

APPLIED DNA SCIENCES INC
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APPLIED DNA SCIENCES, INC.

4,545,454 SHARES OF Common stock (INCLUDING SHARES ISSUED PURSUANT TO THE EXERCISE OF WARRANTS)

2,272,727 WARRANTS TO PURCHASE 2,272,727 SHARES of common stock

This prospectus relates to the resale by the selling securityholders named herein, including their transferees, pledgees or donees, or their respective successors, of up to 2,272,727 shares (the “Shares”) of Applied DNA Sciences, Inc. (the “Company”)’s common stock, \$.001 par value (“Common Stock”), warrants to purchase 2,272,727 shares of Common Stock (“Warrants”), and 2,272,727 shares of Common Stock issuable upon exercise of the Warrants (the “Warrant Shares”). Sabby Healthcare Master Fund, Ltd. and Sabby Volatility Master Fund, Ltd. are collectively, the “Selling Securityholders”. For information about the Selling Securityholders, see “Selling Securityholders” on page 8. The Selling Securityholders may sell shares of Common Stock, Warrants, and Warrant Shares (together, the “Securities”) from time to time in the principal markets on which the Common Stock and Warrants are quoted at the prevailing market price or in negotiated transactions. We are registering the offer and sale of the Securities pursuant to certain registration rights granted to the Selling Securityholders. The timing and amount of any sale of Common Stock or any sale or exercise of any Warrant is within the sole discretion of each Selling Securityholder. We are not selling any Securities under this prospectus and will not receive any of the proceeds from the sale of Common Stock or Warrants by the Selling Securityholders except for funds received from the exercise of Warrants held by the Selling Securityholders, if and when exercised for cash. We will pay the expenses of registering these Securities, including legal and accounting fees. All selling and other expenses incurred by the Selling Securityholders will be borne by the Selling Securityholders. See “Plan of Distribution.”

Our Common Stock and Warrants offered by the Selling Securityholders have been issued pursuant to a private placement which closed on November 7, 2016. Our Warrant Shares will be issued upon the exercise of the Warrants in accordance with their terms. See “Selling Securityholders.”

Our Common Stock is traded on The NASDAQ Capital Market under the symbol “APDN”. On December 12, 2016, the closing sales price for our Common Stock on The NASDAQ Capital Market was \$2.20 per share. Our Warrants are traded on The NASDAQ Capital Market under the symbol “APDNW”. On December 12, 2016, the closing sale price for our Warrants on the NASDAQ Capital Market was \$0.701.

The purchase of the Common Stock and Warrants offered through this prospectus involves a high degree of risk. You should consider carefully the risk factors beginning on page 6 of this prospectus before purchasing any of the securities offered by this prospectus.

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

Neither the Securities and Exchange Commission (“SEC”) 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.

The date of this prospectus is December 13, 2016.

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ABOUT THIS PROSPECTUS

The information contained in this prospectus is not complete and may be changed. You should rely only on the information provided in or incorporated by reference in this prospectus, in any prospectus supplement or in a related free writing prospectus, or documents to which we otherwise refer you. We have not authorized anyone else to provide you with different information.

We have not authorized any dealer, agent or other person to give any information or to make any representation other than those contained or incorporated by reference in this prospectus and any accompanying prospectus supplement or any related free writing prospectus. You must not rely upon any information or representation not contained or incorporated by reference in this prospectus or an accompanying prospectus supplement or any related free writing prospectus. This prospectus and the accompanying prospectus supplement and any related free writing prospectus, if any, do not constitute an offer to sell or the solicitation of an offer to buy any securities other than the registered securities to which they relate, nor do this prospectus and the accompanying prospectus supplement and any related free writing prospectus, if any, constitute an offer to sell or the solicitation of an offer to buy securities in any jurisdiction to any person to whom it is unlawful to make such offer or solicitation in such jurisdiction. You should not assume that the information contained in this prospectus and the accompanying prospectus supplement and any related free writing prospectus, if any, is accurate on any date subsequent to the date set forth on the front of such document or that any information we have incorporated by reference is correct on any date subsequent to the date of the document incorporated by reference, even though this prospectus and any accompanying prospectus supplement and any related free writing prospectus is delivered or securities are sold on a later date.

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 in this prospectus 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.

Our trademarks in the United States include SigNature® DNA, SigNature® T DNA, fiberTyping®, DNAnet®, digitalDNA®, SigNify™ and Beacon™. All trademarks, service marks and trade names included or incorporated by reference in this prospectus are the property of their respective owners, including, without limitation, SmokeCloak®, a mark owned by MSS Professional A/S and/or its affiliates, and PimaCott®, a mark owned by Divatex Home Fashion, Inc. and/or its affiliates.

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

FORWARD-LOOKING STATEMENTS

This prospectus 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 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 regarding 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 “About the Company” set forth in this prospectus 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 under “Risk Factors”, those set forth from time to time in our other filings with the SEC, and the following factors and risks:

- our short operating history with our current business model and lack of significant revenues;
- 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.

- 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;

- 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;

· inability to continue to retain the services of Dr. Hayward, our Chief Executive Officer;

· 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.

All forward-looking statements and risk factors included in this prospectus 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 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.

ABOUT THE 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 plant-based or other 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, SigNature® T DNA, fiberTyping®, DNAnet®, digitalDNA®, SigNify™ and Beacon™ comprise our principal technology platform. The large-scale production of specific DNA sequences is used in the diagnostics and reagent industries.

SigNature® DNA, the core of our technology platform, is nature's ultimate means of authentication and supply chain security. Founded on plant-based DNA, our precision-engineered marks have not and, we believe, cannot be broken. The conventional process used to sequence ("decode") native DNA is not possible with the engineered mark. Additional layers of protection and complexity are added to the mark in a proprietary manner. SigNature DNA can resist wash off, even in aggressive industrial treatment baths. SigNature DNA 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 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 plant-based or other 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. 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 offers 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, which in turn can help ensure integrity in supply, honest claims, and ethical and sustainable sourcing.

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, microcircuits and other electronics, cash and valuables-in-transit, consumer asset marking, printing and packaging businesses and diagnostics and reagents. In the future, we plan to expand our focus to include pharmaceuticals, additional consumer products, food and beverage and agrochemicals. To date, the substantial portion of our revenues has been generated from sales of our SigNature DNA and SigNature T DNA, our principal supply chain security and product authentication solutions. We expect to continue to grow revenues from sales of our SigNature DNA, SigNature T DNA, DNAnet, digitalDNA, Beacon, and SigNify offerings, which all have various applications in supply chain security and product authentication, and we expect to continue to work with companies and governments to secure supply chains and restore confidence to products and product labeling throughout the world. In addition, we expect to grow revenues from the large-scale production of specific DNA sequences using our Triathlon™ PCR systems which have multiple applications including as a diagnostic and reagent and for gene therapy, DNA vaccines and diagnostics.

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 specific type of SigNature DNA marker (e.g., one designed to mark a particular product). Our in-lab forensic testing for authenticity results in an expert witness Certificate of DNA Authentication (CODA). Because DNA is one of the most dense information carriers known, only minute quantities of SigNature DNA are necessary for successful analysis and authentication. As a result, SigNature DNA can fold seamlessly into production and logistics workflows.

SigNature DNA has 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 forensic marker has passed all tests across a broad spectrum of materials and has met key military stability standards. SigNature DNA has passed a strenuous “red-team” vetting on behalf of the U.S. Defense Logistics Agency.

Hundreds of millions of SigNature DNA markers now exist as markers in the public domain on items ranging from consumer product packaging to microcircuits; to our knowledge, none has ever been copied.

SigNature T. SigNature T DNA is a unique patent-pending tagging and authentication system specifically designed for textiles and apparel. Specially engineered to adhere tenaciously to any kind of textile substrate, including natural and synthetic fibers, SigNature T DNA markers are resistant to standard textile production conditions, and cannot be

copied. The result: an enduring forensic identity marker that remains present from the fiber stage through to the finished product.

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

Our patented genotyping platform, known as “fiberTyping®”, described below, complements tagging with SigNature T plant-based DNA. fiberTyping is employed to identify the genus and species of the fibers before or after they are tagged with SigNature T DNA. fiberTyping cannot be used to track a specific cotton batch through the supply chain, a function which can only be accomplished by our SigNature T DNA system.

fiberTyping. fiberTyping is not a marker, but a test of native cotton fiber, which gives a clear result that determines whether the intended cotton DNA is present in your 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 geographic origin are issues of global significance, important to brand owners and to governments that must regulate the international cotton trade. The use of DNA to identify the cotton fiber content of finished textiles is a significant opportunity for license holders to control their brand and for governments to improve their ability to enforce compliance with trade agreements between nations.

In addition to the global cotton trade, the potential markets for genotyping include biotherapeutics, nutraceuticals, natural foods, wines and fermented alcohols and other natural textiles.

We believe that our DNA extraction protocol and methodologies are more effective than existing forensic systems. We believe that the combination of our SigNature T DNA and fiberTyping solutions cover the forensic authentication market for textiles, and secure systems and protocols developed may be applicable to multiple industry verticals, and can mark and authenticate products at every stage of their life cycle, from beginning to end.

DNANet. 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 home asset and vehicle marking. DNANet, a DNA marker can be used to definitively link evidence and offenders to specific crime scenes and help return stolen or lost property to its rightful owner. As the crime is investigated, the fluorescing DNA marker can assist police in linking the offender and stolen items to a specific crime scene, creating a greater ability to identify and convict.

Beacon. Beacon locked optical markers deliver secure real-time inspection capabilities. A unique encrypted mechanism (patent-pending) 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 DNA markers, a strong and flexible end-to-end security solution is created where authenticity and provenance can be determined with confidence.

SigNify. Developing a secure method for real-time, in-field screening of DNA-marked items has long been a priority for Applied DNA Sciences. 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 DNA 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 DNA in the field– DNA becomes a true, front-line solution for supply chain integrity.

Information Technology Systems

digitalDNA. digitalDNA is 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 DNA 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. Architected for either cloud or local operation, the system supports mobile data capture using bar codes or other technologies. Of special note is the power of embedding our proprietary DNA into tag ink or substrate as the forensic backstop for tags which can be easily copied. The system is architected as the controller and repository for other validation and authentication devices such as our SigNify DNA Readers, Multi-Mode Reader (prototype), DNA Transfer Systems, and other third party devices and is designed to share data with third party applications through standard interfaces.

DNA Transfer Systems. Our DNA Transfer Systems 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 used to mark cotton at all seven U.S. cotton gins in the 2016 season.

Large-scale production of specific DNA sequences using PCR. Our Triathlon™ PCR systems allow for the large-scale production of specific DNA sequences. The systems are self-contained and modular, can work together in mass production or can be used individually throughout the world, offering the advantage of delivering DNA locally and securely. These DNA sequences are being used by customers as a diagnostic and reagent and provide us the opportunity to cross-sell our DNA-based supply chain security solutions. A new capacity for us will be the ability to manufacture longer DNA sequences valuable in gene therapy, DNA vaccines and diagnostics. 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.

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 Nevada, and in 2002, we changed our name to our current name, Applied DNA Sciences, Inc. In December 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 DNA markers and product prototypes, and DNA authentication. 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 registration statement.

To date, we have had a limited operating history with our current business model, and as a result, our operations have produced limited revenues.

RISK FACTORS

Investing in our securities involves a high degree of risk. Prior to making a decision about investing in our securities, you should carefully consider and evaluate the specific factors discussed under the heading “Risk Factors” in our Annual Report on Form 10-K for the fiscal year ended September 30, 2016 filed on December 6, 2016, with the SEC, and any updates described in subsequent Quarterly Reports on Form 10-Q, all of which are incorporated herein by reference, and may be amended, supplemented or superseded from time to time by other reports we file with the SEC in the future. The risks and uncertainties we have described are not the only risks that we face. Additional risks and uncertainties not presently known to us or that we currently deem immaterial may also affect our operations. The occurrence of these known or unknown risks might cause you to lose all or part of your investment.

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

USE OF PROCEEDS

We will not receive any proceeds from the sale of the shares of Common Stock or Warrants by the Selling Securityholders. However, we will receive proceeds from the exercise of the Warrants by the Selling Securityholders to the extent they are exercised. We estimate that the maximum proceeds that we may receive from the exercise of the Warrants, assuming all the Warrants are exercised at their exercise price of \$3.50, will be \$7,954,545. We do not know, however, whether any of the Warrants will be exercised or, if any of the Warrants are exercised, when they will be exercised. It is possible that the Warrants will expire and never be exercised. There are circumstances under which the Warrants may be exercised on a cashless basis. In these circumstances, even if the Warrants are exercised, we may not receive any proceeds, or the proceeds that we do receive may be significantly less than what we might expect. We intend to use the aggregate net proceeds from the Private Placement and the exercise of the Warrants for general corporate purposes, including working capital, capital expenditures, business development and research and development. The actual allocation of proceeds realized from the exercise of these Securities will depend upon the amount and timing of such exercises, our operating revenues and cash position at such time and our working capital requirements. The Selling Securityholders will pay any expenses incurred by the Selling Securityholders for brokerage, accounting, tax or legal services or any other expenses incurred by the Selling Securityholders in disposing of the shares of Common Stock and Warrants. We will bear all other costs, fees and expenses incurred in effecting the registration of the shares covered by this prospectus, including, without limitation, all registration fees and fees and expenses of our counsel and our accountants.

PRIVATE PLACEMENT OF COMMON STOCK AND WARRANTS

Securities Purchase Transaction

On November 2, 2016, we entered into a securities purchase agreement (“Purchase Agreement”) with Sabby Healthcare Master Fund, Ltd. and Sabby Volatility Master Fund, Ltd. (collectively, “Selling Securityholders”). Pursuant to the Purchase Agreement, the Selling Securityholders agreed to purchase, in a private placement (the “Private Placement”), 2,272,727 shares of our Common Stock, and Warrants to purchase 2,272,727 shares of Common Stock. Each Warrant will be exercisable for one share of our Common Stock and will have the same terms as our existing publicly traded warrants that are currently listed on The NASDAQ Capital Market under the symbol “APDNW”, with an exercise price of \$3.50 and an expiration date of November 20, 2019. The aggregate gross proceeds of the Private Placement were approximately \$5.0 million before deducting the placement agents’ fee and other placement expenses. The price per share of Common Stock was \$2.49 and the price per Warrant was \$.01. The Private Placement closed on November 7, 2016 (the “Closing Date”).

Pursuant to a placement agency agreement with us, the placement agents for the Private Placement were Maxim Group LLC, as Lead Placement Agent, and Imperial Capital, LLC, as Co-Placement Agent, (collectively, “Placement Agents”) who received a cash fee of 7.0% of the gross proceeds of the Private Placement, and who were also granted warrants to purchase that number of shares of Common Stock equal to 3.0% of the shares sold in the Private Placement (“Placement Agent Warrants”). The Placement Agent Warrants are non-exercisable for 180 days from the Closing Date, have an exercise price equal to 115% of the offering price of the shares and terminate on the five year anniversary of the Closing Date. In addition, we agreed to reimburse the Placement Agents for out-of-pocket expenses actually incurred in an amount not to exceed \$50,000, \$15,000 of which was paid to reimburse the Selling Securityholders for legal and due diligence fees and expenses.

We intend to use the aggregate net proceeds from the Private Placement and the exercise of the Warrants for general corporate purposes, including working capital, capital expenditures, business development and research and development.

Pursuant to a registration rights agreement between us and the Selling Securityholders, we agreed to file a registration statement by December 7, 2016 and to use our best efforts to cause such registration statement to be declared effective by the SEC by January 6, 2017 (or by February 6, 2017 in the event of a “full review” by the SEC). In the event the registration statement fails to be filed or to be declared effective within the applicable time periods, we will be subject to monthly damages equal to 2% of the purchase price of the securities not covered by an effective registration statement. Upon effectiveness of this registration statement, it is expected that the Common Stock and Warrants issued in the Private Placement will be freely tradeable on The NASDAQ Capital Market under the symbols “APDN”

and “APDNW”, respectively.

The Purchase Agreement contains customary representations, warranties and agreements by us. Under the Purchase Agreement, we agreed not to issue additional Common Stock or securities convertible into Common Stock for a period of one hundred twenty (120) days after the Effective Date, as defined in the Purchase Agreement (the “Restricted Period”), except for, among other customary exclusions, issuances pursuant to our stock or option plan (provided that issuances to consultants will not exceed 50,000 shares in the aggregate during the Restricted Period). Further, we agreed not to effect any issuance of Common Stock or securities convertible into Common Stock involving a Variable Rate Transaction, as defined in the Purchase Agreement, while the Selling Securityholders hold any Warrants. In addition, pursuant to the Purchase Agreement, upon any Subsequent Financing, as defined in the Purchase Agreement, during the period ending on the nine (9) month anniversary of the Effective Date, the Selling Securityholders shall have the right to participate in up to an amount equal to 25% of the Subsequent Financing; provided that no Selling Securityholders shall have such participation right to the extent that after giving effect to such participation, such Selling Securityholders (together with such Selling Securityholders’s affiliates, and any persons acting as a group together with such Selling Securityholders or its affiliates) would beneficially own in excess of 9.99% of the Common Stock outstanding immediately after giving effect to the Subsequent Financing.

In connection with the Private Placement, we and each of our executive officers, directors and certain stockholders have entered into lock-up agreements with the Lead Placement Agent (the “Lock-Up Agreements”) and have agreed, subject to certain exceptions set forth in the Lock-Up Agreements, not to offer, sell, agree to offer or sell, solicit offers to purchase, grant any call option or purchase any put option with respect to, pledge, borrow, or otherwise dispose of any Common Stock, warrant to purchase Common Stock or other security convertible into, or exercisable or exchangeable for Common Stock, or our equity securities, or establish or increase any “put equivalent position” or liquidate or decrease any “call equivalent position” with respect to any relevant security or otherwise enter into any swap, derivative or other transaction or arrangement that transfers to another, in whole or in part, any economic consequence of ownership of a relevant security for 180 days from the date of the final prospectus filed with the SEC without the prior written consent of the Lead Placement Agent. Notwithstanding the foregoing, if (a) we issue an earnings release or other press release of material information, or a material event relating to us occurs, during the last 17 days of the lock-up period, or (b) prior to the expiration of the lock-up period, we announce that we will release earnings results during the 16-day period beginning on the last day of the lock-up period, the restrictions described above shall continue to apply until the expiration of the 18-day period beginning on the issuance of the earnings releases or other press release or the occurrence of the material event, unless the Lead Placement Agent waives that extension.

Our issuance of the Common Stock and Warrants were exempt from registration under the Securities Act of 1933, as amended (the “Act”), pursuant to the exemption from registration provided by Section 4(a)(2) of the Act and by Rule 506 of Regulation D promulgated under the Act. The Selling Securityholders represented that they are “accredited investors” as that term is defined in Rule 501 of Regulation D.

SELLING Securityholders

We have prepared this prospectus to allow the Selling Securityholders we have identified herein, including their transferees, pledgees, donees and successors in interest, to offer for resale up to 4,545,454 shares of our Common Stock (assuming exercise of all Warrants) and 2,272,727 Warrants.

The Common Stock being offered by the Selling Securityholders are those previously issued to the Selling Securityholders, and those issuable to the Selling Securityholders upon exercise of the Warrants. For additional information regarding the issuances of those shares of Common Stock and Warrants, see “Private Placement of Common Stock and Warrants” above. We are registering the shares of Common Stock and Warrants in order to permit the Selling Securityholders to offer the Securities for resale from time to time. Except for the ownership of the shares of Common Stock and the Warrants, the Selling Securityholders have not had any material relationship with us within the past three years.

The table below lists the Selling Securityholders and other information regarding the beneficial ownership of the shares of Common Stock and Warrants by each of the Selling Securityholders.

In accordance with the terms of a registration rights agreement with the Selling Securityholders, this prospectus generally covers the resale of the (i) the number of shares of Common Stock issued to the Selling Securityholders in the Private Placement which closed on November 7, 2016; (ii) the maximum number of shares of Common Stock issuable upon exercise of the Warrants, sold to the Selling Securityholders on November 7, 2016, determined as if the outstanding Warrants were exercised in full as of the trading day immediately preceding the date this registration statement was initially filed with the SEC, without regard to any limitations on the exercise of the Warrants; and (iii) the number of Warrants issued to the Selling Securityholders in the Private Placement which closed on November 7, 2016.

Under the terms of the Warrants, a Selling Securityholder may not exercise the Warrants to the extent such exercise would cause such Selling Securityholder, together with its affiliates and attribution parties, to beneficially own a number of shares of Common Stock which would exceed 4.99% of our then outstanding Common Stock following such exercise, excluding for purposes of such determination shares of Common Stock issuable upon exercise of the

Warrants which have not been exercised. This table does not reflect this limitation. The Selling Securityholders may sell all, some or none of their shares in this offering. See “Plan of Distribution.”

| Name of Selling Securityholders | No. of Shares of Common Stock Beneficially Owned Prior to this Offering ¹ | Percentage of Outstanding Shares of Common Stock Beneficially Owned Prior to this Offering ¹ | No. of Warrants Beneficially Owned Prior to this Offering ¹ | No. of Shares of Common Stock Offered by Selling Securityholders | Maximum No. of Warrants Offered pursuant to this Offering. | No. and Percentage of Outstanding Shares of Common Stock and Warrants Beneficially Owned Subsequent to this Offering ² |
|--|--|---|--|--|--|---|
| Sabby Healthcare Master Fund, Ltd. ³ | 2,727,274 | 5.17 | 1,363,637 | 2,727,274 | 1,363,637 | 0 |
| Sabby Volatility Warrant Master Fund, Ltd. ⁴ | 1,818,180 | 3.45 | 909,090 | 1,818,180 | 909,090 | 0 |

¹ Includes the Common Stock purchased in the Private Placement and the Common Stock issuable upon the complete exercise of the Warrants.

² We have assumed that after termination of this Offering none of the Securities covered by this prospectus will be beneficially owned by the Selling Securityholders and further assumed that the Selling Securityholders will not acquire beneficial ownership of any additional securities issued by us during the Offering.

³ Includes Warrants to purchase 1,363,637 shares of our Common Stock. Sabby Management LLC, the investment advisor of such Selling Securityholder and its manager, Mr. Hal Mintz, hold shared voting and dispositive power of these Securities and may be deemed to be their beneficial owners but disclaim beneficial ownership of such Securities, except to the extent of their pecuniary interests therein. The Warrants held by a Selling Securityholder may not be converted if, after such conversion, such Selling Securityholder and its affiliated entities would beneficially own, as determined in accordance with Section 13(d) of the Exchange Act, more than 4.99% of the number of shares of our Common Stock then issued and outstanding.

⁴ Includes Warrants to purchase 909,090 shares of our Common Stock. Sabby Management LLC, the investment advisor of such Selling Securityholder and its manager, Mr. Hal Mintz, hold shared voting and dispositive power of these Securities and may be deemed to be their beneficial owners but disclaim beneficial ownership of such Securities, except to the extent of their pecuniary interests therein. The Warrants held by a Selling Securityholder may not be converted if, after such conversion, such Selling Securityholder and its affiliated entities would beneficially own, as determined in accordance with Section 13(d) of the Exchange Act, more than 4.99% of the number of shares of our Common Stock then issued and outstanding.

plan of distribution

Each Selling Stockholder (the "Selling Securityholders") of the Securities and any of their pledgees, assignees and successors-in-interest may, from time to time, sell any or all of their Securities covered hereby on the principal trading market or any other stock exchange, market or trading facility on which the Securities are traded or in private transactions. These sales may be at fixed or negotiated prices. A Selling Stockholder may use any one or more of the following methods when selling Securities:

- ordinary brokerage transactions and transactions in which the broker-dealer solicits purchasers;

· block trades in which the broker-dealer will attempt to sell the Securities as agent but may position and resell a portion of the block as principal to facilitate the transaction;

- purchases by a broker-dealer as principal and resale by the broker-dealer for its account;

- an exchange distribution in accordance with the rules of the applicable exchange;

- privately negotiated transactions;

- settlement of short sales;

· in transactions through broker-dealers that agree with the Selling Securityholders to sell a specified number of such Securities at a stipulated price per Security;

· through the writing or settlement of options or other hedging transactions, whether through an options exchange or otherwise;

- a combination of any such methods of sale; or

- any other method permitted pursuant to applicable law.

The Selling Securityholders may also sell Securities under Rule 144 or any other exemption from registration under the Securities Act, if available, rather than under this prospectus.

Broker-dealers engaged by the Selling Securityholders may arrange for other brokers-dealers to participate in sales. Broker-dealers may receive commissions or discounts from the Selling Securityholders (or, if any broker-dealer acts as agent for the purchaser of Securities, from the purchaser) in amounts to be negotiated, but, except as set forth in a supplement to this Prospectus, in the case of an agency transaction not in excess of a customary brokerage commission in compliance with FINRA Rule 2440; and in the case of a principal transaction a markup or markdown in compliance with FINRA IM-2440.

In connection with the sale of the Securities or interests therein, the Selling Securityholders may enter into hedging transactions with broker-dealers or other financial institutions, which may in turn engage in short sales of the Securities in the course of hedging the positions they assume. The Selling Securityholders may also sell Securities short and deliver these Securities to close out their short positions, or loan or pledge the Securities to broker-dealers that in turn may sell these Securities. The Selling Securityholders may also enter into option or other transactions with broker-dealers or other financial institutions or create one or more derivative securities which require the delivery to such broker-dealer or other financial institution of Securities offered by this prospectus, which Securities such broker-dealer or other financial institution may resell pursuant to this prospectus (as supplemented or amended to reflect such transaction).

The Selling Securityholders and any broker-dealers or agents that are involved in selling the Securities may be deemed to be “underwriters” within the meaning of the Securities Act in connection with such sales. In such event, any commissions received by such broker-dealers or agents and any profit on the resale of the Securities purchased by them may be deemed to be underwriting commissions or discounts under the Securities Act. Each Selling Stockholder has informed the Company that it does not have any written or oral agreement or understanding, directly or indirectly, with any person to distribute the Securities.

The Company is required to pay certain fees and expenses incurred by the Company incident to the registration of the securities. The Company has agreed to indemnify the Selling Securityholders against certain losses, claims, damages and liabilities, including liabilities under the Securities Act.

We agreed to keep this prospectus effective until the earlier of (i) the date on which the Securities may be resold by the Selling Securityholders without registration and without regard to any volume or manner-of-sale limitations by reason of Rule 144, without the requirement for us to be in compliance with the current public information under Rule 144 under the Securities Act or any other rule of similar effect or (ii) all of the Securities have been sold pursuant to this prospectus or Rule 144 under the Securities Act or any other rule of similar effect. The resale Securities will be sold only through registered or licensed brokers or dealers if required under applicable state securities laws. In addition, in certain states, the resale Securities covered hereby may not be sold unless they have been registered or qualified for sale in the applicable state or an exemption from the registration or qualification requirement is available and is complied with.

Under applicable rules and regulations under the Exchange Act, any person engaged in the distribution of the resale Securities may not simultaneously engage in market making activities with respect to the Common Stock for the applicable restricted period, as defined in Regulation M, prior to the commencement of the distribution. In addition, the Selling Securityholders will be subject to applicable provisions of the Exchange Act and the rules and regulations thereunder, including Regulation M, which may limit the timing of purchases and sales of the Common Stock by the Selling Securityholders or any other person. We will make copies of this prospectus available to the Selling Securityholders and have informed them of the need to deliver a copy of this prospectus to each purchaser at or prior to the time of the sale (including by compliance with Rule 172 under the Securities Act).

where you can find more information

We file annual, quarterly and current reports, and other information with the SEC. You may read and copy information filed by us with the SEC at the SEC's public reference section, 100 F Street, N.E., Washington, D.C. 20549. Information regarding the operation of the public reference section can be obtained by calling 1-800-SEC-0330. The SEC also maintains an Internet site at <http://www.sec.gov> that contains reports, statements and other information about issuers, such as us, who file electronically with the SEC. We maintain an Internet site at <http://www.adnas.com>. However, the information on our Internet site is not incorporated by reference in this prospectus and any prospectus supplement and you should not consider it a part of this prospectus or any accompanying prospectus supplement.

DOCUMENTS INCORPORATED BY REFERENCE

The SEC allows us to “incorporate by reference” into this prospectus the information in other documents that we file with it. This means that we can disclose important information to you by referring you to those documents. The information incorporated by reference is considered to be a part of this prospectus, and information in documents that we file later with the SEC will automatically update and supersede information contained in documents filed earlier with the SEC or contained in this prospectus. We incorporate by reference in this prospectus (i) the documents listed below, (ii) all documents that we file with the SEC under Section 13(a), 13(c), 14 or 15(d) of the Exchange Act after the date of the initial filing of the registration statement of which this prospectus is included and prior to the effectiveness of such registration statement, and (iii) and any future filings that we may make with the SEC under Sections 13(a), 13(c), 14, or 15(d) of the Exchange Act prior to the termination of the offering under this prospectus; provided, however, that we are not incorporating, in each case, any documents or information deemed to have been furnished and not filed in accordance with SEC rules:

Our Annual Report on Form 10-K for the year ended September 30, 2016, as filed with the SEC on December 6, 2016.

The description of our Common Stock and 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 and prior to the effectiveness of such registration statement or after the date of this prospectus and prior to the termination or completion of the offering of Securities under this prospectus shall be deemed to be incorporated by reference in this prospectus and to be a part hereof from the date of filing such reports and other documents.

You may obtain a copy of any or all of the documents referred to above which may have been or may be incorporated by reference into this prospectus, except for exhibits to those documents (unless the exhibits are specifically incorporated by reference into those documents) at no cost to you by writing or telephoning us at the following address: Office of the Corporate Secretary, Applied DNA Sciences, Inc., 50 Health Sciences Drive, Stony Brook, New York 11790, telephone (631) 240-8800.

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.

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 year ended September 30, 2016, as set forth in their report, which is incorporated by reference in the prospectus and elsewhere in this registration statement. 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.

APPLIED DNA SCIENCES, INC.

2,272,727 Shares of Common Stock

2,272,727 Warrants Exercisable into

2,272,727 Shares of Common Stock