Applied DNA Acquires Spindle Biotech

Better RNA...Faster

July 13, 2023

Nasdaq: APDN
Safe Harbor Statement

The statements made by Applied DNA in this presentation may be “forward-looking” in nature within the meaning of Section 27A of the Securities Act of 1933, Section 21E of the Securities Exchange Act of 1934 and the Private Securities Litigation Reform Act of 1995. Forward-looking statements describe Applied DNA’s future plans, projections, strategies, and expectations, are based on assumptions and involve a number of risks and uncertainties, many of which are beyond the control of Applied DNA, and include Applied DNA’s beliefs and expectations and statements about the benefits sought to be achieved in the acquisition of Spindle and the potential effects of the acquisition on Applied DNA. Actual results could differ materially from those projected due to its history of net losses, limited financial resources, unknown future demand for its biotherapeutics products and services, the unknown amount of revenues and profits that will result from the LinealVT™ platform, the fact that there has never been a commercial drug product utilizing PCR-produced DNA technology and/or the Spindle RNAP enzyme approved for therapeutic use, and various other factors detailed from time to time in Applied DNA’s SEC reports and filings, including its Annual Report on Form 10-K filed on December 14, 2022, as amended, its 10-Q filed on February 9, 2023, and May 11, 2023, and other reports it files with the SEC, which are available at www.sec.gov. Applied DNA undertakes no obligation to update publicly any forward-looking statements to reflect new information, events, or circumstances after the date hereof or to reflect the occurrence of unanticipated events, unless otherwise required by law.
Acquisition Highlights

Structure
The acquisition of Spindle Biotech is being accounted for as an asset acquisition, and Applied DNA will record the assets acquired and the consideration paid in its fiscal fourth quarter and full-year 2023 results ending September 30, 2023.

Non-Contingent Considerations
Cash of $625,000, and 750,000 shares of restricted common stock subject to a 6-month lockup period

Contingent Stock Considerations
1.0M shares, 250,000 shares of which will be issued upon the issuance of a patent for the Spindle RNA polymerase, and 750,000 shares of which will be issued in three equal tranches upon the achievement of aggregate gross sales milestones at $5.0M per tranche

Revenue Share (10 Years)
10% of Linea™ IVT platform net sales
14% of enzyme net sales if sold outside of the Linea™ IVT platform

Management
Spindle Biotech CEO Aaron Chung joins Applied DNA as Director, Nucleic Acid Platforms
Acquisition Rationale

- Unique combination of LinearDNA™ platform and Spindle complementary technologies allow Applied DNA to address two significant issues facing mRNA manufacturing.

- The Company’s LinearDNA platform is well suited to produce chemically modified IVT templates, which are required for the Spindle RNA polymerase (RNAP).

- Addition of Spindle RNAP increases the Company’s total addressable market several fold to an estimated 20+%\(^1\) of mRNA manufacturing costs of goods.

- Combined technology allows Applied DNA customers to produce better mRNA, faster and cheaper.

\(^1\)- Based on Company’s internal modeling and estimates
Conventional mRNA Manufacturing Problems

Bacterially derived pDNA is currently the starting material for mRNA

Long lead times increase mRNA production timeline

Struggles with complex DNA sequences such as Poly(a) tails

Requires expensive enzymatic linearization and additional filtration steps

Increased regulatory scrutiny

Problematic inflammatory byproduct of conventional IVT

dsRNA removal is essential for safe and effective mRNA products

Currently removed via expensive and complex purification methods

Can cause quality control issues

Increased regulatory scrutiny

Plasmid DNA (pDNA)  Double Stranded RNA (dsRNA)
**linearDNA™ IVT Templates**

- Cell free enzymatic production platform
- Rapid production timelines
- Reduces mRNA production steps
- Primer induced modifications enable simple 3’ and 5’ IVT template customization
- Stable homopolymer amplification

**Spindle RNA Polymerase (RNAP)**

- Proprietary and patent pending RNAP
- Includes DNA binding domain and high-fidelity T7
- High binding affinity for chemically modified linearDNA IVT templates
- Reduces or eliminates dsRNA contamination
- mRNA yields that meet or exceed conventional IVT

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**Substantially Improved mRNA Production**

- Significantly simplified mRNA production
- Reduced or eliminated dsRNA contamination
- Delivery of commercial scale IVT templates in as little as 14 days
- Integrable into current mRNA workflows
Conventional IVT mRNA Production

- pDNA IVT Template Manufacture
- In vitro transcription
- Purification step 1
- Purification step 2
- Encapsulate and sterile filtration
- mRNA Product

Linea IVT mRNA Production

- LinearDNA IVT Template Manufacture
- In vitro transcription
- Purification step 1
- Purification step 2
- Encapsulate and sterile filtration
- mRNA Product

Removal of IVT template linearization and purification steps results in simplified workflow.
Equivalent mRNA Yields to Conventional IVT

Platform’s chemically modified linearDNA templates and proprietary enzyme and IVT conditions have no negative impact on mRNA yields.
• Dot blot detection of dsRNA impurities in mRNA. The darker the dot, the more dsRNA is present.
• Combination of chemically modified linear DNA templates + Spindle RNAP **significantly reduces or eliminates dsRNA** impurities as compared to conventional IVT.
Thank you!
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