tags, SigNify and CertainT offerings as we work with companies and governments to secure supply chains for various types of products and product labeling throughout the world. In addition, we expect to continue to grow revenues from PCR-produced linear DNA products and services using our Triathlon™ PCR systems.

Signature Molecular Tags

SigNature Molecular Tags. The SigNature molecular tag is our patented molecular taggant technology, at the core of our platform. It provides forensic power and protection for a wide array of applications. Highly secure, robust and durable, SigNature molecular tags are an ingredient that can be used to fortify brand protection efforts; strengthen supply chain security; and mark, track and convict criminals. Through our SigNature molecular tags, custom DNA sequences can be embedded into a wide range of host carriers including natural and synthetic fibers, ink, varnish, thread, metal coatings, and pharmaceuticals and nutraceuticals. SigNature molecular tags can be made resistant to challenging environments such as heat, cold, vibration, abrasion, organic solvents, chemicals, UV radiation and other extreme environmental conditions, and so can be identified for numerous years after being embedded directly, or into media applied or attached to the item to be marked. Each individual molecular tag is recorded and stored in a secure database so that we can later detect it using a simple spot test, or the molecular tags can be forensically analyzed in our laboratories to obtain definitive proof of the presence or absence of a specific SigNature molecular tag (e.g., one

designed to mark a particular product). Our in-lab forensic testing capability delivers an expert witness Certificate of DNA Authentication ("CODA"). Because DNA is one of the densest information carriers known, and can be amplified with high fidelity, only minute quantities of SigNature molecular tags are necessary for successful analysis and authentication. As a result, SigNature molecular tags can fold seamlessly into production and logistics workflows at extremely low concentrations.

SigNature molecular tags have been subjected to rigorous testing by the Idaho National Laboratory, a U.S. National Laboratory, by CALCE (the Center for Advanced Life Cycle Engineering), the largest electronic products and systems research center focused on electronics reliability, and by verified procedures in our laboratories. The molecular tag has passed all tests across a broad spectrum of materials and substrates, and has met key military stability standards. SigNature molecular tags have also passed a strenuous "red-team" vetting on behalf of the U.S. Defense Logistics Agency.

SigNature molecular tags now exist on hundreds of millions of commodity quantities ranging from consumer product packaging to microcircuits to cotton and synthetic fibers; to our knowledge, none has ever been copied.

SigNature T Molecular Tags and fiberTyping

SigNature T Molecular Tags. SigNature T molecular tags are a unique patented tagging and authentication system specifically designed for textiles and apparel. Specially engineered to adhere tenaciously to textile substrates, including natural and synthetic fibers, SigNature T molecular tags are resistant to standard textile production conditions. The result: an enduring forensic level molecular tag that remains present from the fiber stage through to the finished product.

Our SigNature T technology allows for better quality control and assurance at any point in the supply chain. SigNature T molecular tags are currently used for brand protection efforts and raw material source compliance programs. For example, American grown cotton fibers can be tagged at the gin in the United States, verified as “American grown” and then traced through every step of the supply chain.

fiberTyping. Our patented cotton genotyping platform, known as “fiberTyping,” described below, complements our SigNature T molecular tag system. fiberTyping is employed to identify the genus and species of the fibers before or after they are tagged with SigNature T molecular tags. fiberTyping cannot be used to provide unique identity of a specific cotton through the supply chain.

fiberTyping is not a molecular tag, but a genotyping test of native cotton fiber DNA, which gives a clear result that determines whether the intended “nature-made” endogenous cotton DNA is present in fiber, yarn or fabric. Samples from the primary material are sent to our forensic labs for DNA analysis and authentication. Cotton classification and the authentication of cotton species after cotton has left its place of origin are issues of global significance, important to brand owners and to governments that must regulate the international cotton trade. The use of endogenous DNA to identify the cotton fiber content in textile supply chains, along with the SigNature T molecular tag system is a significant opportunity for brand license holders to control their intellectual property, for brands to shield themselves against legal liabilities, and for governments to improve their ability to enforce compliance with trade agreements between nations.

We believe that our proprietary DNA extraction protocols and methodologies are more effective than existing forensic systems. We believe that the combination of our SigNatureT molecular tags and fiberTyping solutions cover the

forensic authentication market for textiles and that the related protocols we have developed may be applicable to multiple industry verticals (such as ingredients in nutraceuticals and cannabis) and can mark and authenticate products at every stage of their life cycle, from beginning to end.

DNAnet, Smart DNA and Backtrac

Recognizing that DNA-based evidence is the cornerstone of modern-era law enforcement, we have developed what we believe to be the ultimate crime fighting tools – currently being used in vehicle and home asset marking, as well as commercial applications.

These molecular tags can be used to definitively link evidence and offenders to specific crime scenes. As the crime is investigated, the fluorescing molecular marker can assist police in linking the offender and stolen items to a specific crime scene, creating a greater ability to identify and convict.

These long-lasting tagging solutions contain unique molecular tags that can help return stolen or lost property to its rightful owner.

Beacon

Beacon locked optical markers deliver secure real-time inspection capabilities. A unique patented encrypted mechanism creates a protected, covert screening tool that can be easily adapted to packaging, security labels and high–value assets through inks, varnishes and coatings. When Beacon locked optical markers are combined with SigNature molecular tags, a strong and flexible security and screening solution is created where authenticity and provenance can be determined with confidence.

SigNify

Developing a secure method for real-time, in-field screening of molecularly-tagged items has long been a priority for us. We believe that standard fluorophores, up-converting phosphors, holograms and other more-traditional screening tools provide little to no defense against counterfeiting. We believe that secure in-field inspection backed with forensic-level molecular tag authentication is the key to maintaining a well-defended supply chain or asset management program.

The SigNify IF portable DNA reader provides definitive real-time authentication of SigNature and SigNature T molecular tags in the field. With SigNify IF, Signature molecular tags become a true, front-line solution for supply chain integrity.

Information Technology Systems

Applied DNA Sciences Portal. The CertainT and other customer applications include the use of a software platform that enables customers to manage the security of company-marked goods from point of marking to point of authentication or validation to end of life. The base platform is configurable to customer requirements which differ by vertical market, company business process and IT environment. Basic functions offered include molecular tag inventory management, program training and communications, a database of marked items information, associated documents and images, chain of custody and location tracking, sample authentication processing and CODA downloads, and other administrative functions. Designed for either cloud or local operation, the system supports mobile data capture using bar codes or other technologies. The system is architected as the controller and repository for other validation and authentication devices such as our SigNify DNA Readers, DNA Transfer Systems, and other third party devices and is designed to share data with third party applications through standard interfaces.

DNA Transfer Systems and Cannabis Tracking System. Our DNA Transfer Systems and Cannabis Tracking System are developed for DNA marking applications which are high volume with a need for monitoring and control. They are computer based, fully automated, offer remote internet access for real-time monitoring and can be configured for application-specific alerts and reporting online. They are being used to mark cotton at six U.S. cotton gins in the 2018-2019 ginning season and one location in Australia.

CertainT Supply Chain Platform

CertainT helps brands confirm their product's authenticity and origin with certified, trust, transparency and traceability through the seamless amalgamation of several of our platform technologies to tag, test and track. The CertainT trademark indicates use of the CertainT tagging, testing and tracking platform to enable proof of product claims for any material, item or product. Secure and proven, the CertainT Platform helps manufacturers, brands or other commercial organizations deliver on their promise that customers are buying products that are ethically-sourced, safe and authentic.

Large-scale production of specific DNA sequences using PCR.

Our patented Triathlon™ PCR systems allow for the large-scale production of specific DNA sequences. The systems are computer-controlled, self-contained and modular. DNA sequences produced through our processes and systems are being used by customers as components of diagnostic tests and reagents, which provide us the opportunity to cross-sell our DNA-based supply chain security solutions to this installed base and others. We believe we have the ability to manufacture longer DNA sequences valuable in gene therapies, adoptive cell therapies (such as CAR T), DNA vaccines, RNA therapies and diagnostics, with what we believe is a distinct competitive advantage in cost, cleanliness, and time-to-market. These types of DNA are distinct from our DNA security markers and represent a potential new entry into medical markets, where we believe there are opportunities for our broader platform. Customers using our PCR-produced linear DNA products and services for use in in vitro medical diagnostics, preclinical biotechnology research and preclinical drug and biologic manufacturing receive DNA product that we believe is made cleaner and faster than historical manufacturing methods, thereby offering the opportunity for increased efficiency and turnaround times in their processes.

Contract Research

Under LRx, we act as a contract research organization for the nucleic acid-based medical and biologic markets. In addition, LRx is providing contract research services to several RNA based drug and biologic customers for preclinical studies. These services include the design, development and manufacture of PCR-produced DNA templates for RNA.

Therapeutics

In addition, we seek to develop, acquire and commercialize, ourselves or with partners, a diverse portfolio of nucleic acid-based drugs and biologics based on PCR-produced linear DNA to improve existing nucleic acid-based therapeutics or to create new nucleic acid-based therapeutics that address unmet medical needs. We are also engaged in preclinical and animal drug candidate development activities focusing on therapeutically relevant DNA constructs manufactured through our large scale PCR production systems. LRx uses its PCR systems to rapidly produce customized DNA for use by our CRO/CMO clients, our preclinical drug and biologic clients and partners, and for our own preclinical drugs and biologics under development in the field of CAR T-cell immunotherapy. LRx's proprietary process enables large, gram-scale production of DNA through PCR for bio-based therapeutics, adoptive cell therapies, vaccines (including cancer), CRISPR and other nucleic acid-based therapies. Linear DNA does not require recombination, therefore, there is no need for a virus or for plasmids. This reduces the risk of unwanted DNA or other contaminants that would need to be removed.

Recent Developments

TheraCann International. During January 2018, we entered into an initial two-year $1 million contract for the development of molecular tracking systems for legal cannabis worldwide with TheraCann International Benchmark Corporation, ("TheraCann"), a leading full service cannabis consultancy with operations in the US, Canada, Australia, Europe and South America, for the integration of the Company's SigNature molecular tagging and testing technology into TheraCann's seed-to-sale Enterprise Resource Platform (ERP) for legal cannabis operations. Under the terms of the contract, the companies have entered into a development and marketing agreement whereby we will develop the technologies necessary to tag and authenticate legal cannabis throughout the supply chain and seamlessly integrate tagging and authentication data into TheraCann's ERP and Blockchain platform.

ACG Associated Capsules Private Limited (ACG) During January 2018, we entered into a Memorandum of Understanding with ACG to develop SigNature molecularly tagged empty hard-shell capsules to enhance product traceability and authentication. ACG is one of the world's largest pharmaceutical and nutraceutical capsule manufacturers, with the empty capsules market estimated to exceed $2 billion by 2023. Discussions between us and ACG toward a definitive agreement incorporating are underway, although no assurance can be given that a definitive agreement will be entered into.

Colorcon, Inc. On March 31, 2018, we entered into definitive licensing and cooperation agreement as well as a related supply agreement with Colorcon, Inc. ("Colorcon") for molecular tagging in the pharmaceutical and nutraceutical markets. Colorcon plans to use our SigNature molecular tags in Colorcon's product offerings and access to our associated authentication technologies. These Agreements follow the memorandum of understanding (MOU) announced on December 18, 2017.

Under the terms of the Agreements, Applied DNA grants Colorcon exclusive worldwide right to use the Company's molecular tags and associated authentication technologies in film coatings for solid oral dosage form ("SOD") applications, for which Colorcon is the largest global supplier, and non-exclusive rights to use our technologies in inks and colorants for SOD applications. Pursuant to the Agreements, we will supply taggant and authentication materials to Colorcon in exchange for long-term royalties on the sale of Colorcon products incorporating the Company's molecular tags and on the sale of authentication services related thereto. Further, the first of two milestone payments was payable to us with the signing of the Agreements. We will receive the second milestone payment upon initial approval by a regulatory authority for application in a SOD pharmaceutical or nutraceutical product application. The Agreements generally expire on the later of October 1, 2032 or the last expiration date of any patent licensed pursuant to the Agreements.

American & Efird (A&E) During April 2018, we entered into a statement of work with American & Efird (A&E), one of the world's leading manufacturers and distributors of industrial and consumer sewing thread, embroidery thread, and technical textiles, to evaluate our Beacon® technology for use in CertainT® enhanced secure sewing threads for brand protection. A prior statement of work dated July 25, 2017 between Applied DNA and A&E demonstrated Applied DNA's SigNature®T DNA-based authentication. This collaboration with A&E represents execution on the Company's growth strategy to expand its base of business in its core markets and broaden the application of it molecular tagging technology platform in adjacent markets.

BLC Leather Technology Center Limited (BLC) During May 2018, we completed a one-year research project with BLC under a sponsored research agreement we entered into in March 2017 for the development of a DNA-based supply chain track and trace system. The results of the research project helped validate that our technology can be used in the harsh leather-production environment to provide forensic traceability for leather from farm to shop. In November 2018, we entered a follow-on collaboration agreement with BLC to facilitate the commercialization of such technology. Under the terms of the collaboration agreement, we and BLC agree to jointly develop business and marketing plans, with BLC receiving a share of the revenue we receive relating to the DNA-based tracking system. The agreement expires in November 2023.

Takis S.R.L. and Evvivax S.R.L. During September 2018 we signed a joint development agreement with Takis S.R.I. and Evvivax S.R.L. ("Takis/Evvivax"), biotechnology companies focused on the discovery and development of DNA based anti-cancer vaccines for the human and animal targets, respectively. Under the terms of the agreement, we will jointly develop linear DNA expression vectors for two of Takis/Evvivax's anti-cancer vaccines candidates utilizing our linear DNA technology. Linear DNA amplicons carrying the DNA sequences for Takis/Evvivax's vaccine candidates will be delivered to preclinical animal models via Takis/Evvivax's proprietary electroporation technology. Antigen-specific immune responses aimed at achieving therapeutic effects will be studied.

iCell Gene Therapeutics, Inc. During October 2018, we entered into an exclusive North American licensing agreement and research services agreement with iCell Gene Therapeutics, Inc. (“iCell”) under which iCell licensed to us an anti-CD19 CAR T therapy candidate for non-viral delivery. We intend to utilize our non-viral, plasmid free platform, along with the in-licensed anti-CD19 CAR T therapy to develop, manufacture and commercialize LinCART19, a non-viral, plasmid free anti-CD19 CAR T therapeutic candidate. Under the terms of the agreements, iCell will receive a percentage of net sales derived from products incorporating the licensed CD 19 Antigen Receptor within North America, as well as development milestone payments and a fundraising milestone. The development milestone payments are triggered up on the completion of defined phases of clinical research for a product candidate incorporating the CD 19 Antigen Receptor. The fundraising milestone payment is triggered by an initial funding event of LRx.

Everledger, Inc. During December 2018, we entered into a Joint Development Agreement with Everledger, Inc. (Everledger), an independent emerging technology enterprise. We intend to develop and market a combined physical and digital supply chain traceability and certification solution utilizing the our CertainT molecular tagging and authentication systems together with Everledger’s blockchain-based platform.

Corporate History

We are a Delaware corporation, which was initially formed in 1983 under the laws of the State of Florida as Datalink Systems, Inc. In 1998, we reincorporated in the State of Nevada, and in 2002, we changed our name to our current name, Applied DNA Sciences, Inc. On December 17, 2008, we reincorporated from Nevada to the State of Delaware.

Our corporate headquarters are located at the Long Island High Technology Incubator at Stony Brook University in Stony Brook, New York, where we established laboratories for the manufacture of molecular tags, product prototyping, molecular tag authentication and bulk DNA production. The address of our corporate headquarters is 50 Health Sciences Drive, Stony Brook, New York 11790, and our telephone number is (631) 240-8800. We maintain a website at www.adnas.com where general information about us is available. The information on, or that may be accessed through, our website is not incorporated by reference into and should not be considered a part of this report.

To date, we have produced limited recurring revenues from our products and services, have incurred expenses and have sustained losses. Consequently, our operations are subject to all the risks inherent in the establishment and development of a biotechnology company.

FORWARD-LOOKING STATEMENTS

This prospectus supplement and the documents incorporated by reference herein contain "forward-looking statements" within the meaning of Section 27A of the Securities Act of 1933, as amended (the "Securities Act") and Section 21E of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), that are intended to qualify for the "safe harbor" created by those sections. In addition, we may make forward-looking statements in other documents filed with or furnished to the SEC, and our management and other representatives may make forward-looking statements orally or in writing to analysts, investors, representatives of the media and others.

Forward-looking statements can generally be identified by the fact that they do not relate strictly to historical or current facts and include, but are not limited to, statements using terminology such as "can", "may", "could", "should", "assume", "forecasts", "believe", "designated to", "will", "expect", "plan", "anticipate", "estimate", "potential", "position", "p "guidance", "intend", "seek", "budget", "project" or "continue", or the negative thereof or other comparable terminology regar beliefs, plans, expectations or intentions regarding the future. You should read statements that contain these words carefully because they:

- discuss our future expectations;
- contain projections of our future results of operations or of our financial condition; and
- state other "forward-looking" information.

We believe it is important to communicate our expectations. However, forward-looking statements involve risks and uncertainties and our actual results and the timing of certain events could differ materially from those discussed in forward-looking statements as a result of certain factors, including those set forth under "Risk Factors" and "Prospectus Supplement Summary – Our Company" set forth in this prospectus supplement and the documents incorporated herein by reference.

Accordingly, our actual results and the timing of certain events may differ materially from those expressed or implied in such forward-looking statements due to a variety of factors and risks, including, but not limited to, those set forth in this prospectus supplement under "Risk Factors" and those set forth from time to time in our other filings with the SEC.

All forward-looking statements and risk factors included in this prospectus supplement and the documents incorporated herein by reference are made as of the date hereof, based on information available to us as of such date,

and we assume no obligations to update any forward-looking statement or risk factor, unless we are required to do so by law. If we do update one or more forward-looking statements, no inference should be drawn that we will make updates with respect to other forward-looking statements or that we will make any further updates to those forward-looking statements at any future time.

Forward-looking statements may include our plans and objectives for future operations, including plans and objectives relating to our products and our future economic performance, projections, business strategy and timing and likelihood of success. Assumptions relating to the foregoing involve judgments with respect to, among other things, future economic, competitive and market conditions, future business decisions, and the time and money required to successfully complete development and commercialization of our technologies, all of which are difficult or impossible to predict accurately and many of which are beyond our control.

Any of the assumptions underlying the forward-looking statements contained in this prospectus supplement could prove inaccurate and, therefore, we cannot assure you that the results contemplated in any of such forward-looking statements will be realized. Based on the significant uncertainties inherent in these forward-looking statements, the inclusion of any such statement should not be regarded as a representation or as a guarantee by us that our objectives or plans will be achieved, and we caution you against relying on any of the forward-looking statements contained herein.

SUMMARY OF RISKS

Before you invest in our common stock and Warrants, you should carefully consider all the information in this prospectus supplement, including matters set forth in the "Risk Factors" section beginning on page S-14 of this prospectus supplement. We believe that the following are some of the major risks and uncertainties that may affect us:

- substantial doubt relating to our ability to continue as a going concern;
- our lack of significant revenues;
- our limited experience in marketing our large-scale PCR-based manufacturing platform;
- our history of net losses, which may continue, and our potential inability to achieve profitability;
- the possibility that we may require additional financing, which may involve the issuance of additional shares of common stock or securities exercisable for common stock and dilute the percentage of ownership held by our current stockholders;
- difficulty in obtaining or inability to obtain additional financing if such financing becomes necessary;
- the possibility we may fail to make timely payments on our secured convertible notes and, as a result, the noteholders enforcing their remedies and ultimately realizing on their collateral which includes substantially all of our assets, including our intellectual property;
- volatility in the price and/or trading volume of our common stock;
- future short selling and/or manipulation of the price of our common stock;
- our inability to implement our short and long-term strategies;
- competition from products and services provided by other companies, including competition in the principal markets for our drug and biologic candidates and linear DNA;

- potential difficulties and failures in manufacturing our products;
- loss of strategic relationships;
- dependence on a limited number of key customers;
- lack of acceptance of our products and services by potential customers;
- potential failure to introduce new products and services;
- difficulty or failure in expanding/and or maintaining our sales, marketing and support organizations and our distribution arrangements necessary to enable us to reach our goals with respect to increasing market acceptance of our products and services;
- seasonality in revenues related to our cotton customer contracts;
- shifting enforcement priorities of U.S. federal laws relating to cannabis;

- inability to obtain and maintain regulatory approval in the pharmaceutical and biotechnology markets;
- inability of our collaborators, licensees, and customers to develop, obtain approval for and successfully commercialize products that incorporate our technology;
- inability of us, our collaborators, or customers to develop and timely manufacture complex biologic products and their components to exacting quality and safety standards;
- inability to attract and retain qualified scientific, production and managerial personnel, including Dr. Hayward, our Chief Executive Officer;
- failure to maintain the listing on, or the delisting of our securities from, The Nasdaq Capital Market;
- conflicts of interest with affiliates and related parties with whom we have engaged or entered into transactions;
- inability to compete effectively in the industries in which we operate;
- lack of success in our research and development efforts for new products;
- failure to manage our growth in operations and acquisitions of new technologies and businesses;
- inability to protect our intellectual property rights;
- intellectual property litigation against us or other legal actions or proceedings in which we may become involved;
- unauthorized disclosure of sensitive or confidential data (including customer data) and cybersecurity breaches; and
- adverse changes in worldwide or domestic economic, political or business conditions.

THE OFFERING

Securities offered:	shares of our common stock, including shares of common stock underlying the Warrants Warrants to purchase shares of our common stock
Combined offering price per share of common stock and accompanying Warrant:	$ per share and Warrant
Common stock outstanding before the offering[1]:	30,112,057 shares
Common stock to be outstanding after the offering[1][2]:	shares
Over-Allotment Option:	The Underwriting Agreement provides that we will grant to the underwriter an option, exercisable within 45 days after the closing of this offering, to purchase up to an additional shares of common stock and/or an additional Warrants, solely for the purpose of covering over-allotments, if any.
Use of Proceeds:	We intend to use the net proceeds from this offering for working capital, capital expenditures, business development and research and development expenditures.
Listing and Symbols:	Our common stock is listed on The Nasdaq Capital Market ("Nasdaq") under the symbol "APDN."
Warrants:	We are issuing to purchasers of shares of our common stock in this offering a Warrant to purchase one share of our common stock for each share purchased in this offering for a combined purchase price of $. The Warrants will be exercisable beginning on the Initial Exercise Date at an exercise price of $ per share and will expire on the five year anniversary of the Initial Exercise Date. The Warrants include an adjustment provision that, subject to certain exceptions, reduces their exercise price if the Company issues common stock or common stock equivalents at a price lower than the then-current exercise price of the Warrants, subject to a minimum exercise price of $ per share. See "Description of Securities we are Offering—Warrants."
Risk Factors:	Investing in our securities involves substantial risks. You should carefully review and consider the "Risk Factors" section of this prospectus supplement beginning on page S-14 and on page 5

of the accompanying base prospectus, as well as the other information in this prospectus supplement for a discussion of the factors you should consider before you decide to invest in this offering.

(1) The number of shares of our common stock outstanding as of December 18, 2018 excludes 6,177,214 shares of common stock issuable upon exercise of outstanding stock options, at a weighted average exercise price of $3.13 per share and 12,208,527 shares of common stock issuable upon exercise of outstanding warrants at a weighted average exercise price of $3.24 per share.

(2) The total number of shares of our common stock outstanding after this offering is based on 30,112,057 shares outstanding as of December 18, 2018 and does not give effect to any exercise of the Warrants.

RISK FACTORS

Investment in our securities involves a high degree of risk. In addition to the risks and investment considerations discussed elsewhere in this prospectus supplement or any document incorporated by reference herein, the following factors should be carefully considered by anyone purchasing the securities offered by this prospectus supplement. The risks and uncertainties described below are not the only ones we face. Additional risks and uncertainties not presently known to us or that we currently deem immaterial also may impair our business operations. We also update risk factors from time to time in our periodic reports on Forms 10-K, 10-Q and 8-K which will be incorporated by reference in this prospectus supplement. If any of the following risks actually occur, our business could be harmed. In such case, the trading price of our common stock could decline and investors could lose all or a part of their investment.

See also the statements contained under the heading “Forward Looking Statements.”

Risks Relating to Our Business:

There is substantial doubt relating to our ability to continue as a going concern.

We have recurring net losses, which have resulted in an accumulated deficit of $248,366,083 as of September 30, 2018. We have incurred a net loss of $11,692,928 for the fiscal year ended September 30, 2018. At September 30, 2018, we had cash and cash equivalents of $1,659,564. We have concluded that these factors raise substantial doubt about our ability to continue as a going concern for one year from the issuance of the financial statements.

In addition, the report from our independent registered public accounting firm for the year ended September 30, 2018 includes an explanatory paragraph stating that our significant losses and need to raise additional funds to meet our obligations and sustain operations raise substantial doubt about our ability to continue as a going concern. We will continue to seek to raise additional working capital through public equity, private equity or debt financings. If we fail to raise additional working capital, or do so on commercially unfavorable terms, it would materially and adversely affect our business, prospects, financial condition and results of operations, and we may be unable to continue as a going concern. Future reports from our independent registered public accounting firm may also contain statements expressing substantial doubt about our ability to continue as a going concern. If we seek additional financing to fund our business activities in the future and there remains substantial doubt about our ability to continue as a going concern, investors or other financing sources may be unwilling to provide additional funding to us on commercially reasonable terms, if at all

We have not produced significant revenues. This makes it difficult to evaluate our future prospects and increases the risk that we will not be successful.

Our operations since inception have produced limited revenues, and may not produce significant revenues in the near term, or at all, which may harm our ability to obtain additional financing and may require us to reduce or discontinue our operations. If we create significant revenues in the future, we expect to derive most of such revenues from the sale of supply chain security and product authentication solutions. You must consider our business and prospects in light of the risks and difficulties we will encounter as a company operating in a rapidly evolving industry. We may not be able to successfully address these risks and difficulties, which could significantly harm our business, operating results, and financial condition.

We have a history of net losses which may continue, and which may harm our ability to obtain financing and continue our operations.

We incurred net losses of $11.7 million and $12.9 million for the fiscal years ended September 30, 2018 and 2017, respectively. These net losses have principally been the result of the various costs associated with our selling, general and administrative and research and development expenses as we expanded operations, acquired, developed and validated technologies and expanded marketing activities. Our operations are subject to the risks and competition inherent in a company that moved from the development stage to an operating company. We may not generate sufficient revenues from operations to achieve or sustain profitability on a quarterly, annual or any other basis in the future. Our revenues and profits, if any, will depend upon various factors, including whether our existing products and services or any new products and services we develop will achieve market acceptance. If we continue to incur losses, then our accumulated deficit will continue to increase which may significantly impair our ability to obtain additional financing. As a result, our business, results of operations and financial condition would be significantly harmed, and we may be required to reduce or terminate our operations.

If we are unable to obtain additional financing our business operations may be harmed or discontinued.

Our continuation as a going concern is dependent upon our future revenues and our ability to commercialize more products, obtain additional capital and attain profitable operations. We will require additional funds to complete the continued development and commercialization of our products, product manufacturing, and to fund expected additional losses from operations, until revenues are sufficient to cover our operating expenses. If we are unsuccessful in obtaining any necessary additional financing, we will most likely be forced to reduce or terminate our operations.

Our opportunities in pharmaceuticals and biologics will require substantial additional funding. We may not be successful in our efforts to create a pipeline of product candidates or to develop commercially successful products. If we fail to successfully identify, finance and develop product candidates, our commercial opportunities in pharmaceuticals and biologics may be limited.

We have no pharmaceutical or biologic products approved for commercial sale and have not generated any revenue from product sales. Identifying, developing, obtaining regulatory approval and commercializing pharmaceutical and biologic product candidates will require substantial additional funding beyond our current available resources and is prone to the risks of failure inherent in drug or biologic development. Developing product candidates is expensive, and we expect to spend substantial amounts as we fund our early-stage research projects, engage in preclinical development of early-stage programs and, in particular, advance program candidates through preclinical development and clinical trials.

Even if we receive regulatory approval to market any of our product candidates, we cannot assure you that any such product candidate will be successfully commercialized, widely accepted in the marketplace or more effective than other commercially available alternatives.

Investment in pharmaceutical and biologic product development involves significant risk that any product candidate will fail to demonstrate adequate efficacy or an acceptable safety profile, gain regulatory approval, and become commercially viable. We cannot provide any assurance that we will be able to successfully advance any product candidates through the development process or, if approved, successfully commercialize any product candidates.

Even if we are able to generate revenue from the sale of any approved pharmaceutical and biologic products, we may not become profitable and may need to obtain additional funding to continue operations. Our failure to become and remain profitable would decrease the value of our company and could impair our ability to raise capital, expand our business, maintain our research and development efforts, diversify our pipeline of product candidates or continue our operations, and cause a decline in the value of our common stock, all or any of which may adversely affect our viability.

Our operating results could be adversely affected by a reduction in business with our significant customers.

Our revenue earned from the sale of products and services for the fiscal year ended September 30, 2018 included an aggregate of 65% of our total revenues from four customers. These four customers accounted for approximately 96% of our total accounts receivable at September 30, 2018. At September 30, 2018, one customer accounted for an aggregate of 82% of our total accounts receivable. Our revenues earned from sale of products and services for the fiscal year ended September 30, 2017 included an aggregate of 78% from four customers of our total revenues. These four customers accounted for approximately 97% of our total accounts receivable at September 30, 2017. At September 30, 2017, one customer accounted for 80% of our total accounts receivable. Generally, our customers do not have an obligation to make purchases from us and may stop ordering our products and services or may terminate existing orders or contracts at any time with little or no financial penalty. The loss of any of our significant customers, any substantial decline in sales to these customers, or any significant change in the timing or volume of purchases by our customers could result in lower revenues and could harm our business, financial condition or results of operations.

If our existing products and services are not accepted by potential customers or if we fail to introduce new products and services, our business, results of operations and financial condition will be harmed.

There has been limited market acceptance of our DNA based technology, encapsulation, embedment and authentication products and services to date. Some of the factors that will affect whether we achieve market acceptance of our solutions include:

- availability, quality and price relative to competitive solutions;
- customers' opinions of the solutions' utility;
- ease of use;
- consistency with prior practices;
- scientists' opinions of the solutions' usefulness; and
- general trends in anti-counterfeit and security solutions' research.

Dependence on channel partners.

Our future growth will depend to a material extent on the successful advocacy of our technology by channel partners to their members and customers, and implementation of our technology in solutions propagated by channel partners and provided by third parties. Our business has relied on the success of business partners. Our continuing success is largely dependent on a new generation of business partners involved in our tagging technology.

If our channel partners are not successful in advocating and deploying our technology, we may not be able to achieve and sustain profitable operations. If other business partners who include our technology in their products or otherwise license our intellectual property for use in their products cease to do so, or we fail to obtain other partners who will incorporate, embed, integrate or bundle our technology, or these partners are unsuccessful in their efforts, expanding deployment of our technology and increasing revenues will be adversely affected. Consequently, our ability to increase revenue could be adversely affected and we may suffer other adverse effects to our business. In addition, if our technology does not perform according to market expectations, our future sales would suffer as customers seek

and employ alternative technologies.

Many of our business endeavors can be impeded or frustrated by larger, more influential companies or by standard-setting bodies or institutions downplaying, minimizing or rejecting the value or use of our technology. A negative position by such companies, bodies or institutions, could result in obstacles for us that we would be incapable of overcoming and may block or impede the adoption of our technology. In addition, potential customers may delay or reject initiatives that relate to deployment of our technology. Such a development would make the achievement of our business objectives in this market difficult or impossible.

The expenses or losses associated with lack of widespread market acceptance of our solutions may harm our business, operating results and financial condition.

Rapid technological changes and frequent new product introductions are typical in the markets we serve. Our future success may depend in part on continuous, timely development and introduction of new products that address evolving market requirements. We believe successful new product introductions may provide a significant competitive advantage because customers invest their time in selecting and learning to use new products, and once invested in the new technology, are often reluctant to switch products. To the extent we fail to introduce new and innovative products, we may lose any market share we then have to our competitors, which will be difficult or impossible to regain. Any inability, for technological or other reasons, to successfully develop and introduce new products could reduce our growth rate or damage our business. We may experience delays in the development and introduction of products. We may not keep pace with the rapid rate of change in anti-counterfeiting and security products' research, and any new products acquired or developed by us may not meet the requirements of the marketplace or achieve market acceptance.

We need to expand our sales, marketing and support organizations and our distribution arrangements to increase market acceptance of our products and services.

We currently have a limited number of sales, marketing, customer service and support personnel and may need to increase our staff to generate a greater volume of sales and to support any new customers or the expanding needs of existing customers. The employment market for sales, marketing, customer service and support personnel in our industry is very competitive, and we may not be able to hire the kind and number of sales, marketing, customer service and support personnel we are targeting. Our inability to hire qualified sales, marketing, customer service and support personnel may harm our business, operating results and financial condition. While we have entered into a limited number of agreements with distributors, we may not be able to sufficiently build out a distribution network or enter into arrangements with qualified distributors on acceptable terms or at all. If we are not able to develop greater distribution capacity, we may not be able to generate sufficient revenue to support our operations.

If we are unable to continue to retain the services of Dr. Hayward, we may not be able to continue our operations.

Our success depends to a significant extent upon the continued service of Dr. James A. Hayward, our Chairman, Chief Executive Officer and President. On July 28, 2016, we entered into an employment agreement with Dr. Hayward. The initial term was from July 1, 2016 through June 30, 2017, with automatic one-year renewal periods. As of June 30, 2018, the employment contract renewed for an additional year. Loss of the services of Dr. Hayward could significantly harm our business, results of operations and financial condition. We do not maintain key-person insurance on the life of Dr. Hayward.

We may have conflicts of interest with our affiliates and related parties, and in the past we have engaged in transactions and entered into agreements with affiliates that were not negotiated at arms' length.

We have engaged, and may in the future engage, in transactions with affiliates and other related parties. These transactions may not have been, and may not be, on terms as favorable to us as they could have been if obtained from non-affiliated persons. While an effort has been made, and will continue to be made, to enter into transactions with affiliated persons and other related parties at rates and on terms as favorable as would be charged by others, there will always be an inherent conflict of interest between our interests and those of our affiliates and related parties. In August 2018 and November 2018, we issued an aggregate of $2.2 million in principal amount of secured convertible notes, a majority of which are owned by our chairman, president and chief executive officer. These convertible notes may be converted into common stock, which, if converted by Dr. Hayward, would increase the amount of control he has over the Company. The Company may be adversely impacted if any related party agreement or transaction is made on unfavorable terms.

The markets for our supply chain security and product authentication solutions are very competitive, and we may be unable to continue to compete effectively in these industries in the future.

The principal markets for our offerings are intensely competitive. We compete with many existing suppliers and new competitors continue to enter the market. Many of our competitors, both in the United States and elsewhere, are major pharmaceutical, chemical and biotechnology companies, or have strategic alliances with such companies, and many of them have substantially greater capital resources, marketing experience, research and development staff, and facilities than we do. Any of these companies could succeed in developing products that are more effective than the products that we have or may develop and may be more successful than us in producing and marketing their existing products. Some of our competitors that operate in the anti-counterfeiting and fraud prevention markets include: 3DTL Inc., Alp Vision Sa, Authentix Inc., Brandwatch Technologies, Chromologic LLC, Collectors Universe Inc., Collotype Labels International, Data Dot Technology, De La Rue Plc., Digimarc Corp., DNA Technologies, Inc., DuPont Authentication Systems, FractureCode Corporation, Haelixa, ICA Bremen GmbH, ID Global Solutions Corporation, IEHCorporationInformium AG, Eastman Kodak Company, L-1 Identity Solutions Inc., opSec Security Group plc., MicroTagTemed Ltd., Nanotech Security Corp., Nokomis, Inc., Oritain Global Limited, ProoftagSAS, SafeTraces Inc., Selectamark Security Systems plc, Spectra Systems Corp., SmartWater Technology, Inc., Sun Chemical Corp, TraceTag International, TruTag Technologies Inc., YottaMark Inc., and Safe Traces, Inc.

We expect this competition to continue and intensify in the future. Competition in our markets is primarily driven by:

- product performance, features and liability;
- price;
- timing of product introductions;
- ability to develop, maintain and protect proprietary products and technologies;
- sales and distribution capabilities;
- technical support and service;
- brand loyalty;

- applications support; and

- breadth of product line.

If a competitor develops superior technology or cost-effective alternatives to our products, our business, financial condition and results of operations could be significantly harmed.

Revenues from our customer contracts with respect to cotton will be seasonal and may also be subject to weather conditions and other factors beyond our control, which may cause our operating results to fluctuate significantly quarterly and annually.

A significant proportion of our revenues is expected to derive from customer contracts for tagging, authentications and other services related to cotton. The cotton ginning season in the United States takes place between September and March each year. Therefore, revenues from our customer contracts relating to cotton will be seasonal, which may cause our operating results to fluctuate significantly quarterly and annually. Additionally, weather and climatic conditions, natural disasters and other factors beyond our control also affect the production and sale of cotton and other agricultural commodities to which our customer contracts may relate, as well as our customers' or prospective customers' decisions regarding purchases of our products and services, and may cause our operating results to fluctuate significantly quarterly and annually. The seasonal fluctuations in operating results described above may cause a decline in the price of our common stock.

Fluctuations in quarterly results.

Our revenues and profitability are difficult to predict due to the nature of the markets in which we compete, fluctuating user demand, the uncertainty of current and future global economic conditions, and for many other reasons, including that our operating results are highly dependent on the volume and timing of orders received during a quarter, which are difficult to forecast. Customers generally order on an as-needed basis and we typically do not obtain firm, long-term purchase commitments from our customers.

Shifting enforcement priorities of U.S. federal laws relating to cannabis.

The Company is currently developing supply chain solutions for the cannabis industry. These solutions are intended to verify the authenticity, origin and provenance of cannabis. Cannabis is a Schedule I substance as defined under U.S. federal law, and its possession and use is generally not permitted under U.S. federal law, although a number of individual states have enacted state laws to authorize possession, sale and use of cannabis for medical purposes, and in some states for recreational purposes. Our solutions will be utilized in those U.S. states where cannabis possession, sale and/or use is legal under state law. While our cannabis supply chain solutions are distinct from cannabis itself, our cannabis supply chain business and related revenue may nevertheless be adversely impacted by such laws at the federal and/or state level in the United States, or potentially in foreign jurisdictions. It is possible that such laws may result in our cannabis supply chain business having no revenues or may subject the Company to increased risk of litigation.

Pharmaceutical and biologic-related revenue is generally dependent on regulatory approval, oversight and compliance.

All of our pharmaceutical and biologic product candidates will require significant preclinical and clinical development before we can seek regulatory approval for them and launch a product commercially. The sale and use of our products and services in the pharmaceutical and biologic markets will generally be subject to regulatory approval and oversight, potentially including approval and/or oversight in various foreign jurisdictions. In addition, our pharmaceutical and biologic products and services may be incorporated into products that cannot be marketed in the United States or in many other jurisdictions without approval by the Food and Drug Administration (“FDA”) or comparable agencies of other countries or regions. Obtaining such regulatory approvals is costly, time-consuming, uncertain, and subject to unanticipated delays. When, if ever, such approvals will be obtained is unknown. Our revenue in the pharmaceutical and biologic markets, including revenue from our agreements with Colorcon is highly dependent upon obtaining such approval.

Federal agencies, including the FDA and Federal Trade Commission (“FTC”), as well as state, local, and foreign authorities, also exercise ongoing review and control of the manufacturing, packaging, labeling, advertising, sale, distribution, and monitoring of pharmaceutical and biologic products. If our pharmaceutical or biologic product candidates or pharmaceutical or biologic products incorporating our products are ever approved, failure to comply with any of these regulations or other requirements could also have an adverse effect on our revenue in the pharmaceutical and biologic markets.

Pharmaceutical and biologic -related revenue will be highly dependent on our collaborators’ and customers’ success in obtaining regulatory approval and commercializing their products.

Some of our products in the pharmaceutical and biologic market will be incorporated into products that are subject to comprehensive regulation by the FDA and other regulatory agencies in the United States and by comparable authorities in other countries. In the United States, to obtain approval from the FDA to market any future pharmaceutical or biologic product that incorporates our technology, our collaborators or customers will be required to submit a New Drug Application ("NDA") or Biologics Licensing Application ("BLA"). Ordinarily, the FDA requires a company to support an NDA or BLA with substantial evidence of the product candidate's safety and efficacy in treating the targeted indication based on data derived from adequate and well-controlled clinical trials, including Phase III safety and efficacy trials conducted in patients with the disease or condition being targeted. The process of obtaining such regulatory approvals is expensive, often takes many years if approval is obtained at all, and can vary substantially based upon the type, complexity and novelty of the product candidate involved. Changes in the regulatory approval process during the development period, changes in or the enactment of additional statutes or regulations, or changes in the regulatory review process may cause delays in the approval or rejection of an application. There is no guarantee that our collaborators and customers will ever be successful in obtaining regulatory approval for any product that incorporates our products or technology. Even if regulatory approval is received, the manufacturing processes, post approval clinical data, labeling, advertising and promotional activities for any such product will be subject to continual requirements of and review by the FDA and other regulatory bodies. Our business may be materially harmed by our collaborators' and customers' inability to obtain or maintain regulatory approvals for their products.

In addition, we will be dependent on, and have no control over, consumer demand for the products into which our products are incorporated. Consumer demand for our collaborators' and customers' products could be adversely affected by, among other things, delays in health regulatory approval, the loss of patent and other intellectual property rights protection, the emergence of competing products, including generic drugs or biosimilars, the degree to which private and government drug plans subsidize payment for a particular product and changes in the marketing strategies for such products. The healthcare industry has changed significantly over time, and we expect the industry to continue to evolve. Some of these changes may have a material adverse effect on our collaborators and customers and thus may have a material adverse effect on our business. If the products into which our products are incorporated do not gain market acceptance, our revenues and profitability may be adversely affected.

Pharmaceutical and biologic products are highly complex, and if we or our collaborators and customers are unable to provide quality and timely offerings to our respective customers, our business could suffer.

The process of manufacturing pharmaceutical and biologics and their components is complex, highly-regulated and subject to multiple risks.

Manufacturing biologics is highly susceptible to product loss due to contamination, equipment failure, improper installation or operation of equipment, vendor or operator error, inconsistency in yields, variability in product characteristics and difficulties in scaling the production process. Even minor deviations from normal manufacturing processes could result in reduced production yields, product defects and other supply disruptions.

Our ability to generate revenue in the pharmaceutical and biologic market depends on our ability to manufacture products that meet exacting quality and safety standards. If we are unable to manufacture these products to the required levels, it could have an adverse effect on our business, financial condition, and results of operations and may subject us to regulatory actions, including product recalls, product seizures, injunctions to halt manufacture or distribution, restrictions on our operations, or civil sanctions, including monetary sanctions and criminal actions. In addition, we could be subject to costly litigation, including claims from our collaborators and customers for reimbursement for the cost of our products or other related losses, the cost of which could be significant.

Our business also depends on the ability of our collaborators and customers to manufacture the pharmaceutical or biologic products that incorporate our products. If the FDA determines that our collaborators and customers are not in compliance with FDA laws and regulations, including those governing Current Good Manufacturing Practice regulations ("cGMPs"), the FDA may deny NDA or BLA approval until the deficiencies are corrected. Even if our collaborators or customers obtain regulatory approval for any of their product candidates, there is no assurance that they will be able to manufacture the approved product to specifications acceptable to the FDA or other regulatory authorities, to produce it in sufficient quantities to meet the requirements for the potential launch of the product or to meet potential future demand. If our collaborators or customers are unable to produce sufficient quantities for clinical

trials or for commercialization, commercialization efforts would be impaired, which would have an adverse effect on our business, financial condition, results of operations and growth prospects.

Pharmaceutical and biologic -related revenue will be dependent on our collaborators' and customers' demand for our manufacturing services.

The amount of customer spending on biologic development and manufacturing will have an impact on our sales and profitability in the pharmaceutical and biologic market. Our collaborators and customers determine the amounts that they will spend based upon, among other things, available resources, access to capital, and their need to develop new products, which, in turn, are dependent upon a number of factors, including their competitors' research, development and product initiatives and the anticipated market uptake, and clinical and reimbursement scenarios for specific products and therapeutic areas. Consolidation in the pharmaceutical and biologic industry may impact such spending as customers integrate acquired operations, including R&D departments and manufacturing operations. Any reduction in spending on pharmaceutical and biotechnology development and related services as a result of these and other factors could have a material adverse effect on our business, results of operations and financial condition.

The markets for our drug and biologic candidates and linear DNA are very competitive, and we may be unable to continue to compete effectively in these industries in the future.

The principal markets for our drug and biologic candidates and linear DNA are intensely competitive. We compete with many existing suppliers and new competitors continue to enter the market. Many of our competitors, both in the United States and elsewhere, are major pharmaceutical, chemical and biotechnology companies, or have strategic alliances with such companies, and many of them have substantially greater capital resources, marketing experience, research and development staff, and facilities than we do. Any of these companies could succeed in developing products that are more effective than the product candidates that we have or may develop and may be more successful than us in producing and marketing their existing products. Some of our competitors that operate in the drugs, biologics and DNA manufacturing markets include: Intrexon Corp,. Aldervron, LLC, Cobra Biologics, Limited, Integrated DNA Technologies, Inc., Ziopharm Oncology, Inc., MaxCyte Inc., Touchlight Genetics Ltd. Novartis AG, Kite Pharma, Inc. and Juno Therapeutics, Inc.

We expect this competition to continue and intensify in the future. Our competitors also compete with us in recruiting and retaining qualified scientific and management personnel, as well as in acquiring technologies complementary to, or necessary for, our programs. Our commercial opportunities could be reduced or eliminated if our competitors develop and commercialize drug and biologic candidates or linear DNA that are safer, more effective, have fewer or less severe side effects, are more convenient, or are less expensive than any drug and biologic candidates and linear DNA that we may develop. Our competitors also may obtain FDA or other regulatory approval for their products more rapidly than we may obtain approval for ours, which could result in our competitors establishing a strong market position before we are able to enter the market. Additionally, drug and biologic candidates and linear DNA developed by our competitors may render our potential drug and biologic candidates and linear DNA uneconomical or obsolete, and we may not be successful in marketing any drug and biologic candidates and linear DNA we may develop against competitors.

If any of these risks occur, our business, financial condition and results of operations could be significantly harmed.

Our research and development efforts for new products may be unsuccessful.

We incur research and development expenses to develop new products and technologies in an effort to maintain our competitive position in a market characterized by rapid rates of technological advancement. Our research and development efforts are subject to unanticipated delays, expenses and technical problems. There can be no assurance that any of these products or technologies will be successfully developed or that, if developed, will be commercially successful. In the event that we are unable to develop commercialized products from our research and development efforts or we are unable or unwilling to allocate amounts beyond our currently anticipated research and development investment, we could lose our entire investment in these new products and technologies. Any failure to translate

research and development expenditures into successful new product introduction could have an adverse effect on our business.

In addition, research, development, and commercialization of pharmaceutical and biologic products is inherently risky. We cannot give any assurance that any of our pharmaceutical and biologic product candidates will receive regulatory approval, which is necessary before they can be commercialized.

Other risks include:

- Our preclinical programs may experience delays or may never advance to clinical trials, which would adversely affect our ability to obtain regulatory approvals or commercialize these programs on a timely basis or at all, which would have an adverse effect on our business.

- We have no history of commercializing pharmaceutical products, which may make it difficult to evaluate the prospects for our future viability.

- If the FDA rejects an Investigational New Drug Application ("IND") submitted by us or places us on clinical hold, we will not be able to commence a Phase 1 clinical trial in the U.S., which would likely have a material adverse effect on us.

- We have never dosed any of our product candidates in humans. Our clinical trials may reveal significant adverse events, toxicities or other side effects not seen in our preclinical studies and may result in a safety profile that could inhibit regulatory approval or market acceptance of any of our product candidates.

- Positive results from early preclinical studies of our product candidates are not necessarily predictive of the results of later preclinical studies and any future clinical trials of our product candidates. If we cannot show positive results or replicate any positive results from our earlier preclinical studies of our product candidates in our later preclinical studies and future clinical trials, we may be unable to successfully develop, obtain regulatory approval for and commercialize our product candidates.

- We may not be successful in our efforts to create a pipeline of product candidates or to develop commercially successful products. If we fail to successfully identify and develop additional product candidates, our commercial opportunity may be limited.

- If we receive authorization to conduct our clinical trials, we may encounter substantial delays in our clinical trials, or may not be able to conduct or complete our clinical trials on the timelines we expect, if at all.

- We may encounter difficulties enrolling patients in our clinical trials, and our clinical development activities could thereby be delayed or otherwise adversely affected.

- Our clinical trials may fail to demonstrate substantial evidence of the safety and efficacy of our product candidates, which would prevent, delay or limit the scope of regulatory approval and commercialization.

- Clinical development is a lengthy and expensive process with an uncertain outcome, and failure can occur at any stage of clinical development. If we are unable to design, conduct and complete our clinical trials successfully, our product candidates will not be able to receive regulatory approval.

- We face significant competition in an environment of rapid technological and scientific change, and there is a possibility that our competitors may achieve regulatory approval before us or develop therapies that are safer, more advanced or more effective than ours, which may negatively impact our ability to successfully market or commercialize any product candidates we may develop and ultimately harm our financial condition.

- The manufacture of our product candidates is complex and difficulties may be encountered in production. If such difficulties are encountered or failure to meet regulatory standards occurs, our ability to provide supply of our

product candidates for clinical trials or our products for patients, if approved, could be delayed or stopped, or we may be unable to maintain a commercially viable cost structure.

- If, in the future, we are unable to establish sales and marketing capabilities or enter into agreements with third parties to sell and market any product candidates we may develop, we may not be successful in commercializing those product candidates if and when they are approved.

- Even if any product candidates we develop receive marketing approval, they may fail to achieve the degree of market acceptance by physicians, patients, healthcare payors, and others in the medical community necessary for commercial success.

- Even if we are able to commercialize any product candidates, such products may become subject to unfavorable pricing regulations, third party reimbursement practices, or healthcare reform initiatives, which would harm our business.

Failure to license new technologies could impair sales of our existing products or any new product development we undertake in the future.

To generate broad product lines, it is advantageous to sometimes license technologies from third parties rather than depend exclusively on the development efforts of our own employees. As a result, we believe our ability to license new technologies from third parties may be important to our ability to offer new products. In addition, from time to time we are notified of, or become aware of patents held by third parties that are related to technologies we are selling or may sell in the future. After a review of these patents, we may decide to seek a license for these technologies from these third parties. There can be no assurance that we will be able to successfully identify new technologies developed by others. Even if we are able to identify new technologies of interest, we may not be able to negotiate a license on favorable terms, or at all.

Our failure to manage our growth in operations and acquisitions of new product lines and new businesses could harm our business.

The recent growth in our operations could place a significant strain on our current management resources. To manage such growth, we may need to improve our:

- operations and financial systems;
- procedures and controls; and
- training and management of our employees.

Our future growth, if any, may be attributable to acquisitions of new product lines and new businesses. Future acquisitions, if successfully consummated, would likely create increased working capital requirements, which would likely precede by several months any material contribution of an acquisition to our net income. Our failure to manage growth or future acquisitions successfully could seriously harm our operating results. Also, acquisition costs could cause our operating results to vary significantly from quarter to quarter. Furthermore, our stockholders would be diluted if we financed the acquisitions by incurring convertible debt or issuing securities.

A percentage of our sales occur outside of the U.S. As a result, we are subject to the economic, political, regulatory and other risks of international operations.

For fiscal 2018 and 2017, 45% and 27%, respectively, of our revenue was from customers located outside of the U.S. We believe that the revenue from the sale of our products and services outside the U.S. will continue to grow in the near future. We intend to expand our international operations to the extent that suitable opportunities become available. Our foreign operations and sales could be adversely affected as a result of:

- nationalization of private enterprises and assets;
- political or economic instability in certain countries and regions;
- differences in foreign laws, including increased difficulties in protecting intellectual property and uncertainty in enforcement of contract rights;
- the possibility that foreign governments may adopt regulations or take other actions that could directly or indirectly harm our business and growth strategy;
- credit risks;

- currency fluctuations;
- tariff and tax increases;
- export and import restrictions and restrictive regulations of foreign governments;
- shipping products during times of crisis or wars; and
- other risks inherent in foreign operations.

We are subject to numerous regulatory, legal, operational, and other risks as a result of our international operations which could adversely impact our businesses in many ways.

As a U.S. company, we are required to comply with the economic sanctions and embargo programs administered by Office of Foreign Assets Control and similar multi-national bodies and governmental agencies worldwide, and the Foreign Corrupt Practices Act ("FCPA"). A violation of a sanction or embargo program or of the FCPA or similar laws prohibiting certain payments to governmental officials, such as the U.K. Bribery Act, could subject us, and individual employees, to a regulatory enforcement action as well as significant civil and criminal penalties which could adversely impact our business and operations.

Failure to attract and retain qualified scientific, production and managerial personnel could harm our business.

Recruiting and retaining qualified scientific and production personnel to perform and manage prototype, sample, and product manufacturing and business development personnel to conduct business development are critical to our success. In addition, our desired growth and expansion into areas and activities requiring additional expertise, such as clinical testing, government approvals, production, sales and marketing will require the addition of new management personnel and the development of additional expertise by existing management personnel. Because our industry is very competitive, we face significant challenges in attracting and retaining a qualified personnel base. Although we believe we have been, and will continue to be, able to attract and retain these personnel, we cannot assure you that we will continue to be able to successfully attract qualified personnel in the future. The failure to attract and retain these personnel or, alternatively, to develop this expertise internally would harm our business since our ability to conduct business development and manufacturing would be reduced or eliminated, resulting in lower revenues. We generally do not enter into employment agreements requiring our employees to continue in our employment for any period of time, with the exception of our Chief Executive Officer. See "If we are unable to continue to retain the services of Dr. Hayward, we may not be able to continue our operations" above in "Risk Factors."

Our intellectual property rights are valuable, and any inability to protect them could reduce the value of our products, services and brand.

Our patents, trademarks, trade secrets, copyrights and all of our other intellectual property rights are important assets for us. There are events that are outside of our control that pose a threat to our intellectual property rights as well as to our products and services. For example, effective intellectual property protection may not be available in every country in which our products and services are distributed. The efforts we have taken to protect our proprietary rights may not be sufficient or effective. Any significant impairment of our intellectual property rights could harm our business or our ability to compete. Protecting our intellectual property rights is costly and time consuming. Any increase in the unauthorized use of our intellectual property could make it more expensive to do business and harm our operating results. Although we seek to obtain patent protection for our innovations, it is possible we may not be able to protect some of these innovations. Given the costs of obtaining patent protection, we may choose not to protect certain innovations that later turn out to be important. There is always the possibility that the scope of the protection gained from one of our issued patents will be insufficient or deemed invalid or unenforceable. We also seek to maintain certain intellectual property as trade secrets. The secrecy could be compromised by third parties, or intentionally or accidentally by our employees, which would cause us to lose the competitive advantage resulting from these trade secrets.

Intellectual property litigation could harm our business, financial condition and results of operations.

Litigation regarding patents and other intellectual property rights is extensive in the drug and biotechnology industry. In the event of an intellectual property dispute, we may be forced to litigate. This litigation could involve proceedings instituted by the U.S. Patent and Trademark Office or the International Trade Commission, as well as proceedings brought directly by affected third parties. Intellectual property litigation can be extremely expensive, and these expenses, as well as the consequences should we not prevail, could seriously harm our business.

If a third party claims an intellectual property right to technology we use, we might need to discontinue an important product or product line, alter our products and processes, pay license fees or cease our affected business activities. Although we might under these circumstances attempt to obtain a license to this intellectual property, we may not be able to do so on favorable terms, or at all. Furthermore, a third party may claim that we are using inventions covered by the third party's patent rights and may go to court to stop us from engaging in our normal operations and activities, including making or selling our products. These lawsuits are costly and could affect our results of operations and divert the attention of managerial and technical personnel. A court may decide that we are infringing the third party's patents and would order us to stop the activities covered by the patents. In addition, a court may order us to pay the other party damages for having violated the other party's patents. The drug and biotechnology industry has produced a proliferation of patents, and it is not always clear to industry participants, including us, which patents cover various types of products or methods of use. The coverage of patents is subject to interpretation by the courts, and the interpretation is not always uniform. If we are sued for patent infringement, we would need to demonstrate that our products or methods of use either do not infringe the patent claims of the relevant patent and/or that the patent claims are invalid, and we may not be able to do this. Proving invalidity, in particular, is difficult since it requires a showing of clear and convincing evidence to overcome the presumption of validity enjoyed by issued patents.

Because some patent applications in the United States may be maintained in secrecy until the patents are issued, because patent applications in the United States and many foreign jurisdictions are typically not published until eighteen months after filing, and because publications in the scientific literature often lag behind actual discoveries, we cannot be certain that others have not filed patent applications for technology covered by our or our licensor's issued patents or pending applications or that we or our licensors were the first to invent the technology. During the ordinary course of our business, we do not conduct "prior art" searches before filing a patent application. Our competitors may have filed, and may in the future file, patent applications covering technology similar to ours. Any such patent application may have priority over our or our licensors' patent applications and could further require us to obtain rights to issued patents covering such technologies. If another party has filed a United States patent application on inventions similar to ours, we may have to participate in an interference proceeding declared by the U.S. Patent and Trademark Office to determine priority of invention in the United States. The costs of these proceedings could be substantial, and it is possible that such efforts would be unsuccessful, resulting in a loss of our United States patent position with respect to such inventions.

Some of our competitors may be able to sustain the costs of complex patent litigation more effectively than we can because they have substantially greater resources. In addition, 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.

Accidents related to hazardous materials could adversely affect our business.

Some of our operations require the controlled use of hazardous materials for chemical reactions and synthesis. These materials are common to molecular/biological/chemical laboratories and require no special handling or regulation. Although we believe our safety procedures comply with the standards prescribed by federal, state, local and foreign regulations, the risk of accidental contamination of property or injury to individuals from these materials cannot be completely eliminated. In the event of an accident, we could be liable for any damages that result, which could seriously damage our business and results of operations.

Potential product liability claims could affect our earnings and financial condition.

We face a potential risk of liability claims based on our products and services. Though we have product liability insurance coverage which we believe is adequate, we may not be able to maintain this insurance at reasonable cost and on reasonable terms. We also cannot assure that this insurance will be adequate to protect us against a product liability claim, should one arise. In the event that a product liability claim is successfully brought against us, it could result in a significant decrease in our liquidity or assets, which could result in the reduction or termination of our business. A successful product liability claim or series of claims brought against us could cause our stock price to decline, and, if judgments exceed our insurance coverage, could adversely affect our results of operations, prospects, and business. Product liability claims may result in impairment of our business reputation and other losses.

Litigation generally could affect our financial condition and results of operations.

We generally may be subject to claims made by and required to respond to litigation brought by customers, former employees, former officers and directors, former distributors and sales representatives, former consultants and vendors and service providers. We have faced such claims and litigation in the past and we cannot assure you that we will not be subject to claims in the future. In the event that a claim is successfully brought against us, considering our lack of material revenue and the losses our business has incurred for the period from our inception to September 30, 2018, this could result in a significant decrease in our liquidity or assets, which could result in the reduction or termination of our business.

Business disruptions could seriously harm our future revenue and financial condition and increase our costs and expenses.

Our operations could be subject to earthquakes, power shortages, telecommunications failures, cyber-attacks or other vulnerabilities in our computer systems, terrorism, water shortages, tsunamis, floods, hurricanes, typhoons, fires, extreme weather conditions, medical epidemics, political or economic instability, and other natural or manmade disasters or business interruptions. The occurrence of any of these business disruptions could seriously harm our revenue and financial condition and increase our costs and expenses.

General economic conditions may adversely affect our business, operating results and financial condition.

A general weakening or decline in the global economy or a period of economic slowdown may have serious negative consequences for our business and operating results. Since our customers incorporate our products into a variety of consumer goods, the demand for our products is subject to worldwide economic conditions and their impact on levels of consumer spending. Some of the factors affecting consumer spending include general economic conditions, unemployment, consumer debt, reductions in net worth, residential real estate and mortgage markets, taxation, energy prices, interest rates, consumer confidence and other macroeconomic factors. During periods of economic weakness or uncertainty, demand for consumer goods incorporating our products may weaken, and current or potential customers may defer purchases of our products.

A cybersecurity incident and other technology disruptions could negatively affect our business and our relationships with customers.

We use technology in substantially all aspects of our business operations. The widespread use of technology, including mobile devices, cloud computing, and the internet, give rise to cybersecurity risks, including security breach, espionage, system disruption, theft and inadvertent release of information. Our business involves the storage and transmission of numerous classes of sensitive and/or confidential information and intellectual property, including information relating to customers and suppliers, private information about employees, and financial and strategic information about us and our business partners. If we fail to effectively assess and identify cybersecurity risks associated with the use of technology in our business operations, we may become increasingly vulnerable to such risks. Additionally, while we have implemented measures to prevent security breaches and cyber incidents, our preventative measures and incident response efforts may not be entirely effective. The theft, destruction, loss, misappropriation, or release of sensitive and/or confidential information or intellectual property, or interference with our information technology systems or the technology systems of third parties on which we rely, could result in business disruption, negative publicity, brand damage, violation of privacy laws, loss of customers, potential liability and competitive disadvantage.

Risks Related to Regulatory Approval of Our Pharmaceutical and Biotherapeutic Product Candidates and Other Legal Compliance Matters:

The regulatory approval processes of the FDA and comparable foreign regulatory authorities are lengthy, time consuming, and inherently unpredictable. If we are ultimately unable to obtain regulatory approval for our product candidates, we will be unable to generate product revenue and our business will be substantially harmed.

The time required to obtain approval by the FDA and comparable foreign regulatory authorities is unpredictable, typically takes many years following the commencement of clinical trials, and depends upon numerous factors, including the type, complexity and novelty of the product candidates involved. In addition, approval policies, regulations, or the type and amount of clinical data necessary to gain approval may change during the course of a product candidate's clinical development and may vary among jurisdictions, which may cause delays in the approval or the decision not to approve an application. Regulatory authorities have substantial discretion in the approval process and may refuse to accept any application or may decide that our data are insufficient for approval and require additional preclinical, clinical or other studies. We have not submitted for, or obtained regulatory approval for any product candidate, and it is possible that none of our existing product candidates or any product candidates we may seek to develop in the future will ever obtain regulatory approval. Applications for our product candidates could fail to receive regulatory approval for a variety of reasons. This lengthy approval process, as well as the unpredictability of the results of clinical trials, may result in our failing to obtain regulatory approval to market any of our product candidates, which would significantly harm our business, results of operations, and prospects.

Our product candidates may cause undesirable side effects or have other properties that could halt their clinical development, prevent their regulatory approval, limit their commercial potential, or result in significant negative consequences.

Adverse events or other undesirable side effects caused by our product candidates could cause us or regulatory authorities to interrupt, delay, or halt clinical trials and could result in a more restrictive label or the delay or denial of regulatory approval by regulatory authorities. Side effects related to a drug or biologic could affect patient recruitment, the ability of enrolled patients to complete the study, and/or result in potential product liability claims.

Additionally, if one or more of our product candidates receives marketing approval, and we or others later identify undesirable side effects or adverse events caused by such products, a number of potentially significant negative consequences could result. Regulatory authorities may withdraw approvals of such product or impose restrictions on distribution. They may require additional warnings or contraindications on the product label that could diminish the usage or otherwise limit the commercial success of the product. We may be required to change the way the product is administered, conduct additional clinical trials or post-approval studies. We may be forced to suspend marketing of the product; or required to create a Risk Evaluation and Mitigation Strategy ("REMS"). In addition, our reputation may

suffer. Any of these events could prevent us from achieving or maintaining market acceptance of the particular product candidate, if approved, and could significantly harm our business, prospects, results of operations, and prospects.

Obtaining and maintaining regulatory approval of our product candidates in one jurisdiction does not mean that we will be successful in obtaining regulatory approval of our product candidates in other jurisdictions.

Obtaining and maintaining regulatory approval of our product candidates in one jurisdiction does not guarantee that we will be able to obtain or maintain regulatory approval in any other jurisdiction, but a failure or delay in obtaining regulatory approval in one jurisdiction may have a negative effect on the regulatory approval process in others. Approval procedures vary among jurisdictions and can involve requirements and administrative review periods different from those in the United States, including additional preclinical studies or clinical trials as clinical trials conducted in one jurisdiction may not be accepted by regulatory authorities in other jurisdictions. In many jurisdictions outside the United States, a product candidate must be approved for reimbursement before it can be approved for sale in that jurisdiction. In some cases, the price that we intend to charge for our products is also subject to approval. There could be significant delays, difficulties and costs for us and could delay or prevent the introduction of our products in certain countries. Failure to comply with the regulatory requirements in international markets or failure to receive applicable marketing approvals could reduce our target market and harm our ability to realize the full market potential of our product candidates.

Even if we obtain regulatory approval for a product candidate, our products will remain subject to extensive regulatory scrutiny.

If any of our product candidates are approved, they will be subject to ongoing regulatory requirements for manufacturing, labeling, packaging, storage, advertising, promotion, sampling, record-keeping, conduct of post-marketing studies, and submission of safety, efficacy, and other post-market information, including both federal and state requirements in the United States and requirements of comparable foreign regulatory authorities. Ongoing regulatory requirements include ensuring that quality control and manufacturing and production procedures conform to cGMP regulations, and we will be subject to continual review and inspections to assess compliance with cGMP and adherence to commitments made in any regulatory filings. Accordingly, we and others with whom we work must continue to expend time, money, and effort in all areas of regulatory compliance.

Any regulatory approvals that we receive for our product candidates will be subject to limitations on the approved indicated uses for which the product may be marketed and promoted or to the conditions of approval (including the requirement to implement a REMS), or contain requirements for potentially costly post-marketing testing. We will be required to report certain adverse reactions and production problems, if any, to the FDA and comparable foreign regulatory authorities. Any new legislation addressing drug or biologic safety issues could result in delays in product development or commercialization, or increased costs to assure compliance. The FDA and other agencies, including the Department of Justice, closely regulate and monitor the post-approval marketing and promotion of products to ensure that they are manufactured, marketed and distributed only for the approved indications and in accordance with the provisions of the approved labeling. We will have to comply with requirements concerning advertising and promotion for our products. Promotional communications with respect to prescription drugs and biologics are subject to a variety of legal and regulatory restrictions and must be consistent with the information in the product's approved label. As such, we may not promote our products for indications or uses for which they do not have approval. The holder of an approved NDA must submit new or supplemental applications and obtain approval for certain changes to the approved product, product labeling, or manufacturing process. We could also be asked to conduct post-marketing clinical trials to verify the safety and efficacy of our products in general or in specific patient subsets. If original marketing approval was obtained via the accelerated approval pathway, we could be required to conduct a successful post-marketing clinical trial to confirm clinical benefit for our products. An unsuccessful post-marketing study or failure to complete such a study could result in the withdrawal of marketing approval.

If a regulatory agency discovers previously unknown problems with a product, such as adverse events of unanticipated severity or frequency, or problems with the facility where the product is manufactured, or disagrees with the promotion, marketing or labeling of a product, such regulatory agency may impose restrictions on that product or us, including, but not limited to, requiring withdrawal or recall of the product from the market, imposing civil or criminal penalties, and imposing restrictions on our operations. Any government investigation of alleged violations of law could require us to expend significant time and resources in response, and could generate negative publicity. Any failure to comply with ongoing regulatory requirements may significantly and adversely affect our ability to commercialize and generate revenue from our products. If regulatory sanctions are applied or if regulatory approval is withdrawn, the value of our company and our operating results will be adversely affected.

In addition, the FDA's regulations, policies or guidance may change and new or additional statutes or government regulations in the United States and other jurisdictions may be enacted that could further restrict or regulate post-approval activities. We cannot predict the likelihood, nature or extent of adverse government regulation that may arise from pending or future legislation or administrative action. If we are not able to achieve and maintain regulatory compliance, we may not be permitted to market our products and/or product candidates, which would adversely affect our ability to generate revenue and achieve or maintain profitability.

Healthcare legislative measures aimed at reducing healthcare costs may have a material adverse effect on our business and results of operations.

Third party payors are developing increasingly sophisticated methods of controlling healthcare costs. In both the United States and certain foreign jurisdictions, there have been a number of legislative and regulatory changes to the health care system that could impact our ability to sell our products profitably. In particular, in the United States in 2010, the Affordable Care Act, or ACA, was enacted. In addition, other legislative changes have been proposed and adopted in the United States since the ACA was enacted. The repeal of or changes in some or all of the ACA and complying with any new legislation or reversing changes implemented under the ACA could be time-intensive and expensive, resulting in a material adverse effect on our business. Until the ACA is fully implemented or there is more certainty concerning the future of the ACA, it will be difficult to predict its full impact and influence on our business.

There have been, and likely will continue to be, legislative and regulatory proposals at the foreign, federal and state levels directed at containing or lowering the cost of healthcare. We cannot predict the initiatives that may be adopted in the future. The continuing efforts of the government, insurance companies, managed care organizations and other payors of healthcare services to contain or reduce costs of healthcare and/or impose price controls may adversely affect the demand for our product candidates, if we obtain regulatory approval, including: our ability to receive or set a price that we believe is fair for our products; our ability to generate revenue and achieve or maintain profitability; the level of taxes that we are required to pay; and the availability of capital. We expect that the ACA, as well as other healthcare reform measures that may be adopted in the future, may result in additional reductions in Medicare and other healthcare funding, more rigorous coverage criteria, lower reimbursement, and new payment methodologies. This could lower the price that we receive for any approved product. Any denial in coverage or reduction in reimbursement from Medicare or other government-funded programs may result in a similar denial or reduction in payments from private payors, which may prevent us from being able to generate sufficient revenue, attain profitability or commercialize our product candidates, if approved.

Our employees, independent contractors, consultants, commercial partners and vendors may engage in misconduct or other improper activities, including non-compliance with regulatory standards and requirements.

We are exposed to the risk of fraud, misconduct or other illegal activity by our employees, independent contractors, consultants, commercial partners and vendors. Misconduct by these parties could include intentional, reckless and negligent conduct that fails to: comply with the laws of the FDA and other comparable foreign regulatory authorities; provide true, complete and accurate information to the FDA and other comparable foreign regulatory authorities; comply with manufacturing standards we have established; comply with healthcare fraud and abuse laws in the United States and similar foreign fraudulent misconduct laws; or report financial information or data accurately or to disclose unauthorized activities to us.

If we obtain FDA approval of any of our product candidates and begin commercializing those products in the United States, our potential exposure under such laws will increase significantly, and our costs associated with compliance with such laws are also likely to increase. In particular, research, sales, marketing, education and other business arrangements in the healthcare industry are subject to extensive laws designed to prevent fraud, kickbacks, self-dealing and other abusive practices. These laws and regulations may restrict or prohibit a wide range of pricing, discounting, educating, marketing and promotion, sales and commission, certain customer incentive programs and other business arrangements generally. Activities subject to these laws also involve the improper use of information obtained in the course of patient recruitment for clinical trials, which could result in regulatory sanctions and cause serious harm to our reputation. We have adopted a code of business conduct and ethics, but it is not always possible to identify and deter misconduct by employees and third parties, and the precautions we take to detect and prevent this activity may not be effective in controlling unknown or unmanaged risks or losses or in protecting us from governmental investigations or other actions or lawsuits stemming from a failure to be in compliance with such laws. If any such actions are instituted against us, and we are not successful in defending ourselves or asserting our rights, those actions could have a significant impact on our business, including the imposition of significant fines or other sanctions.

If we fail to comply with healthcare laws, we could face substantial penalties and our business, operations and financial conditions could be adversely affected.

Healthcare providers, physicians and payors play a primary role in the recommendation and prescription of any product candidates for which we may obtain marketing approval. Our future arrangements with payors and customers may expose us to broadly applicable fraud and abuse and other healthcare laws and regulations that may constrain the business or financial arrangements and relationships through which we market, sell and distribute any product candidates for which we may obtain marketing approval. Even though we do not and will not control referrals of healthcare services or bill directly to Medicare, Medicaid or other third party payors, federal and state healthcare laws and regulations pertaining to fraud and abuse and patients' rights are and will be applicable to our business. Restrictions under applicable federal, state and foreign healthcare laws and regulations which may affect our ability to operate and expose us to areas of risk include: federal civil and criminal false claims laws and civil monetary penalty laws, including the False Claims Act; the federal Health Insurance Portability and Accountability Act of 1996, or HIPAA; HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act of 2009; the federal Physician Payments Sunshine Act, created under the ACA, and its implementing regulations; federal consumer protection and unfair competition laws, which broadly regulate marketplace activities and activities that potentially harm consumers; and analogous state and foreign laws and regulations.

Because of the breadth of these laws and the narrowness of the statutory exceptions and safe harbors available, it is possible that some of our business activities could, despite our efforts to comply, be subject to challenge under one or more of such laws. Efforts to ensure that our business arrangements will comply with applicable healthcare laws may involve substantial costs. It is possible that governmental and enforcement authorities will conclude that our business practices may not comply with current or future statutes, regulations or case law interpreting applicable fraud and abuse or other healthcare laws and regulations. If any such actions are instituted against us, and we are not successful in defending ourselves or asserting our rights, those actions could have a significant impact on our business, including the imposition of civil, criminal and administrative penalties, damages, disgorgement, monetary fines, possible exclusion from participation in Medicare, Medicaid and other federal healthcare programs, contractual damages, reputational harm, diminished profits and future earnings, and curtailment of our operations, any of which could adversely affect our ability to operate our business and our results of operations. In addition, the approval and commercialization of any of our product candidates outside the United States will also likely subject us to foreign equivalents of the healthcare laws mentioned above, among other foreign laws.

If we or any suppliers we engage fail to comply with environmental, health, and safety laws and regulations, we could become subject to fines or penalties or incur costs that could have a material adverse effect on the success of our business.

We and any suppliers we currently or may in the future engage are subject to numerous federal, state, and local environmental, health, and safety laws, regulations, and permitting requirements, including those governing laboratory procedures; the generation, handling, use, storage, treatment, and disposal of hazardous and regulated materials and

wastes; the emission and discharge of hazardous materials into the ground, air, and water; and employee health and safety. Under certain environmental laws, we could be held responsible for costs relating to any contamination at our current or past facilities and at third party facilities. We also could incur significant costs associated with civil or criminal fines and penalties. Compliance with applicable environmental laws and regulations may be expensive, and current or future environmental laws and regulations may impair our research, product development and manufacturing efforts. In addition, we cannot entirely eliminate the risk of accidental injury or contamination from these materials or wastes. Although we maintain workers' compensation insurance to cover us for costs and expenses we may incur due to injuries to our employees resulting from the use of hazardous materials, this insurance may not provide adequate coverage against potential liabilities. We do not carry specific biological or hazardous waste insurance coverage, and our property, casualty, and general liability insurance policies specifically exclude coverage for damages and fines arising from biological or hazardous waste exposure or contamination. Accordingly, in the event of contamination or injury, we could be held liable for damages or be penalized with fines in an amount exceeding our resources, and our preclinical trials, future clinical trials or regulatory approvals could be suspended, which could have a material adverse effect on our business, prospects, financial condition, results of operations, and prospects.

Risks Relating to Our Common Stock and Other Securities:

There are a large number of shares of common stock underlying our outstanding options and warrants and the sale of these shares may depress the market price of our common stock and cause immediate and substantial dilution to our existing stockholders. The holders of our publicly traded warrants may require their repurchase in certain circumstances.

As of December 18, 2018, we had 30,112,057 shares of common stock issued and outstanding, outstanding options to purchase 6,177,214 shares of common stock and outstanding warrants to purchase 12,208,527 shares of common stock. The issuance of shares upon exercise of our outstanding options and warrants will cause immediate and substantial dilution to our stockholders. Under our publicly traded warrants (including additional warrants sold privately that have registration rights), in the event of a "Fundamental Transaction" (as defined in the related warrant agreement, which generally includes any merger with another entity, the sale, transfer or other disposition of all or substantially all of our assets to another entity, or the acquisition by a person of more than 50% of our common stock), each warrant holder will have the right at any time prior to the consummation of the Fundamental Transaction to require us to repurchase the warrant for a purchase price in cash equal to the Black Scholes value (as calculated under the warrant agreement) of the then remaining unexercised portion of such warrant on the date of such Fundamental Transaction, which may materially adversely affect our financial condition and/or results of operations and may prevent or deter a third party from acquiring us.

We may require additional financing which may in turn require the issuance of additional shares of common stock, preferred stock or other debt or equity securities (including convertible securities) and which would dilute the ownership held by our stockholders.

We may need to raise funds through either debt or the sale of our shares of our common stock in order to achieve our business goals. Any additional shares issued would further dilute the percentage ownership held by the stockholders. Furthermore, if we raise funds in equity transactions through the issuance of convertible securities which are convertible at the time of conversion at a discount to the prevailing market price, substantial dilution is likely to occur resulting in a material decline in the price of your shares. Our public offerings completed in November 2014 and April 2015, our registered direct public offering (the "Registered Direct Offering") and concurrent private placement, during November 2015, our private placements completed in November 2016 and June 2017, and our registered direct offering in December 2017 resulted in dilution to investors and future offerings of securities could result in further dilution to investors. Our private placements of convertible notes in August 2018 and November 2018 could result in dilution to investors if the holders convert their notes into shares of our common stock.

Conversion of our convertible notes into common stock will result in additional dilution to our stockholders.

Upon satisfaction of certain conversion conditions (including conditions outside of our control, such as market price or trading price) and proper conversion of the Notes by a holder, we may be required to deliver shares of our common stock to a converting holder. If additional shares of our common stock are issued due to conversion of some or all of the outstanding Notes, the ownership interests of existing stockholders will be diluted. Further, any sales in the public market of any shares of common stock issued upon conversion or hedging or arbitrage trading activity that develops due to the potential conversion of the Notes could adversely affect prevailing market prices of our common stock.

Substantially all of our assets are encumbered. If we should fail to make timely payments on our secured convertible notes, holders of the notes may choose to enforce their remedies and ultimately realize on the collateral securing the notes, which includes substantially all of our intellectual property.

On August 31, 2018 we entered into a securities purchase agreement pursuant to which we issued and sold an aggregate of $1.65 million in principal amount of secured convertible notes and on November 29, 2018 we entered into a second securities purchase agreement pursuant to which we issued and sold an aggregate of $550 thousand in principal amount of secured convertible notes (together, the “Notes”), which are due and payable in full on August 30, 2021 and November 28, 2021, respectively. A majority of the Notes are owned by our chairman, president and chief executive officer. Until the principal and accrued but unpaid interest under the Notes is paid in full, or the Notes are converted into shares of common stock, our obligations under the Notes are secured by a lien on substantially all of our assets (excluding certain cash accounts) and the assets of APDN (B.V.I.) Inc., our wholly-owned subsidiary, in favor of CSC Corporation, as collateral agent for the purchasers of the Notes. The secured assets include substantially all of our intellectual property. The existence of such lien may substantially limit our ability to obtain additional secured financing and force us to attempt to incur additional unsecured indebtedness, which may be unavailable to us. If we should fail to make timely payments on the Notes, holders of the Notes may choose to enforce their remedies and ultimately realize on the collateral securing the Notes, which may have a material adverse effect on our business, including the inability for us to continue our operations.

We may require additional financing in the future, which may not be available or, if available, may be on terms that cause a decline in the value of the shares of our common stock held by stockholders.

If we raise capital in the future by issuing additional securities, our stockholders may experience a decline in the value of the shares of our common stock they currently hold or may acquire prior to any such financing. In addition, such securities may have rights senior to the rights of holders of our shares of common stock.

If we fail to comply with the continuing listing standards of Nasdaq, our securities could be delisted.

Our common stock and publicly traded warrants are listed on Nasdaq under the symbols “APDN” and “APDNW,” respectively. For our common stock and publicly traded warrants to continue to be listed on Nasdaq, we must meet the current continued listing requirements, including the requirements that (1) our stock must maintain a minimum closing bid price of $1.00 (the “Minimum Bid Price Requirement”); and (2) we must maintain net income from continuing operations (in the latest fiscal year or two of the three last fiscal years) of at least $500,000, a market value of listed securities of at least $35 million or stockholders’ equity of at least $2.5 million (the “Minimum Stockholders’ Equity Requirement”).

As of September 30, 2018, our stockholders’ equity was below the Minimum Stockholders’ Equity Requirement. We are currently evaluating potential solutions to regain compliance with the Minimum Stockholders’ Equity Requirement. The Minimum Stockholders’ Equity Requirement is not subject to an automatic grace period. There can be no assurance that we will meet the Minimum Stockholders’ Equity Requirement or the Minimum Bid Price Requirement during any compliance period or in the future, or otherwise meet Nasdaq compliance standards, or that Nasdaq will grant the Company any relief from delisting as necessary, or that we will be able to ultimately meet applicable Nasdaq requirements for any such relief.

If we were unable to meet Nasdaq’s listing requirements, our common stock and warrants could be delisted from Nasdaq. If our securities were to be delisted from Nasdaq, our securities could begin to trade on the Over-The-Counter Bulletin Board or on one of the markets operated by OTC Markets Group, including OTC Pink (formerly known as the “pink sheets”), as the case may be. In such event, our securities could once again be subject to the “penny stock” rules which among other things require brokers or dealers to approve investors’ accounts, receive written agreements and determine investor suitability for transactions and disclose risks relating to investing in the penny stock market. Any such delisting of our securities could have an adverse effect on the market price of, and the efficiency of the trading market for our securities, not only in terms of the number of shares that can be bought and sold at a given price, but also through delays in the timing of transactions and less coverage of us by securities analysts, if any. Also, if in the future we were to determine that we need to seek additional equity capital, it could have an adverse effect on our ability to raise capital in the public or private equity markets.

Any material weaknesses in our internal control over financing reporting in the future could adversely affect investor confidence, impair the value of our common stock and increase our cost of raising capital.

Any failure to remedy deficiencies in our internal control over financial reporting that may be discovered or our failure to implement new or improved controls, or difficulties encountered in the implementation of such controls, could harm our operating results, cause us to fail to meet our reporting obligations or result in material misstatements in our financial statements. Any such failure could, in turn, affect the future ability of our management to certify that internal control over our financial reporting is effective. Inferior internal control over financial reporting could also subject us to the scrutiny of the SEC and other regulatory bodies which could cause investors to lose confidence in our reported financial information and could subject us to civil or criminal penalties or stockholder litigation, which could have an adverse effect on our results of operations and the market price of our common stock.

In addition, if we or our independent registered public accounting firm identify deficiencies in our internal control over financial reporting, the disclosure of that fact, even if quickly remedied, could reduce the market's confidence in our financial statements and harm our share price. Furthermore, deficiencies could result in future non-compliance with Section 404 of the Sarbanes-Oxley Act of 2002. Such non-compliance could subject us to a variety of administrative sanctions, including review by the SEC or other regulatory authorities.

Short sellers of our stock may be manipulative and may drive down the market price of our common stock.

Short selling is the practice of selling securities that the seller does not own but rather has borrowed or intends to borrow from a third party with the intention of buying identical securities at a later date to return to the lender. A short seller hopes to profit from a decline in the value of the securities between the sale of the borrowed securities and the purchase of the replacement shares, as the short seller expects to pay less in that purchase than it received in the sale. As it is therefore in the short seller's interest for the price of the stock to decline, some short sellers publish, or arrange for the publication of, opinions or characterizations regarding the relevant issuer, its business prospects and similar matters calculated to or which may create negative market momentum, which may permit them to obtain profits for themselves as a result of selling the stock short. Issuers whose securities have historically had limited trading volumes and/or have been susceptible to relatively high volatility levels can be particularly vulnerable to such short seller attacks. The publication of any such commentary regarding us in the future may bring about a temporary, or possibly long term, decline in the market price of our common stock. In the past, the publication of commentary regarding us by a disclosed short seller has been associated with the selling of shares of our common stock in the market on a large scale, resulting in a precipitous decline in the market price per share of our common stock. No assurances can be made that similar declines in the market price of our common stock will not occur in the future, in connection with such commentary by short sellers or otherwise.

The price of our common stock may be volatile or may decline, and the trading volume of our common stock may fluctuate, which may make it more difficult to realize a profit on your investment in our shares of common stock.

Our common stock is listed on Nasdaq. The trading price of our common stock has been and may continue to be volatile. In addition, the trading volume of our common stock may fluctuate and cause significant price variations to occur. Volatility in the market price of our common stock may prevent you from being able to sell your shares of common stock at or above the price you paid for your shares of common stock, which may make it more difficult to realize a profit on your investment. A number of factors may affect the market price of our common stock, including, but not limited to, the following:

- our operating and financial performance and prospects;

- our quarterly or annual earnings or those of other companies in our industry or that investors deem comparable to us;
- conditions that impact demand for our products and services;
- public reactions to our press releases, other public announcements and filings with the SEC;
- market and industry perception of our success, or lack thereof, in pursuing our growth strategy;
- strategic actions by us or our competitors, such as acquisitions or restructurings;
- changes in accounting standards, policies, guidance, interpretations or principles;
- arrival and departure of key personnel, including management personnel;
- changes in our capital structure;
- changes in the price of our warrants or other securities we may issue from time to time;

- sales of common stock by us, our directors, officers or large stockholders;
- the expiration of any applicable contractual lock-up agreements;
- changes in general market, economic and political conditions in the United States and global economies or financial markets, including those resulting from natural disasters, terrorist attacks, acts of war and responses to such events;
- announcements of new products or innovations by us or our competitors and announcements concerning our competitors or our industry in general;
- difficulties in commercialization and distribution of our products or lower than expected sales volume or revenues;
- changes in our relationships with manufacturers, suppliers or collaborators, or our inability to supply enough product to meet demand;
- our ability to obtain additional funding;
- changes or developments in applicable laws or regulations;
- any intellectual property infringement actions or other litigation or legal proceeding in which we may become involved;
- changes in financial estimates or recommendations by securities analysts, or their ceasing to publish research or reports about our business;
- the trading volume of our common stock; and
- the appeal and current level of investor interest in the biotechnology/biopharmaceutical capital market sector and in companies in general with business, research strategies and product development pipelines which are similar to us.

In addition, Nasdaq and other securities markets have, from time to time, experienced extreme price and trading volume fluctuations. The market prices of securities of biotechnology and other life sciences companies in a comparable stage to ours historically have been particularly volatile, and trading volume in such securities and our common stock has often been relatively low. Moreover, the securities and financial markets in general have experienced substantial volatility that has often been unrelated or disproportionate to the operating results of any

individual company. During certain periods, specific industry sectors, such as the biotechnology segment, may experience greater volatility than other sectors or the securities markets as a whole. These broad market fluctuations, during which our industry and companies at our stage may experience a stronger degree of market sensitivity, will adversely affect the market price of our common stock.

In the past, following periods of volatility in the market price of a company's securities, stockholders have often instituted class action securities litigation against those companies. Such litigation, if instituted, could result in substantial costs and diversion of management attention and resources, which could significantly harm our reputation and materially adversely affect our business, financial condition and results of operations.

Risks Relating to this Offering:

Our management has broad discretion as to the use of the net proceeds from this offering.

We cannot specify with certainty the particular uses of the net proceeds we will receive from this offering, and these uses may vary from our current plans. Our management will have broad discretion in the application of the net proceeds, including for any of the purposes described in “Use of Proceeds.” Accordingly, you will have to rely upon the judgment of our management with respect to the use of the proceeds. Our management may spend a portion or all of the net proceeds from this offering in ways that holders of our common stock may not desire or that may not yield a significant return or any return at all. The failure by our management to apply these funds effectively could harm our business. Pending their use, we may also invest the net proceeds from this offering in a manner that does not produce income or that loses value.

You will experience immediate and substantial dilution in the net tangible book value per share of the common stock you purchase.

Since the price per share of our common stock being offered is substantially higher than the net tangible book value per share of our common stock, you will suffer substantial dilution in the net tangible book value of the common stock you purchase in this offering. Based on a public offering price of $ per share and Warrant, if you purchase shares of common stock in this offering, you will suffer immediate and substantial dilution of approximately $ per share in the net tangible book value of the common stock. See the section entitled “Dilution” in this prospectus supplement for a more detailed discussion of the dilution you will incur if you purchase common stock in this offering.

Holders of Warrants purchased in this offering will have no rights as common stockholders until such holders acquire our common stock upon exercise of their Warrants.

Until holders of Warrants acquire shares of our common stock upon exercise of the Warrants, holders of Warrants will have no rights with respect to the shares of our common stock underlying such Warrants. Upon exercise of the Warrants, the holders will be entitled to exercise the rights of a common stockholder only as to matters for which the record date occurs after the exercise date.

The exercise price of the Warrants offered by this prospectus may not be adjusted for certain dilutive events.

The exercise price of the Warrants offered by this prospectus is subject to adjustment for certain events, including, but not limited to, certain issuances and/or distributions of capital stock, options, convertible securities and other securities. The exercise price may not be adjusted in all circumstances.

Provisions of the Warrants offered by this prospectus could discourage an acquisition of us by a third party.

In addition to the discussion of the provisions of our Certificate of Incorporation, as amended, certain provisions of the Warrants offered by this prospectus could make it more difficult or expensive for a third party to acquire us. Such Warrants prohibit us from engaging in certain transactions constituting “fundamental transactions” unless, among other things, the surviving entity assumes our obligations under the Warrants. Further, the Warrants provide that, in the event of certain transactions constituting “fundamental transactions,” with some exception, holders of such Warrants will have the right, at their option, to require us to repurchase such Warrants at a price described in the Warrants. These and other provisions of the Warrants offered by this prospectus could prevent or deter a third party from acquiring us even where the acquisition could be beneficial to you.

The sale of our common stock and the Warrants in this offering will result in the reset of the exercise price of certain outstanding warrants.

Included in our outstanding warrants are warrants to purchase 2,735,000 shares of our common stock with an exercise price of $2.00 per share, subject to adjustment. The terms of these warrants provide that (i) if we sell common stock at a price per share less than the then exercise price, or securities which are convertible or exercisable into shares of common stock at an effective per share price less than the then exercise price, then we are required to reduce the exercise price of those warrants to the lower price of the subsequent sale, and (ii) if we sell securities which are convertible or exercisable into shares of common stock at a price which varies or may vary with the market price of the shares of our common stock, including by way of one or more reset(s) to a fixed price, the holders of such securities have the right to substitute the variable price for the exercise price. Because the market price of our common stock is less than the exercise price of those warrants and if we sell our common stock at below $2.00, and the Warrants are exercisable into shares of common stock at a price which varies or may vary with the market price of the shares of our common stock, the sale of shares of our common stock and Warrants in this offering will result in a reduction of the exercise price of those outstanding warrants which will reduce the proceeds we might receive from their possible exercise.

USE OF PROCEEDS

We estimate that the net proceeds from the sale of the shares of common stock and Warrants we are offering will be approximately $ million, not including any amounts we receive upon exercise of the Warrants. Net proceeds are what we expect to receive after deducting underwriting discounts and commissions and other expenses of the offering.

We intend to use the net proceeds received from this offering for working capital, capital expenditures, business development and research and development expenditures. The actual allocation of proceeds realized from this offering will depend upon our operating revenues and cash position and our working capital requirements.

Therefore, as of the date of this prospectus supplement, we cannot specify with certainty all of the particular uses for the net proceeds to be received upon the completion of this offering. Accordingly, we will have broad discretion in the application of the net proceeds, and investors will be relying on our judgment regarding the application of the proceeds of this offering.

Pending our use of the net proceeds from this offering, we intend to invest the net proceeds in a variety of capital preservation investments, including short-term, investment-grade, interest-bearing instruments and U.S. government securities.

We have never declared or paid any cash dividends on our common stock. We do not anticipate paying any cash dividends to stockholders in the foreseeable future. In addition, any future determination to pay cash dividends will be at the discretion of our board of directors and will be dependent upon our financial condition, results of operations, capital requirements, and such other factors as our board of directors deems relevant at such time.

DILUTION

If you purchase securities in this offering, your interest will be immediately and substantially diluted to the extent of the difference between the public offering price per share of our common stock in this offering and the as adjusted net tangible book value per share of our common stock after giving effect to this offering.

Our net tangible book value as of September 30, 2018 was approximately negative $395,086 or approximately negative $0.01 per share of common stock. After giving effect to the sale of the shares and Warrants in this offering at the public offering price of $ per share and Warrant, and after deducting underwriting discounts and commissions and other estimated offering expenses payable by us, and, excluding the proceeds attributable from the exercise of the Warrants, our pro forma as adjusted net tangible book value at September 30, 2018 would have been approximately $ million or $ per share. This represents an immediate increase in net tangible book value of approximately $ per share to our existing stockholders, and an immediate dilution of $ per share to investors purchasing shares in the offering.

Dilution in net tangible book value per share represents the difference between the amount per share paid by purchasers of our common stock in this offering and the net tangible book value per share of our common stock immediately after this offering.

The following table illustrates the per share dilution to investors purchasing securities in the offering:

Public offering price per share and Warrant	$
Net tangible book value per share as of September 30, 2018	$
Increase in net tangible book value per share attributable to this offering	$
Adjusted net tangible book value per share after this offering	$
Amount of dilution in net tangible book value per share to new investors in this offering	$

The discussion and tables above are based on 30,112,057 shares of our common stock outstanding as of September 30, 2018, which excludes 6,183,214 shares of common stock issuable upon exercise of outstanding options and 12,208,527 shares of common stock issuable upon exercise of outstanding warrants as of such date. This amount also excludes shares of common stock issuable upon the exercise of the Warrants issued in the offering. To the extent that options or warrants outstanding as of September 30, 2018 have been or may be exercised, investors purchasing our common stock in this offering may experience further dilution. In addition, we may choose to raise additional capital due to market conditions or strategic considerations even if we believe we have sufficient funds for our current or future operating plans. To the extent that we raise additional capital through the sale of equity or convertible debt securities, the issuance of these securities could result in further dilution to our stockholders.

S-37

CAPITALIZATION

The following table sets forth our cash and cash equivalents and capitalization, as of September 30, 2018:

- on an actual basis; and
- on a pro forma basis, based on a public offering price of $ per share of common stock and Warrant, to give effect to the sale of shares of common stock, after deducting underwriting discounts and commissions and estimated offering expenses payable by us.

You should consider this table in conjunction with "Use of Proceeds" above as well as our "Management's Discussion and Analysis of Financial Condition and Results of Operations" and our financial statements and the notes to those financial statements incorporated by reference in this prospectus supplement.

	As of September 30, 2018	
	Actual	**Unaudited, Pro forma**
Cash and cash equivalents	$ 1,659,564	$
Stockholders' Equity:		
Preferred stock, par value $0.001 per share; 10,000,000 shares authorized; -0- shares issued and outstanding as of September 30, 2018	-	
Series A Preferred stock, par value $0.001 per share; 10,000,000 shares authorized; -0- shares outstanding as of September 30, 2018	-	
Series B Preferred stock, par value $0.001 per share; 10,000,000 shares authorized; -0- shares outstanding as of March 31, 2018	-	
Common stock, $0.001 par value per share; 500,000,000 shares authorized; 30,112,057 shares issued and outstanding as September 30, 2018	30,112	
Additional paid-in capital	249,090,474	
Accumulated deficit	(248,366,083)	
Total Stockholders' Equity	$ 754,503	$

DESCRIPTION OF SECURITIES WE ARE OFFERING

In this offering, we are offering a maximum of shares of common stock and Warrants to purchase shares of common stock.

As of December 18, 2018, our authorized capital stock consists of 500,000,000 shares of common stock, par value $0.001 per share, of which 30,112,057 shares were issued and outstanding, and 10,000,000 shares of preferred stock, par value $0.001 per share, of which no shares were issued and outstanding. In addition, as of December 18, 2018, there were issued and outstanding options to purchase 6,177,214 shares of common stock and warrants to purchase 12,208,527 shares of our common stock. The authorized and unissued shares of common stock and preferred stock are available for issuance without further action by our stockholders, unless such action is required by applicable law or the rules of any stock exchange on which our securities may be listed. Unless approval of our stockholders is so required, our board of directors will not seek stockholder approval for the issuance and sale of our common stock.

Common Stock

Each shareholder of our common stock is entitled to one vote for each share issued and outstanding held on all matters to be voted upon by the shareholders. Our shares of common stock have no preemptive, conversion, or redemption rights. Upon the sale of substantially all of our stock or assets or dissolution, liquidation or winding up, and after all liquidation preferences payable to any series of preferred stock entitled thereto have been satisfied, our remaining assets shall be distributed to all holders of common stock and any similarly situated stockholders who are not entitled to any liquidation preference or, if there be an insufficient amount to pay all such stockholders, then ratably among such holders. All of our issued and outstanding shares of common stock are fully paid and non-assessable. Our Certificate of Incorporation, as amended (the “Certificate of Incorporation”), does not provide for cumulative voting in the election of directors. The holders of shares of our common stock will be entitled to such cash dividends as may be declared from time to time by our board of directors from funds available therefor.

Our common stock is listed on Nasdaq under the symbol “APDN.” The transfer agent and registrar for our common stock is American Stock Transfer & Trust Company.

Warrants

We are selling to investors in this offering Warrants to purchase one share of our common stock for each share of common stock purchased in this offering at a combined purchase price of $.

Each Warrant will be exercisable beginning on the Initial Exercise Date, which is the date of closing, at an exercise price of $ per share, subject to adjustment. The Warrants will be exercisable for five years from the Initial Exercise Date, but not thereafter. The Warrants include an adjustment provision that, subject to certain exceptions, reduces their exercise price if the Company issues common stock or common stock equivalents at a price lower than the then-current exercise price of the Warrants, subject to a minimum exercise price of $ per share.

The Warrants are subject to a call provision whereby the Company may, subject to certain provisions including that the volume weighted average price of the Company's Common Stock has exceeded 300% of the Exercise Price for twenty consecutive trading days, call for cancellation of all or any portion of the Warrants not yet exercised.

Subject to limited exceptions, a holder of Warrants will not have the right to exercise any portion of its Warrants if the holder, together with its affiliates, would beneficially own in excess of 4.99% (or, at the election of the holder, 9.99%) of the number of shares of our common stock outstanding immediately after giving effect to such exercise, or the Beneficial Ownership Limitation; provided, however, that upon 61 days' prior notice to the Company, the holder may increase or decrease the Beneficial Ownership Limitation, provided that in no event shall the Beneficial Ownership Limitation exceed 9.99%.

The Warrants contain a “cashless exercise” feature that allows holders to exercise the warrants without a cash payment to the Company upon the terms set forth in the Warrants, if at the time of exercise there is no effective registration statement registering, or the prospectus contained therein is not available for the issuance of the shares to the exercising Warrant holder.

The Warrants provide that if the daily volume weighted average price of our common stock fails to exceed 85% of the exercise price as of the Initial Exercise Date for a period of 30 consecutive trading days, the aggregate number of warrant shares issuable in a cashless exercise shall equal the product of (i) the aggregate number of warrant shares that would be issuable upon exercise of the Warrants if such exercise were by means of a cash exercise and (ii) 0.70.

In the case of certain fundamental transactions affecting the Company, a holder of Warrants, upon exercise of such Warrants after such fundamental transaction, will have the right to receive, in lieu of shares of the Company’s common stock, the same amount and kind of securities, cash or property that such holder would have been entitled to receive upon the occurrence of the fundamental transaction, had the Warrants been exercised immediately prior to such fundamental transaction. In lieu of such consideration, a holder of Warrants may instead elect to receive a cash payment based upon the Black-Scholes value of their Warrants.

The exercise price and number of the shares of our common stock issuable upon the exercise of the Warrants will be subject to adjustment in the event of any stock dividends and splits, reverse stock split, recapitalization, reorganization or similar transaction, as described in the Warrants.

Anti-takeover Effects of Certain Provisions of our Certificate of Incorporation and Bylaws

Our Certificate of Incorporation contains provisions that could make it more difficult to acquire control of our company by means of a tender offer, open market purchases, a proxy contest or otherwise. A description of these provisions is set forth below.

Preferred Stock

We believe that the availability of the preferred stock under our Certificate of Incorporation provides us with flexibility in addressing corporate issues that may arise. Having these authorized shares available for issuance allows us to issue shares of preferred stock without the expense and delay of a special stockholders’ meeting. The authorized shares of preferred stock, as well as shares of common stock, will be available for issuance without further action by

our stockholders, unless action is required by applicable law or the rules of any stock exchange on which our securities may be listed. The board of directors has the power, subject to applicable law, to issue series of preferred stock that could, depending on the terms of the series, impede the completion of a merger, tender offer or other takeover attempt that some, or a majority, of the stockholders might believe to be in their best interests or in which stockholders might receive a premium for their stock over the then prevailing market price of the stock.

Advance Notice Procedure

Our bylaws provide an advance notice procedure for stockholders to nominate director candidates for election or to bring business before an annual meeting of stockholders. Only persons nominated by, or at the direction of, our board of directors or by a stockholder of record who has given proper and timely notice to our secretary prior to the meeting at which such stockholder is entitled to vote and appears, will be eligible for election as a director. In addition, any proposed business other than the nomination of persons for election to our board of directors must constitute a proper matter for stockholder action pursuant to a proper notice of meeting delivered to us. For notice to be timely, it must generally be delivered to our secretary not less than 90 nor more than 120 calendar days prior to the first anniversary of the previous year's annual meeting (or if the date of the annual meeting is more than 30 calendar days before or more than 60 calendar days after the anniversary date of the previous year's annual meeting, not earlier than the 120th calendar day prior to such meeting and not later than either the 90th calendar day prior to such meeting or the 10th calendar day after public disclosure of the date of such meeting is first made by us). These advance notice provisions may have the effect of precluding the conduct of certain business at a meeting if the proper procedures are not followed or may discourage or deter a potential acquirer from conducting a solicitation of proxies to elect its own slate of directors or otherwise attempt to obtain control of us.

Special Meetings of Stockholders

Our bylaws provide that special meetings of stockholders may be called only by the Chairman of the Board, the Chief Executive Officer, or the Board of Directors pursuant to a resolution adopted by a majority of the Board.

Anti-Takeover Effects of Delaware Law

Companies incorporated in Delaware are subject to the provisions of Section 203 of the Delaware General Corporation Law, or Section 203, unless the corporation has "opted out" of these provisions with an express provision in its original certificate of incorporation or an express provision in its certificate of incorporation or bylaws resulting from a stockholders' amendment approved by at least a majority of the outstanding voting shares. We have opted out of Section 203 with an express provision in our certificate of incorporation. Therefore, the anti-takeover effects of Section 203 do not apply to us.

In general, Section 203 prohibits a publicly-held Delaware corporation from engaging in a "business combination" with an "interested stockholder" for a three-year period following the time that this stockholder becomes an interested stockholder, unless the business combination is approved in a prescribed manner. A "business combination" includes, among other things, a merger, asset or stock sale or other transaction resulting in a financial benefit to the interested stockholder. An "interested stockholder" is a person who, together with affiliates and associates, owns, or did own within three years prior to the determination of interested stockholder status, 15% or more of the corporation's voting stock.

Under Section 203, a business combination between a corporation and an interested stockholder is prohibited unless it satisfies one of the following conditions: before the stockholder became interested, the board of directors approved either the business combination or the transaction which resulted in the stockholder becoming an interested stockholder; upon consummation of the transaction which resulted in the stockholder becoming an interested stockholder, the interested stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction commenced, excluding for purposes of determining the voting stock outstanding, shares owned by persons who are directors and also officers, and employee stock plans, in some instances; or at or after the time the stockholder became interested, the business combination was approved by the board of directors of the corporation and authorized at an annual or special meeting of the stockholders by the affirmative vote of at least two-thirds of the outstanding voting stock which is not owned by the interested stockholder.

Listing

Our shares of common stock offered hereby are listed on Nasdaq under the symbol “APDN.”

Transfer Agent and Registrar

American Stock Transfer & Trust Company, located in Brooklyn, New York, is the transfer agent and registrar for our common stock.

INDEMNIFICATION FOR SECURITIES ACT LIABILITIES

Our Certificate of Incorporation provides to the fullest extent permitted by Delaware law that our directors or officers shall not be personally liable to us or our stockholders for damages for breach of such director's or officer's fiduciary duty. The effect of this provision of our Certificate of Incorporation is to eliminate our rights and our stockholders (through stockholders' derivative suits on behalf of our company) to recover damages against a director or officer for breach of the fiduciary duty of care as a director or officer (including breaches resulting from negligent or grossly negligent behavior), except under certain situations defined by statute. We believe that the indemnification provisions in our Certificate of Incorporation are necessary to attract and retain qualified persons as directors and officers.

We have entered into an indemnification agreement (each, an "Indemnification Agreement") with each of our directors and executive officers. In general, the Indemnification Agreement obligates us to indemnify a director or executive officer, to the fullest extent permitted by applicable law, for certain expenses, including attorneys' fees, judgments, penalties, fines and settlement amounts actually and reasonably incurred by them in any action or proceeding arising out of their services as one of our directors or officers, or any of our subsidiaries or any other company or enterprise to which the person provides services at our request. In addition, the Indemnification Agreement provides for the advancement of expenses incurred by the indemnitee in connection with any covered proceeding to the fullest extent permitted by applicable law. The rights provided by the Indemnification Agreement are in addition to any other rights to indemnification or advancement of expenses to which the indemnitee may be entitled under applicable law, the Company's Certificate of Incorporation or bylaws, or otherwise.

Insofar as indemnification for liabilities arising under the Securities Act, may be permitted to directors, officers or persons controlling us pursuant to the foregoing provisions, or otherwise, we have been advised that in the opinion of the SEC, such indemnification is against public policy as expressed in the Securities Act and is, therefore, unenforceable.

UNDERWRITING

We have entered into an underwriting agreement with Maxim Group LLC ("Maxim" or the "Underwriter") acting as the sole underwriter and book-running manager for this offering. Subject to the terms and conditions of the underwriting agreement, the Underwriter named below has agreed to purchase, and we have agreed to sell to it, the number of shares of common stock and Warrants at the public offering price, less the underwriting discounts and commissions, as set forth on the cover page of this prospectus supplement.

The underwriting agreement provides that the obligations of the Underwriter to pay for and accept delivery of the shares of common stock and Warrants offered by this prospectus supplement are subject to the approval of certain legal matters by their counsel and to other conditions. The Underwriter is obligated to take and pay for all of the shares of common stock and Warrants offered by this prospectus supplement if any such shares of common stock and Warrants are taken, other than those shares of common stock and Warrants covered by the over-allotment option described below.

Over-Allotment Option

We have granted to the Underwriter an option, exercisable not later than 45 days after the effective date of the underwriting agreement, to purchase up to additional shares of common stock and/or Warrants at the public offering price less the underwriting discounts and commissions set forth on the cover page of this prospectus supplement. The Underwriter may exercise this option only to cover over-allotments made in connection with this offering. We will be obligated, pursuant to the option, to sell these additional shares of common stock and/or Warrants to the Underwriter to the extent the option is exercised. If any additional shares of common stock and/or Warrants are purchased, the Underwriter will offer the additional shares of common stock and/or Warrants on the same terms as those on which the other shares of common stock and Warrants are being offered hereunder.

Commissions

We have agreed to pay the Underwriter a cash fee equal to 7.0% of the gross proceeds raised in this offering. The Underwriter proposes to offer the shares of common stock and Warrants directly to the public at the public offering price set forth on the cover of this prospectus supplement. In addition, the representative may offer some of the shares of common stock and warrants to purchase shares of common stock to other securities dealers at such price less a concession of up to % or $ per share. After the offering to the public, the offering price and other selling terms may be changed by the representative without changing the proceeds we will receive from the Underwriter.

The following table summarizes the public offering price, underwriting commissions and proceeds before expenses to us assuming both no exercise and full exercise of the Underwriter's option to purchase additional shares of common stock and Warrants. The underwriting commissions are equal to the public offering price per share less the amount per share the Underwriter pays us for the shares of common stock and Warrants.

	Per Share	**Total Without Over-Allotment**	**Total With Over-Allotment**
Public offering price	$	$	$
Underwriting discounts and commissions	$	$	$
Proceeds to us before expenses	$	$	$

We estimate the total expenses of this offering, including registration, filing and listing fees, printing fees and legal and accounting expenses, but excluding underwriting discounts and commissions, will be approximately $, all of which are payable by us.

Pursuant to the underwriting agreement, we have agreed not to enter into any agreement to issue or announce the issuance or proposed issuance of any common stock or common stock equivalents for a period of 30 days following the final closing of the offering.

We have also granted the Underwriter a right of first refusal to act as placement agent, underwriter or investment bank on any subsequent private or public offering of our securities for a period of 9 months from the sale of common stock and Warrants in this offering.

Lock-Up Agreements

We and each of our officers and directors have agreed, subject to certain exceptions, not to offer, issue, sell, contract to sell, encumber, grant any option for the sale of or otherwise dispose of any shares of our common stock and warrants to purchase shares of common stock or other securities convertible into or exercisable or exchangeable for shares of our common stock for a period of 90 days after the effective date of the registration statement of which this prospectus is a part without the prior written consent of the Underwriter.

The Underwriter may in its sole discretion and at any time without notice release some or all of the shares subject to lock-up agreements prior to the expiration of the lock-up period. When determining whether or not to release shares from the lock-up agreements, the representative will consider, among other factors, the security holder's reasons for requesting the release, the number of shares for which the release is being requested and market conditions at the time.

Price Stabilization, Short Positions and Penalty Bids

In connection with this offering, the Underwriter may engage in transactions that stabilize, maintain or otherwise affect the price of our common stock or Warrants. Specifically, the Underwriter may over-allot in connection with this offering by selling more shares of common stock or Warrants than are set forth on the cover page of this prospectus supplement. This creates a short position in our common stock or Warrants for the Underwriter's own account. The short position may be either a covered short position or a naked short position. In a covered short position, the number of shares of common stock or Warrants over-allotted by the Underwriter is not greater than the number of shares of common stock or Warrants that they may purchase in the over-allotment option. In a naked short position, the number of shares of common stock or Warrants involved is greater than the number of shares of common stock or Warrants in the over-allotment option. To close out a short position, the Underwriter may elect to exercise all or part of the over-allotment option. The Underwriter may also elect to stabilize the price of our common stock or Warrants or reduce any short position by bidding for, and purchasing, common stock or Warrants in the open market.

The Underwriter may also impose a penalty bid. This occurs when a particular underwriter or dealer repays selling concessions allowed to it for distributing a security in this offering because the Underwriter repurchases that security in stabilizing or short covering transactions.

Finally, the Underwriter may bid for, and purchase, shares of our common stock or warrants in market making transactions, including "passive" market making transactions as described below.

These activities may stabilize or maintain the market price of our common stock or Warrants at a price that is higher than the price that might otherwise exist in the absence of these activities. The Underwriter are not required to engage in these activities, and may discontinue any of these activities at any time without notice. These transactions may be effected on Nasdaq, in the over-the-counter market, or otherwise.

In connection with this offering, the Underwriter and selling group members, if any, or their affiliates may engage in passive market making transactions in our common stock or Warrants immediately prior to the commencement of sales in this offering, in accordance with Rule 103 of Regulation M under the Exchange Act. Rule 103 generally provides that:

- a passive market maker may not effect transactions or display bids for our common stock or Warrants in excess of the highest independent bid price by persons who are not passive market makers;

- net purchases by a passive market maker on each day are generally limited to 30% of the passive market maker's average daily trading volume in our common stock or Warrants during a specified two-month prior period or 200 shares of common stock or Warrants, whichever is greater, and must be discontinued when that limit is reached; and

- passive market making bids must be identified as such.

Other Terms

In addition, we have agreed to reimburse the Underwriter for all reasonable out-of-pocket expenses up to $75,000, including but not limited to reasonable legal fees, incurred by the Underwriter in connection with the offering. We will reimburse the Underwriter for all such expenses regardless of whether the offering is consummated.

Our Relationship with the Underwriter

The Underwriter and its affiliates have engaged, and may in the future engage, in investment banking transactions and other commercial dealings in the ordinary course of business with us or our affiliates. It has received, or may in the future receive, customary fees and commissions for these transactions. As of the date hereof, an affiliate of the Underwriter holds warrants to purchase 128,800, 163,720, 51,137, and 50,000 shares of our common stock with an exercises prices of $3.73, $3.44, $2.53, and $4.01 per share, respectively.

In addition, in the ordinary course of their business activities, the Underwriter and their affiliates may make or hold a broad array of investments and actively trade debt and equity securities (or related derivative securities) for their own account and for the accounts of their customers. Such investments and securities activities may involve securities and/or instruments of ours or our affiliates. The Underwriter and their affiliates may also make investment recommendations and/or publish or express independent research views in respect of such securities or financial instruments and may hold, or recommend to clients that they acquire, long and/or short positions in such securities and instruments.

Indemnification

We have agreed to indemnify the Underwriter against liabilities relating to the offering arising under the Securities Act and the Exchange Act, liabilities arising from breaches of some or all of the representations and warranties contained in the underwriting agreement, and to contribute to payments that the Underwriter may be required to make for these liabilities.

Electronic Distribution

A prospectus supplement and accompanying base prospectus in electronic format may be made available on a website maintained by the Underwriter. The Underwriter may agree to allocate a number of shares and warrants to purchase shares to underwriters for sale to their online brokerage account holders. In connection with the offering, the Underwriter may distribute prospectus supplements and accompanying base prospectuses electronically. No forms of electronic prospectus other than prospectus supplements and accompanying base prospectuses that are printable as Adobe® PDF will be used in connection with this offering.

The Underwriter has informed us that it does not expect to confirm sales of shares of common stock and Warrants offered by this prospectus supplement to accounts over which it exercises discretionary authority.

Other than the prospectus supplement in electronic format, the information on the Underwriter's website and any information contained in any other website maintained by the Underwriter is not part of this prospectus supplement or the registration statement of which this prospectus forms a part, has not been approved and/or endorsed by us or the Underwriter in its capacity as underwriter and should not be relied upon by investors.

Foreign Regulatory Restrictions on Purchase of Securities Offered Hereby Generally

No action has been or will be taken in any jurisdiction (except in the United States) that would permit a public offering of the securities offered by this prospectus supplement and accompanying base prospectus, or the possession, circulation or distribution of this prospectus supplement and accompanying base prospectus or any other material relating to us or the securities offered hereby in any jurisdiction where action for that purpose is required. Accordingly, the securities offered hereby may not be offered or sold, directly or indirectly, and neither of this prospectus supplement and accompanying base prospectus nor any other offering material or advertisements in connection with the securities offered hereby may be distributed or published, in or from any country or jurisdiction except in compliance with any applicable rules and regulations of any such country or jurisdiction.

The Underwriter may arrange to sell securities offered by this prospectus supplement and accompanying base prospectus in certain jurisdictions outside the United States, either directly or through affiliates, where it is permitted to do so. The foregoing does not purport to be a complete statement of the terms and conditions of the underwriting agreement. A copy of the underwriting agreement and the form of warrant are included as exhibits to our Current Report on Form 8-K filed with the SEC in connection with this offering and incorporated by reference into the Registration Statement of which this prospectus supplement forms a part. See “Where You Can Find More Information.”

EXPENSES

The following are the estimated expenses of the issuance and distribution of our shares of common stock and Warrants in this offering, other than underwriting discounts and commissions, all of which will be paid by us.

SEC registration fee*	$2,898
FINRA filing fee*	$4,250
Legal fees and expenses	$195,000
Accounting fees and expenses	$25,000
Miscellaneous	$25,000
Total	$252,148

*The SEC registration fee of $2,898 and the FINRA filing fee of $4,250 covering all of the securities being offered under the registration statement on Form S-3 (File No. 333-218158) dated May 26, 2017, of which this prospectus supplement forms part, was previously paid. We allocate the cost of these fees on an approximate pro-rata basis with each offering pursuant to such registration statement.

LEGAL MATTERS

The validity of the issuance of the securities offered hereby will be passed upon for us by Pepper Hamilton LLP, New York, New York. Certain legal matters in connection with this offering will be passed upon for Maxim Group LLC by Harter Secrest & Emery LLP, Rochester, New York.

EXPERTS

Marcum LLP, independent registered public accounting firm, has audited our consolidated financial statements included in our Annual Report on Form 10-K for the years ended September 30, 2018 and 2017, as set forth in their report, which is incorporated by reference in the prospectus and elsewhere in this registration statement. Marcum LLP's report includes an explanatory paragraph relating to our ability to continue as a going concern. Our consolidated financial statements are incorporated by reference in reliance on Marcum LLP's report, given on their authority as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

We have filed with the SEC a registration statement on Form S-3 (File No. 333-218158), of which this prospectus supplement and the accompanying base prospectus are a part, under the Securities Act, to register the shares of common stock and Warrants offered by this prospectus supplement. However, this prospectus supplement and the accompanying base prospectus do not contain all of the information contained in the Registration Statement. We have omitted from this prospectus supplement some parts of the Registration Statement as permitted by the rules and regulations of the SEC. Statements in this prospectus supplement concerning any document we have filed as an exhibit to the Registration Statement or that we otherwise filed with the SEC are not intended to be comprehensive and are qualified in their entirety by reference to these filings. In addition, we file annual, quarterly and current reports, proxy statements and other information with the SEC. The SEC also maintains an Internet site that contains reports, proxy and information statements and other information that registrants file electronically with the SEC, including us. The SEC's Internet site can be found at http://www.sec.gov. In addition, we make available on or through our Internet site copies of these reports as soon as reasonably practicable after we electronically file or furnished them to the SEC. Our Internet site can be found at http:www.adnas.com. Our website is not a part of this prospectus supplement.

INFORMATION INCORPORATED BY REFERENCE

We have elected to incorporate certain information by reference into this prospectus supplement. By incorporating by reference, we can disclose important information to you by referring you to other documents we have filed or will file with the SEC. The information incorporated by reference is deemed to be part of this prospectus supplement, except for information incorporated by reference that is superseded by information contained in this prospectus supplement. This means that you must look at all of the SEC filings that we incorporate by reference to determine if any statements in the prospectus supplement or any document previously incorporated by reference have been modified or superseded. This prospectus supplement incorporates by reference the documents set forth below that we have previously filed with the SEC, except in each case the information contained in such document to the extent "furnished" and not "filed":

- Our Annual Report on Form 10-K for the year ended September 30, 2018, as filed with the SEC on December 18, 2018;

- Our Current Reports on Form 8-K, filed with the SEC on December 6, 2018 and December 10, 2018; and

- The description of our Common Stock and listed warrants contained in our Registration Statement on Form 8-A filed on November 13, 2014, including any amendment or report filed for the purpose of updating such description.

All reports and other documents subsequently filed by us pursuant to Sections 13(a), 13(c), 14 and 15(d) of the Exchange Act after the date of the registration statement to which this prospectus forms a part of or after the date of this prospectus supplement and prior to the termination or completion of the offering of common stock and Warrants under this prospectus supplement shall be deemed to be incorporated by reference in this prospectus supplement and to be a part hereof from the date of filing such reports and other documents.

You may obtain copies of these documents on the website maintained by the SEC at http://www.sec.gov. We will furnish to you, upon written or oral request, a copy of any or all of the documents that have been incorporated by reference, including exhibits to these documents. You may request a copy of those filings at no cost by writing or telephoning us at Corporate Secretary, Applied DNA Sciences, Inc., 50 Health Sciences Drive, Stony Brook, New York 11790, (631) 240-8800 or visiting our website at http://www.adnas.com. No information contained on our website is intended to be included as part of, or incorporated by reference into, this prospectus supplement.

PROSPECTUS

$25,000,000

Common Stock
Preferred Stock
Debt Securities
Warrants
Rights
Units

We may offer and sell, from time to time in one or more offerings, up to $25,000,000 of our common stock, preferred stock, debt securities, warrants and rights, or any combination of these securities, and/or units consisting of one or more of these securities. We may also offer common stock or preferred stock upon conversion of debt securities and common stock upon conversion of preferred stock. All of the securities listed above may be sold separately or as units with other securities.

This prospectus describes some of the general terms that may apply to these securities. When we decide to sell a particular class or series of securities, we will provide specific terms of the offered securities in one or more prospectus supplements. We may also authorize one or more free writing prospectuses to be provided to you in connection with these offerings.

The prospectus supplement, and any documents incorporated by reference, may also add, update or change information contained in or incorporated by reference into this prospectus. However, no prospectus supplement shall offer a security that is not registered and described in this prospectus at the time of its effectiveness. You should read this prospectus and any prospectus supplement, as well as the documents incorporated by reference or deemed to be incorporated by reference into this prospectus, and any free writing prospectus carefully before you invest. This prospectus may not be used to offer or sell our securities unless accompanied by a prospectus supplement relating to the offered securities.

Our common stock and our warrants are listed on The NASDAQ Capital Market under the symbols “APDN” and “APDNW,” respectively. Each prospectus supplement will contain information, where applicable, as to our listing on

any securities exchange of the securities covered by the prospectus supplement. The aggregate market value of our outstanding common stock held by non-affiliates was approximately $33,323,045 based on 26,351,483 shares of outstanding common stock, of which 4,852,744 shares are held by affiliates, and a price of $1.55 per share, which was the last reported sale price of our common stock as quoted on The NASDAQ Capital Market on May 15, 2017. Pursuant to General Instruction I.B.6 of Form S-3, in no event will we sell securities registered in a public primary offering with a value exceeding more than one-third of our public float (the market value of our common stock held by our non-affiliates) in any 12 calendar month period so long as our public float remains below $75.0 million. We have not offered any securities pursuant to General Instruction I.B.6 of Form S-3 during the prior 12 calendar month period that ends on and includes the date of this prospectus. As of May 15, 2017, one-third of our public float is equal to approximately $11,107,682.

These securities may be sold by us directly to purchasers, through dealers or agents, or to or through underwriters, or through a combination of these methods. See “Plan of Distribution” in this prospectus. We may also describe the plan of distribution for any particular offering of our securities in a prospectus supplement. If any agents, underwriters or dealers are involved in the sale of any securities in respect of which this prospectus is being delivered, we will disclose their names and the nature of our arrangements with them in a prospectus supplement. The net proceeds we expect to receive from any such sale will also be included in a prospectus supplement.

An investment in our securities involves a high degree of risk. See the sections entitled “Risk Factors” in our most recent Annual Report on Form 10-K and in any Quarterly Report on Form 10-Q, as well as in any prospectus supplement or free writing prospectus related to these specific offerings.

We may amend or supplement this prospectus from time to time by filing amendments or supplements as required or related free writing prospectuses. You should read the entire prospectus and any amendments or supplements carefully before you make your investment decision.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

The date of this prospectus is May 26, 2017

ABOUT THIS PROSPECTUS

This prospectus is part of a Registration Statement that we filed with the Securities and Exchange Commission ("SEC") using a "shelf" registration process. Under this shelf registration process, we may offer from time to time securities described in this prospectus having a maximum aggregate offering price of $25,000,000 in one or more offerings. Each time we offer securities, we will prepare and file with the SEC a prospectus supplement or information that is incorporated by reference into this prospectus that describes the specific amounts, prices and terms of the securities we offer. We may also authorize one or more free writing prospectuses to be provided to you that may contain material information relating to these offerings and securities. The prospectus supplement also may add, update or change information contained in this prospectus or the documents incorporated herein by reference. You should read carefully this prospectus, any applicable prospectus supplement and any related free writing prospectus together with additional information described below under the caption "Where You Can Find More Information."

This prospectus does not contain all the information provided in the Registration Statement we filed with the SEC. For further information about us or our securities offered hereby, you should refer to that Registration Statement, which you can obtain from the SEC as described below under "Where You Can Find More Information."

You should rely only on the information contained or incorporated by reference in this prospectus, any prospectus supplement and any related free writing prospectus. We have not authorized any other person to provide you with different information. If anyone provides you with different or inconsistent information, you should not rely on it. This prospectus is not an offer to sell securities, and it is not soliciting an offer to buy securities, in any jurisdiction where the offer or sale is not permitted. You should assume that the information appearing in this prospectus, any prospectus supplement, any related free writing prospectus as well as information we have previously filed with the SEC and incorporated by reference, is accurate as of the date of those documents only. Our business, financial condition, results of operations and prospects may have changed since those dates.

We may sell securities through underwriters or dealers, through agents, directly to purchasers or through any combination of these methods. We and our agents reserve the sole right to accept or reject in whole or in part any proposed purchase of securities. The prospectus supplement, which we will prepare and file with the SEC each time we offer securities, will set forth the names of any underwriters, agents or others involved in the sale of securities, and any applicable fee, commission or discount arrangements with them. See "Plan of Distribution."

In this prospectus, unless otherwise indicated, the "Registrant," "our company," "we," "us" or "our" refer to Applied DNA Sciences, Inc., a Delaware corporation and its consolidated subsidiaries.

PROSPECTUS SUMMARY

This prospectus summary highlights certain information about our company and other information contained elsewhere in this prospectus or in documents incorporated by reference. This summary does not contain all of the information that you should consider before making an investment decision. You should carefully read the entire prospectus, any prospectus supplement, including the section entitled "Risk Factors" and the documents incorporated by reference into this prospectus, before making an investment decision.

THE OFFERING

This prospectus is part of a Registration Statement that we filed with the SEC utilizing a shelf registration process. Under this shelf registration process, we may sell any combination of:

- common stock;
- preferred stock;
- debt securities, in one or more series;

- warrants to purchase any of the securities listed above;
- rights to purchase common stock, preferred stock or warrants; and/or
- units consisting of one or more of the foregoing

in one or more offerings up to a total dollar amount of $25,000,000. This prospectus provides you with a general description of the securities we may offer. Each time we sell securities, we will provide a prospectus supplement that will contain specific information about the terms of that specific offering and include a discussion of any risk factors or other special considerations that apply to those securities. The prospectus supplement may also add, update or change information contained in this prospectus. You should read both this prospectus and any prospectus supplement together with the additional information described under the heading "Where You Can Find More Information."

OUR COMPANY

Overview

Using biotechnology as a forensic foundation, we create unique security solutions addressing the challenges of modern commerce. Whether for supply chain security, brand protection or law enforcement applications, it is our goal to help establish secure flourishing environments that foster quality, integrity and success. With secure taggants, high-resolution DNA authentication, and comprehensive reporting, our SigNature DNA technologies are designed to deliver what we believe to be the greatest levels of security, deterrence and legal recourse strength. We are also engaged in the large-scale production of specific DNA sequences using the polymerase chain reaction ("PCR").

SigNature DNA, the core of our technology platform, is nature's ultimate means of authentication and supply chain security. Our precision-engineered marks have not and, we believe, cannot be broken. Additional layers of protection and complexity are added to the mark in a proprietary manner. SigNature DNA in various carriers has proven highly resistant to UV radiation, heat, cold, vibration, abrasion and other extreme environments and conditions. We work closely with our customers to develop a solution that will be optimized to their specifications to deliver maximum impact. Our products and technology are protected by what we believe to be a robust portfolio of patents and trademarks.

Using our products and technology, manufacturers, brands, and other stakeholders can ensure authenticity and protect against diversion throughout a product's journey from manufacturer to use.

The core technologies of our business allow us to use DNA sequences to mark objects in a unique manner that we believe cannot be replicated, and then identify these objects by detecting the absence or presence of the DNA. We believe that our disruptive platform offers broad commercial relevance across many industry verticals. Our underlying strategy is to become a solutions provider in supply chains of process industries in which contracts are larger and of longer duration, where the benefits to customers and consumers are more significant, and where our forensic security and traceability offer a unique and protected value. Consumers, governments and companies are demanding details about the systems and sources that deliver their goods. They worry about quality, safety, ethics, and the environmental impact. Farsighted organizations are directly addressing new threats and opportunities presented by this question: Where do these goods come from? These are the questions and concerns we are beginning to address for a growing number of companies. We supply key building blocks for creating secure supply chains with traceability of goods, which in turn can help ensure integrity in supply, honest claims, and ethical and sustainable sourcing.

Signature DNA Markers

SigNature DNA. SigNature DNA is our patented platform ingredient, at the core of all our security solutions. It provides forensic power and protection for a wide array of applications. Highly secure, robust and durable, SigNature DNA markers are an ingredient that can be used to fortify brand protection efforts; strengthen supply chain security; and mark, track and convict criminals. Custom DNA sequences can be embedded into a wide range of host carriers including ink, varnish, thread, laminates and metal coatings. SigNature DNA markers are resistant to heat, cold, vibration, abrasion, organic solvents, chemicals, UV radiation and other extreme environmental conditions, and so can be identified for numerous years after being embedded directly, or into media applied or attached to the item to be marked. Each individual marker is recorded and stored in a secure database so that we can later detect it using a simple spot test, or the marks can be forensically analyzed to obtain definitive proof of the presence or absence of a specifi