

Medikine, Inc.

COMMON STOCK VALUATION

AS OF JANUARY 31, 2019

*Report Date: April 15, 2019*



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April 15, 2019

Ronald W. Barrett, Ph.D.

Chief Executive Officer

Medikine, Inc.

1455 Adams Drive

Menlo Park, CA 94025

Dear Dr. Barrett:

In response to the engagement letter, RNA Advisors, LLC dba RNA Capital Advisors (“RNA” or “we”) has completed an analysis of Medikine, Inc. (“Medikine” or the “Company”) as of January 31, 2019 (the “Valuation Date”), to determine the fair market value of the Company’s common stock (“Common Stock”) on a non-marketable, minority interest basis.

Please note that this letter along with the following report (the “Report”), exhibits (individually an “Exhibit” and collectively the “Exhibits”) and their conclusions (jointly, the “Valuation” or the “Opinion”) are intended for the use of the management and Board of Directors of the Company (“Management”). This analysis has been performed in recognition of Internal Revenue Code Section 409A (“IRC 409A”) and standards as promulgated in the Uniform Standards of Professional Appraisal Practice (“USPAP”). We make no representation as to the accuracy of this Valuation if it is used for any other purpose without the written consent of RNA. This Opinion should not be considered, in whole or in part, as investment advice by anyone.

This analysis uses the methods and techniques outlined in the AICPA Audit and Accounting Practice Aid entitled Valuation of Privately-Held-Company Equity Securities Issued as Compensation, second edition (the “Practice Aid”), which are relevant to the valuation of the Common Stock.

The definition of fair market value is predicated on IRS Revenue Ruling 59-60.

This cover letter provides an overview of the purpose and scope of the analysis and its conclusions. Please refer to the attached Report below for a discussion and presentation of the analysis performed in connection with this engagement.

SUMMARY OF FINDINGS:

Based upon the information and financial data provided, and representations made by Management, as well as the analyses performed, it is our opinion that the fair market value of the Common Stock on a non-marketable, minority interest basis as of the Valuation Date is reasonably stated as follows:

$0.08 (EIGHT CENTS) per Share

The conclusions and opinions expressed in this letter and the accompanying Report are contingent upon the qualifying factors set forth in the Statement of Limiting Conditions and throughout the completed Report.

If you have any questions concerning this Report, please contact me at 925.940.0220.

Sincerely,

**RNA Capital Advisors**

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Sam Renwick, CFA

*Primary Valuation Analyst*

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Engagement Overview

Purpose

RNA has completed an analysis of the Company as of the Valuation Date to determine the fair market value of the Common Stock on a non-marketable, minority interest basis. This analysis has been performed in recognition of IRC 409A. This analysis uses the methods and techniques outlined in the Practice Aid, which are relevant to the valuation of the Common Stock. The definition of fair market value is predicated on IRS Revenue Ruling 59-60.

Scope

RNA has based this Opinion on information provided and represented by Management. Our review and analysis included, but was not necessarily limited to, the following steps:

1. Reviewed the Previous Valuation report (defined below);
2. Discussed the expected operations, financial condition, and future prospects with Management in order to understand the performance of the Company;
3. Reviewed the Company’s financial statements for the years ended December 31, 2015 to December 31, 2018, which Management indicated was the latest available as of the Valuation Date;
4. Reviewed consolidated forecasts prepared by Management for the Company;
5. Reviewed a capitalization summary of the Company as prepared by Management;
6. Reviewed a copy of the Company's Articles of Incorporation;
7. Reviewed copies of certain documents pertaining to various securities underlying the Company's capital structure, such as preferred and common stock;
8. Reviewed certain publicly available financial data for companies that we deemed comparable to the Company;
9. Conducted research concerning the economic conditions and outlook for the US economy generally as of the Valuation Date; and
10. Conducted other studies, analyses and inquiries, as we deemed appropriate.

RNA did not independently verify the information provided; therefore, the validity of our Opinion depends on the completeness and accuracy of the information provided to RNA by Management. Management warranted to RNA that the information supplied was complete and accurate to the best of its knowledge. Information furnished by the Company and others, upon which all or portions of our Opinion are based, is believed to be reliable and we have assumed that all facts and circumstances that would significantly affect the results of the Valuation have been disclosed to us. However, RNA provides no warranty as to the accuracy of such information. Our fee for this service is not contingent upon the Valuation expressed herein.

Key Definitions

The term “BMP”, as used herein, refers to bone morphogenetic protein.

The term “CAGR”, as used herein, refers to compound annual growth rate.

The term “CAR-T”, as used herein, refers to the chimeric antigen receptor T-cell.

The term “CD80”, as used herein, refers to cluster of differentiation 80 protein.

The term “DCF”, as used herein, refers to discounted cash flow method.

The term “DLOM”, as used herein, refers to discount for lack of marketability.

The term “FDA”, as used herein, refers to the US Food and Drug Administration.

The term “HIV”, as used herein, refers to human immunodeficiency virus.

The term “IL”, as used herein, refers to interleukin.

The term “IPO”, as used herein, refers to an initial public offering.

The term “PCR”, as used herein, refers to polymerase chain reaction.

The term “PD-1”, as used herein, refers to programmed cell death protein 1.

The term “PD-L1”, as used herein, refers to programmed death-ligand 1.

The term “Previous Valuation”, as used herein, refers to the valuation of Common Stock performed by RNA as of September 30, 2016.

The term “rNPV”, as used herein, refers to risk-adjusted net present value.

The term “US”, as used herein, refers to the United States of America and its major territories.

The term “USD”, as used herein, refers to US Dollars. Unless otherwise noted, all currency figures in this Opinion are expressed in USD.

Standard of Value

Definition of Fair Market Value

For tax purposes, the appropriate standard of value is fair market value, which is defined as:

“The price, expressed in terms of cash equivalents, at which such property would change hands between a hypothetical willing and able buyer and a hypothetical willing and able seller, acting at arms’ length in an open and unrestricted market, when neither is under compulsion to buy or to sell, and when both have reasonable knowledge of relevant facts.”[[1]](#footnote-1)

Company Overview

Background

Medikine is a privately-held, seed-stage biotech company, discovering IL-based agonists of clinically relevant cytokine receptors. The Company is utilizing proprietary technology to identify novel cytokine receptor agonists based on low molecular weight peptides, unrelated in sequence to the natural cytokine proteins, which can be engineered to have distinct advantages over the natural cytokines.[[2]](#footnote-2) As of the Previous Valuation, the Company’s initial focus was the development of a treatment for renal fibrosis using selective-activation of BMP receptors (the “BMP Program”). However, the Company discontinued the development of the BMP Program as it failed in preclinical development for the treatment of renal fibrosis, and/or, chronic kidney (“CKD”). Notwithstanding, the Company is discovering IL-2 based agonists for the development of therapies targeting immuno-oncology (“IO”) and autoimmune diseases.[[3]](#footnote-3)

Product Pipeline

As of the Valuation Date, the Company’s primary product pipeline and development timelines are discussed below:

1. **IL-2Rβ/γ Agonists IO:** The Company is discovering selective cytokine agonists not based on IL-2 protein, currently in the lead optimization phase. The therapeutic agonist also has the potential for targeting tumor microenvironment and use as a bi-specific peptide for applications in IO.[[4]](#footnote-4)
2. **IL-2Rα/β/γ Agonists for Autoimmune Disease:** The Company is leveraging existing β/γ peptides to develop therapeutics for autoimmune diseases and has identified multiple families of IL-2Rα binding peptide.[[5]](#footnote-5)
3. **IL-27R Agonists for IBD and Other Autoimmune Disease:** The Company also identified a set of high-affinity peptide ligands with applications for the treatment of IBD and other autoimmune diseases. [[6]](#footnote-6)

All the above indications are cytokine-based and are still either in lead optimization or target identification phases of development.

Recent Developments

1. On November 8, 2018, the Company raised $4.0 million in Series Seed 2 preferred financing, led by Lightspeed Ventures and Jonathan MacQuitty. In lieu of the raise, the Company issued 2,666,667 Series Seed 2 shares for an original issue price of $1.50. [[7]](#footnote-7)
2. Relative to the Previous Valuation, the Company discontinued the development of the BMP Program as it failed in preclinical development for the treatment of renal fibrosis, and/or, CKD. The Company is discovering IL-2 based agonists for the development of therapies in IO and autoimmune diseases.[[8]](#footnote-8)

Management Team

Key members of the Management team are:

**Dr. Ronald W. Barrett, Ph.D. – *Chief Executive Officer (“CEO”)***

Dr. Barrett serves as the CEO of the Company. Dr. Barrett co-founded XenoPort, Inc., in 1999 and served as its CEO from September 2001 until October 1, 2015. Dr. Barrett served as the Chief Scientific Officer (“CSO”) of Xenoport Inc. from 1999 to 2001. He served as the Senior Vice President of Research at Affymax Research Institute from 1989 to 1999. He served as a Molecular Pharmacologist in Neuroscience Group at Abbott Laboratories from 1986 to 1989. He has industry and board experience, including as the CEO of a publicly traded biopharmaceutical company. Dr. Barrett has been an Independent Director of Concert Pharmaceuticals, Inc. since December 2007. Dr. Barrett served as a Director of Xenoport, Inc. since August 1999. He is the inventor on more than 40 US patents and has co-authored over 40 manuscripts in peer-reviewed journals. In 1996, he was co-recipient of the Newcomb-Cleveland Award for the year's best manuscript in the publication Science. Dr. Barrett received a Bachelor of Science from Bucknell University and a Ph.D. in Pharmacology from Rutgers University.[[9]](#footnote-9)

**Michael C. Needels, Ph.D. – *Chief Operating Officer***

Dr. Needels serves as the Chief Operating Officer of the Company. He is a Co-Founder of Nodality Inc. (“Nodality”). Prior to joining Nodality, Dr. Needels was an independent Scientific Consultant specializing in the areas of novel assay technology and drug discovery. He held the position of Senior Research Fellow at XenoPort, Inc., responsible for directing new technology initiatives in the areas of drug delivery and drug targeting. Prior to that, he was at Affymax Research Institute where he held the position of Research Unit Director, responsible for the leadership of an approximately 60-member team of biologists, chemists, and engineers pursuing technology development in the areas of novel screening formats and novel types of chemical diversity effective against historically intractable targets. Dr. Needels joined Affymax Research Institute in 1992 to spearhead the then pioneering research effort focused on the development of technologies for the synthesis and screening of encoded, combinatorial libraries. He is a co-inventor of this technology, along with Drs. Ron Barrett, Bill Dower, and Mark Gallop, which has received broad patent coverage. Prior to that, he was employed at Roche Molecular Systems where he worked as a nucleic acid chemist in the group developing the first PCR-based diagnostic tests for such pathogens as HIV, chlamydia, and tuberculosis. His postdoctoral training in molecular and cellular biology was in the laboratory of Prof. Herbert Boyer at the University of California, San Francisco. Dr. Needels received his Master of Science (“M.S.”) and Ph.D. in Bioorganic Chemistry from Cornell University, and a Bachelor of Arts (“B.A.”) degree in Biochemistry from the University of California, Berkeley.[[10]](#footnote-10)

**William J. Dower, Ph.D. – *CSO***

Dr. Dower serves as the CSO of the Company. He previously served as Vice President of Discovery Biology of Xenoport Inc. since 1999. Dr. Dower is one of Xenoport Inc.'s founders and has been Xenoport Inc.'s Vice President of Discovery Biology since 1999. From 1989 to 1999, he held various positions at Affymax Research Institute, the most recent of which was Senior Director of Molecular Biology. Prior to Affymax Research Institute, he held the position of Senior Research Biochemist at Bio-Rad Laboratories, Inc., from 1984 to 1989. He received his B.A. and Ph.D. in Biological Sciences from the University of California, San Diego.[[11]](#footnote-11)

Capitalization and Ownership

The Company is authorized to issue common and preferred stock. As of the Valuation Date, the following

shares were issued and outstanding or anticipated to be issued and outstanding:

*Table 1: Capitalization Table*

|  |  |  |  |
| --- | --- | --- | --- |
| EQUITY CLASS | AUTHORIZED | OUTSTANDING | AS CONVERTED |
| **Series Seed 1** | 1,235,000 | 1,235,000 | 1,646,667 |
| **Series Seed 2** | 2,666,667 | 2,666,667 | 2,666,667 |
| **Common** | 15,000,000 | 6,615,983 | 6,615,983 |

As of the Valuation Date, the Company had 1,706,000 Common Stock options outstanding and 394,000 Common Stock options reserved for future grants as part of Company’s equity-based compensation plan (the “Options Available”). According to Management, 100.0% of the Options Available are expected to be granted in the near future and prior to a possible exit/liquidity event for the Company. As such, due to the dilutive impact of the option pool, we included these shares in our analysis.

Below is a summary of Common Stock options outstanding as of the Valuation Date:

*Table 2: Common Stock Options Summary*

|  |  |  |  |
| --- | --- | --- | --- |
| CLASS OF STOCK | EXERCISE PRICE | SHARES | |
| **Common Stock Options** | $0.07 | | 1,306,000 |
| **Common Stock Options** | $0.05 | | 400,000 |

Refer to Exhibit E.1 for further details on the Company’s capitalization.

Stage of Development

The Practice Aid defines six stages of development for start-up enterprises.

Stage 1 companies have no product revenue and limited expense history. Typically, there is an incomplete management team with an idea, a plan, and possibly some initial product development. Seed capital or first-round of financing is provided during this stage by friends and family, angels or venture-capital firms and the securities issued to these investors are in the form of common stock or preferred stock.

RNA classifies this Company as a Stage 1 company because it has raised Series Seed 1 and Seed 2 rounds of equity financing. The Company’s products are early in the lead optimization and early discovery stages of development, with limited product development relative to the Previous Valuation.

Industry Overview

Overview

In valuing a business or its assets, it is important to consider the condition of, and the outlook for, the industry in which the enterprise operates. Depending upon the nature of the marketplace, industry conditions can significantly affect financial performance and, consequently, value. The following section provides a brief overview of the oncology market with a focus on IO as well as a discussion of the competitive environment in that space.

**Global Oncology Drugs Market**

The global oncology market was valued at $97.4 billion in 2017 and is estimated to reach $176.5 billion by 2025, growing at a CAGR of 7.6% from 2018 through 2025.[[12]](#footnote-12) In the US, cancer is the second most common cause of death, accounting for 1 in every 4 deaths. However, cancer incidence and mortality have been declining in recent times as the survival rates have increased in the past three decades. In the US, more than 15.0 million people are cancer survivors. Lower incidence and improved survival rate have been attributed to a reduction in smoking as well as advances in early detection and treatments.

Currently, there are more than 200 cancer treatment agents with the FDA approving 63 new cancer agents for 78 cancer indications in the past five years. In 2016, the FDA approved 5 new active substances and in 2017, 14 new targeted medicines were approved. Of the 14 new active substances, 11 were designated breakthrough therapies, indicating that the drug may demonstrate a substantial improvement over available therapies on one or more clinically significant endpoint. The approval of precision oncology medicine in 2017, represented a significant milestone in the chronology of cancer therapeutics. Precision oncology, a directing therapy based on genomic biomarkers and independent of cancer type, has demonstrated promising treatment outcomes and can significantly impact the treatment of cancer.

Oncology drugs represent 5 of the top 15 bestselling drugs globally and the market for oncology drugs has been forecasted to grow at a CAGR of 10.9% to 2030. The market growth is driven by the growing prevalence of various types of cancer, an aging population, changes in lifestyle and increasing demand for biological and targeted drug therapies. Global costs of oncology therapeutics and supportive care drugs increased from $96.0 billion in 2013 to $133.0 billion in 2017. Developed markets such as the US, Europe, and Japan account for up to 74.0% of the total spending on oncology treatments. The global spending growth slowed down to 12.5% in 2017 from 14.0% in 2016, offset by slower spending growth in the US, Japan, and the five major European markets.

In 2017, over 700 molecules were in late-stage development with almost 90% of the therapies being targeted treatments. Pipeline assets include small molecules, radiotherapies, hormonals, cytotoxics, and targeted therapies.[[13]](#footnote-13)

IO Market

According to a report by Zion Market Research, the global IO therapy market was valued at approximately $43.0 billion in 2016 and is expected to generate revenue of around $97.3 billion by 2022, growing at a CAGR of around 14.6% for the period 2017 through 2022.[[14]](#footnote-14)

The global IO market can be segmented based on the type of product into monoclonal antibodies (“mAbs”), therapeutic vaccines, immune checkpoint inhibitors, and immune checkpoint activators, amongst others. Based on organ, the IO market is dominated by lung cancer and melanoma, providing opportunities to several companies and academic institutions focusing on novel therapeutics.[[15]](#footnote-15)

According to Research and Markets, the global IO market is expected to be a major revenue generator for the biopharmaceutical industry by 2020. Currently, cancer immunotherapy drugs have captured approximately 50.0% of the overall oncology drugs market. Over the next decade, immunotherapies are expected to be the backbone of cancer treatments in 60.0% of cancer types. It is forecasted that by 2020, Avastin, Nivolumab, Revlimid, Rituxan, and Xtandi will be the top five cancer drugs.[[16]](#footnote-16)

**Approved Pipeline for IO diseases:** For example, AstraZeneca’s PD-L1 antibody, Durvalumab (imfinzi) approved by the FDA in 2017 as an immune checkpoint inhibitor, blocks the interaction of PD-L1 with PD-1 and CD80. In December 2017, Bristol-Myers Squibb Company (“BMS”) received approval for Nivolumab as an adjuvant treatment of melanoma. In August 2017, Novartis International AG (“Novartis”) received FDA approval for a CAR-T therapy named Kymriah for children and young adults with B-cell lymphoblastic lymphoma. Gilead Sciences, Inc. (“Gilead”) completed the acquisition of Kite Pharma Ltd. in October 2017, and Gilead’s CAR-T therapy, Yescarta, received FDA approval in October 2017 to treat non-Hodgkin lymphoma.[[17]](#footnote-17)

Competition

The Company faces competition from other companies in the biotech and biopharma industry. Its competitors in the IL space include Synthorx, Inc. (THOR-707)[[18]](#footnote-18), Nektar Therapeutics (NKTR-214), Roche Holding AG (RG7461), Eli Lilly and Company (pegilodecakin – IL-10; acquired via Armo Biosciences, Inc.)[[19]](#footnote-19), Celgene Corporation (DEL106 – IL-2; acquired via Delinia, Inc.)[[20]](#footnote-20).

Valuation Methodology Overview

The following section provides an overview of various valuation methodologies considered as part of this analysis.

Business Enterprise Valuation Theory

In summary, there are three generally accepted valuation approaches available when valuing the operating assets and liabilities of a closely held business:

1. Cost Approach (“Cost Approach”);
2. Income Approach (“Income Approach”); and
3. Market Approach (“Market Approach”).

Within each category, a variety of methodologies exists to assist in the estimate of value. They are discussed in further detail herein. In addition, there is the Hybrid Approach (“Hybrid Approach”), a methodology that combines two or more of these approaches.

Cost Approach

The Cost Approach relies upon separately valuing each sub-component of the company being valued. The discrete valuation of an asset using this approach is based upon the concept of replication or replacement as an indicator of value. In essence, this method answers the build approach when looking at a “buy versus build” approach to investment.

In the case of most IP-centric technologies with explicit patent protection and substantive and broad blocking rights to competitive entrants, the Cost Approach is not a reasonable proxy for value. By the time most products are commercial, the cost to recreate the existing asset is prohibitive in these circumstances given the demanding regulatory requirements. Furthermore, these costs should be considered sunk costs and, as such, other approaches to value should be considered.

Income Approach

The Income Approach is based on the earnings power, or the cash-generating abilities of the company being valued. This approach focuses on determining a forecast benefit stream that is reflective of the subject company’s most likely future performance. The forecast benefit stream is then discounted to present value based on the appropriate risk‐adjusted discount rate or capitalization rate. The DCF is a commonly used Income Approach. In addition, in the life sciences, if clinical or regulatory risks remain, an rNPV is also common. For IP-centric rights interests, with reasonable patent protection and expectations for a significant decrease in market share upon patent expiration, the Income Approach is generally the favored approach by industry professionals.

Market Approach

In summary, the Market Approach references actual transactions involving (i) the subject being valued, or (ii) similar assets and/or enterprises. The Market Approach generally consists of two primary methodologies: the Guideline Comparables Method (“GCM”) and the Guideline Transaction Method (“GTM”). The GCM involves identifying and selecting publicly traded companies or guideline public companies (“Guideline Public Companies”) with financial and operating characteristics similar to the subject being valued, and subsequently deriving multiples and other metrics from such Guideline Public Companies to apply to the subject being valued. The GTM involves identifying and selecting actual transactions, such as mergers, acquisitions, investments, and licensing agreements, involving companies and/or assets with financial and operating characteristics similar to the subject being valued, and subsequently deriving multiples and other metrics from such guideline transactions (“Guideline Transactions”) to apply to the subject being valued.

The third method under the Market Approach that can provide an indication of value is the Option Pricing Model Backsolve Method (the “OPM Backsolve Method”). By considering the sale price of shares in a recent financing, the equity value can be “back-solved” using an option pricing model that gives consideration to the Company’s capitalization structure and the rights of the preferred and common shareholders. This methodology is most applicable when a valuation is conducted close to the date of a financing transaction, and when other methodologies are deemed less reliable.

Hybrid Approach

A Hybrid Approach combines two or more of the approaches above. Typically, this involves some combination of an Income Approach with a Market Approach. For example, a licensing transaction, which has definitive upfront payments, milestones and royalties, can be viewed as an Income Approach; however, the determination of reasonable consideration across the three major approaches can be based on comparable license arrangements for similar assets which can be viewed as a Market Approach.

Allocation Methodology Theory

In summary, there are four generally accepted allocation methodologies available when determining the value of various classes of securities underlying a company’s capital structure:

1. Current Value Method;
2. Option Pricing Method;
3. Probability-Weighted Expected Return Method; and
4. Hybrid Method.

Within each category, a variety of methodologies exists to assist in the estimation of value, as discussed in further detail herein.

Current Value Method (“CVM”)

The CVM is based on an allocation theory that shareholders with senior stock rights would attempt to maximize the value of their holdings based solely on the senior interest’s underlying liquidation preference, participation rights and conversion rights, as well as an imminent liquidity event. In essence, this approach determines the value of the enterprise at the Valuation Date, distributes said value through the existing capital structure waterfall and then applies discounts or premiums as may be appropriate to the varying security classes. It does not consider optionality or upside payoffs for those securities that may not receive value at the current valuation (e.g. value does not exceed preference) but may receive value if value increases over time (e.g. future value exceeds preference).

RNA noted that the CVM is appropriate under following circumstances:

1. When an imminent liquidity event in the form of an acquisition or dissolution of the enterprise is assumed and/or the expectations about the future of the enterprise as a going concern are effectively immaterial; and
2. When the enterprise is assumed to be at such an early stage of its development that:
   1. No material progress has been made on its business plan;
   2. No significant equity value has been created above the liquidation preference of the preferred stock; and
   3. There is no reasonable basis for estimating the timing and magnitude of any common equity value above the liquidation preference that might be created in the future.

Option Pricing Method (“OPM”)

The OPM relies on financial option theory to allocate value among different classes of members’ equity based upon a future option “claim” on value. Under the OPM, the values of the various classes of stock are estimated as the net value of a series of call options, representing the present value of the expected future returns to the shareholders.

Essentially, the equity claims of a shareholder class are equivalent to a call option on the stock’s participation in the value of the subject company at or above the respective preferred shareholders’ liquidation preferences. Thus, an equity class can be valued by estimating the value of its share in each of these call option rights.

The OPM involves estimating the value of the call options using the Black-Scholes option pricing model (“Black-Scholes”)[[21]](#footnote-21) a lattice model (“Lattice”)[[22]](#footnote-22) or a risk-neutral Monte Carlo simulation at a series of exercise prices that coincide with the liquidation and conversion preferences of the holders of preferred and common shareholders. The Black-Scholes model and most Lattice models assume that a company’s or an asset’s potential return distribution follow a log-normal path and that the period to period movement in price follow a geometric Brownian motion (meaning that prices fluctuate smoothly from period to period and do not essentially jump). Furthermore, closed form models like Black-Scholes do not allow for certain types of liquidity events, like structured sales, which may have some contingent consideration component as part of the exit value. Simulation techniques can capture the reality of most assets noting that companies and asset values usually “jump” on data, that returns can be bi-modal for development stage assets, and that a license or structured exit on the back-end can be simulated. That said, simulation techniques can be costly to develop, can have limited transparency, and can be understood by a much smaller audience than the other techniques.

RNA also noted that the OPM may be used to determine the equity value of a company by using the OPM Backsolve Method. In an OPM framework, the equity value is inferred from a recent financing transaction. It involves making assumptions for the time to liquidity, volatility, and risk-free rate and then solving for the value of equity such that value for the most recent financing equals the amount paid.

In general, while simple in its application, especially for Black Scholes OPM techniques, RNA does not typically apply these approaches when considering allocation techniques for the valuation of equity interests in early stage, privately held life science companies. In doing so, we would violate the major assumptions of both the Black Scholes and the Lattice approaches. Additionally, the simulation approach can generally be reasonably approximated by a scenario-based approach like the PWERM as described below.

Probability-Weighted Expected Return Method (“PWERM”)

Under the PWERM, the value of a company’s particular equity class is estimated based upon an analysis of future values for the entire enterprise assuming various future outcomes. Share value is based upon the probability-weighted present value of these expected outcomes, as well as the rights of each class of preferred and common stock.

The PWERM is well suited for capturing potentially dramatic increases or decreases in value that may result from potential future events that are not log-normally distributed that have the potential for structured exits with contingent consideration. It can take into account elements that apply when considering real-world, risk-adjusted decision frameworks. Candidly, it is the framework most business development, private equity and other transactional professionals consider when thinking through the potential outcomes for an enterprise (i.e. a decision tree or a scenario analysis). We noted that the application of the PWERM is reasonable under circumstances where there is a broad range of possible future outcomes for the enterprise noting that the likelihood of such outcomes and the resulting valuation indications are not assumed to be log-normally distributed as under the OPM. RNA also noted that the PWERM may be used to determine the enterprise value of a company given the contemplation of future values for the entire enterprise assuming various future outcomes in a back-solve type of methodology as is noted above for the OPM, albeit a bit more complex with many more inputs to balance.

Hybrid Method

The Hybrid Method is a cross between the PWERM and OPM. It is performed by first estimating the probability-weighted value across multiple scenarios then use the OPM to estimate the allocation of value within one or more of those scenarios. The Hybrid Method can be a useful alternative to explicitly modeling all PWERM scenarios in situations when the company has transparency into one or more near-term exits but is unsure about what will occur if the current plans fall through.

An advantage of this method is that it utilizes the conceptual framework of option pricing theory to model a continuous distribution of future outcomes and to capture the option-like payoffs of the various share classes while also explicitly considering future scenarios and the discontinuities in outcomes that early-stage companies experience. A disadvantage is that these models require a number of assumptions and may be overly complex. In addition, there may be many potential issues surrounding the integration of risk-adjusted and risk-neutral modeling frameworks.

Valuation Analysis

Selected Valuation Approaches

Considering the above, the allocation determination herein has been developed primarily on the basis of CVM. Given the early stage of development of the Company, we elected not to rely upon a pure application of the three general valuation approaches discussed above. Refer to Exhibit B.1 for details on the CVM.

Income Approach

The DCF method aggregates the present value of all future cash flows available to the investment holder to determine the valuation indication as of the Valuation Date. The DCF methodology involves the following key steps:

1. Determination of cash flow forecasts (“Representative Level Projections”); and
2. Selection of a range of comparative investment risk-adjusted discount rates to apply against the Representative Level Projections.

For purposes of this analysis, as detailed above, RNA did not rely on the DCF in determining a valuation indication for the Company.

Market Approach – GCM

The GCM involves the determination of a valuation indication by multiplying a representative level of earnings, cash flows or other measure against an appropriate risk‐adjusted multiple. This approach provides an indication of value for a company or asset that corresponds with the particular earnings figure being capitalized on a controlling or non‐controlling basis dependent on the underlying levels of multiples applied.

For purposes of this analysis, RNA did not rely upon the GCM in determining the enterprise value of the Company since it is a pre-revenue company. Notwithstanding, RNA did consider Guideline Public Companies deemed comparable to the Company, a key element of the Market Approach. Refer to Exhibits D.1 and D.2 for details on enterprise value, projections, operating metrics, market capitalization, business descriptions, and other metrics for the selected Guideline Public Companies.

For purposes of this analysis, RNA considered the following Guideline Public Companies.

1. Nektar Therapeutics;
2. Fate Therapeutics, Inc.;
3. Synthorx, Inc.;
4. ZIOPHARM Oncology, Inc.;
5. Stemline Therapeutics, Inc.;
6. TG Therapeutics, Inc.;
7. XOMA Corporation;
8. Five Prime Therapeutics, Inc.;
9. Cue Biopharma, Inc.;
10. OncoSec Medical Incorporated;
11. NantKwest, Inc.;
12. Corvus Pharmaceuticals, Inc.; and
13. Surface Oncology, Inc.

RNA acknowledged the characteristics of the Company that differ from the characteristics of the Guideline Public Companies, detailed as follows:

1. The Company's operations focus primarily on developing IL-based agonists for IO, which is generally different from and/or less diversified than the businesses of the selected Guideline Public Companies;
2. The Company must raise financing in order to develop certain assets (noting that the Guideline Public Companies generally have easier access to capital to develop their programs);
3. The Company is generally smaller and at an earlier development stage than the Guideline Public Companies;
4. The range of WACC observed for the Guideline Public Companies represent the growth and risk profile associated with each of the selected Guideline Public Companies. In general, the strategies and prospects of the Company represent a higher risk profile than the Guideline Public Companies; and
5. The Company is not a publicly traded company and relies on private sources of equity. Public companies typically have lower costs of equity since the public equity markets typically demand lower levels of return compared to private sources of equity. Investments in public companies provide a liquid investment that may compensate for the minority level interest typically involved.

As noted above, RNA did not develop an enterprise value indication based on the application of market multiples.

Market Approach – GTM

RNA did not rely upon the GTM because the Company is still operating at a loss. Furthermore, it is relatively difficult to identify market transactions that are reasonably similar to the Company with respect to stage of development, underlying economic fundamentals, products (i.e., potential product pipeline) and prospects for success.

As noted above, RNA did not develop an enterprise value indication based on the application of market multiples.

Allocation Analysis

Based on the considerations detailed above, the allocation determination herein has been developed primarily on the basis of the CVM. We do not believe the OPM construct is appropriate to apply as it assumes a material probabilistic upside for outcomes that are representative of value “not yet created”. The Company has not yet developed the systems infrastructure, procedures, controls and scale that would suggest that this method would be appropriate. Value has not yet been created and the OPM construct implicitly assumes that value has been created and this is not appropriate for an early stage company. We note it will be appropriate at later stages but certainly not at the present stage.

Option Pricing Method

Based on the considerations detailed above, as well as RNA’s observations of Guideline Public Companies, Guideline Transactions and general industry experience, RNA noted that the possible future outcomes and the resulting enterprise value indications for the Company would not generally follow a log-normal distribution. Given the Company’s early stage of development (given the discontinuation of the BMP Program) and limited historical performance and near-term projected performance, the underlying presumptions of a log-normal distribution of returns and a return distribution that follows a Geometric Brownian motion were not reasonable to apply in this analysis. As such, RNA has elected not to rely upon the OPM.

Probability Weighted Expected Return Method

Since Management had limited visibility into the future exit scenarios for the Company, RNA did not rely on the PWERM as a primary allocation methodology.

Hybrid Method

Since Management had limited visibility into the future exit scenarios for the Company, RNA did not rely on the Hybrid Method as a primary allocation methodology.

Current Value Method

Since the Company is at an early stage of development (given the discontinuation of the BMP Program) and does not have a meaningful expense history, the total equity of the Company was allocated to the Common Stock using the CVM and subsequently, the value of Common Stock was determined.

The allocation of equity value herein has been considered based on the rights and preferences of Series Seed 1 and Series Seed 2 (collectively the “Preferred Stock”) and the Common Stock. Since the CVM approach determines the equity value as of the Valuation Date and then distributes the value through the existing capital structure, the first preference over the equity value would be given to the Preferred Stock because of its preference and nature of the investment. The equity value would be allocated to the Preferred Stock based on their liquidation preferences, and after that, the remaining amount is allocated to the Common Stock. If the Preferred Stock of the Company is converted into the Common Stock the total equity value would be distributed between the Common Stock and the Preferred Stock on a pro-rata basis. Value allocable to the Preferred Stock was considered based on higher of the value of liquidation preference and value allocated on an as-converted basis. After allocation to the Preferred Stock, the remaining amount was allocated to the Common Stock. To calculate the per share value of the Common Stock on non-marketable, minority basis, we applied a DLOM. Refer to the section “Discount for Lack of Marketability” below.

**Equity Value**

To determine the total allocable equity value of the Company under the CVM, RNA considered the investment in Series Seed 1 and Series Seed 2 (collectively the “Invested Capital”) as of the Valuation Date and applied the Metrick Gross Value Multiple (“MGVM”).[[23]](#footnote-23)

Table 3 below illustrates the components of equity value:

|  |
| --- |
| **Line Item** |
| **Invested Capital** |
| Multiply: MGVM Exit Multiple |
| **Exit Value** |

*Table 3: Equity Value Calculation*

**Invested Capital**

To determine the equity value of the Company under the CVM, RNA considered the Invested Capital in Series Seed 1 and Series Seed 2.

**Exit Multiple**

We considered exit multiples based on the MGVM. The MGVMs are calculated by dividing the total value of all investments at the exit, by the invested capital. Exhibit F.1 shows the likelihood for various ranges of MGVMs for a first-round investment by VC firms, given the early stage of development of the Company and its technology. Relative to the Previous Valuation, the Company discontinued the development of the BMP Program. Considering most of the Invested Capital for Series Seed 1 was spent on the BMP Program, we chose to apply a multiple close to the de-minimus multiple range. Furthermore, given the early stage of development of the Company and the IL-2 pipeline, we considered a multiple close to the low of the range for Series Seed 2. As such, we determined an implied multiple close to the weighted-average multiple based on the investments in Series Seed 1 and Series Seed 2.

Table 4 below illustrates the calculation:

|  |  |  |
| --- | --- | --- |
| **Line Item** | **% Share of Total Invested Capital** | **Multiple** |
| Series Seed 1 | 23.6% | 0.37x |
| Series Seed 2 | 76.4% | 1.46x |
| **Implied Weighted Average Multiple** |  | **1.20x** |

*Table 4: Weighted Average Multiple Calculation*

**CVM Conclusion**

Based on the above, we concluded the total equity value of $6.3 million and a price per share of Common Stock of $0.08, on a non-marketable, minority basis. Refer to Exhibit B.1 for further details.

Discounts and Premiums

Discount for Lack of Marketability

The holder of a nonmarketable investment is subject to the risk that the investment’s value will decline before the investment can be sold to another investor in a private transaction. Conversely, the holder of an investment that is identical but for the fact that there exists an active public market is not subject to the same risk. Therefore, the holder of the nonmarketable investment will have a higher required rate of return on the investment than the holder of the marketable investment. Consequently, the nonmarketable investment will sell at a discount to the marketable investment. RNA determined a DLOM as a necessary consideration in the analysis since the minority common stock holders of the Company, unlike the shareholders of the Guideline Public Companies, do not have access to an active public market for their securities. Further, the Company’s common stock holders do not possess the rights to force the Company to register with the Securities and Exchange Commission in order to sell their shares. The lack of marketability of common stock may materially limit a shareholder’s ability to liquidate the investment into cash without the risk of loss in value.

Factors that impact the size of the DLOM fall into two categories: (1) factors that affect the duration of the holding period necessary to locate a buyer and negotiate a sale, and (2) factors that affect the degree of risk faced per unit of time during this holding period. Risk per unit of time, according to modern investment theory, is the volatility of an investment’s total return (i.e., both dividends and capital appreciation), or the propensity for an investment’s actual return to differ from its expected return. Factors that either increase the duration of the holding period or increase the expected volatility of an investment’s total return result in higher DLOM. These factors and their directional impact (all else equal) on the size of the DLOM include the following, among others:

1. Presence/absence of a public market for the investment interest: Presence of a public market eliminates the discount;
2. Availability of information on the underlying business and its financial condition: More information reduces the discount because it is easier for prospective investors to perform valuation analyses of the investment;
3. Complexity of the underlying business and business strategy: Greater complexity increases the discount by making it more difficult for prospective investors to evaluate the business’ opportunities and threats, thus making it more difficult to perform valuation analyses of the investment;
4. Access to Management of the underlying business: Greater access to Management reduces the discount by making it easier for prospective investors to understand the business and evaluate the talent of the business’s management;
5. Information tracking by security/business analysts: Some large private companies release financial and other data and are followed by analysts tracking their publicly traded competitors. The presence of such a following reduces the discount by making it easier for prospective investors to perform valuation analyses of the investment;
6. Potential for a sale of the business or an IPO of stock: Such potential scenarios decrease the discount by reducing the expected total costs to an investor exiting the investment and decreasing the expected time until exit;
7. Variability of the business’s operating profit: Greater variability increases the discount since it increases the degree of risk per unit of time during the holding period (by affecting the outlook for future dividends and also, therefore, the valuation of the investment);
8. Financial leverage in the business: Higher leverage increases the discount since it increases the degree of risk per unit of time during the holding period (by affecting the outlook for future dividends and also, therefore, the valuation of the investment);
9. Size of the business as measured by sales or total assets: Small size, which has been associated empirically with greater overall business risk, increases the discount and vice versa; and
10. Regularity of distributions to equity holders: The expectation of regular future distributions monetized for equity holders in a flow through company and the potential for insufficient cash distributions to satisfy their tax liabilities (attributable to such company’s income) increases the discount.

With respect to a DLOM, empirical observations exist that show that, when investors consider alternative investments in either a freely traded security or a security whose marketability is limited, they will price the security with limited marketability at a discount to its freely traded counterpart. Market evidence of the DLOM can be found in two types of transactions, among others: (1) private placements of restricted stock by public companies, and (2) private placements of stock by private companies that later undergo initial public offerings of their stock.

**Finnerty Analysis**

In particular, John Finnerty proposed a model that assumes the investor does not possess special market timing ability and would be equally likely to exercise the hypothetical liquid security at any given point of time. The value of marketability was modeled as the present value of cash flows, similar to an average-strike put option. The Finnerty method addresses the issue of assuming perfect market timing in Longstaff’s look-back option method and the issue of assuming protection on the downside while still realizing appreciation on the upside in the protective put method. Finnerty also performed a regression analysis to restricted stock studies, adjusting to remove other significant factors, such as concentration of ownership and information effects, and found that after isolating the marketability-related factors, the discounts predicted by his method are consistent with the data. Finnerty presented an updated version of his model at the American Society of Appraisers’ Advanced Business Valuation conference in October 2009. Based on this analysis, RNA determined a DLOM of 36.2%. Refer to Exhibit F.2 for further details.

**Asian Put Analysis**

The Finnerty average-strike put option model, also called an Asian put option, assumes that the put option is struck at the average price of the stock over the period from the valuation date to the expiration date. The seller is not assumed to have any special market timing ability. Based on this analysis, RNA determined a DLOM of 42.3%. Refer to Exhibit F.2 for further details.

**DLOM Conclusion**

Based on the quantitative and qualitative analysis above, RNA concluded a DLOM of 40.0% to be applied to the Common Stock. Refer to Exhibit F.2 for further details.

Conclusion

Based on our analysis, our opinion of the fair market value of Common Stock of the Company, on a non-marketable, minority interest basis as of the Valuation Date is **$0.08 (EIGHT CENTS) per Share**.

*Table 5: Valuation Summary*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **VALUATION SUMMARY** |  |  | **(USD IN THOUSANDS  EXCEPT PER SHARE PRICE)** | | | |  |
| **Allocation of Value** |  |  | **Common Stock** | **Equity Value** | | **Selected Approach** |  |
| Current Value Method |  |  | $0.08 | $6,282 | | Primary |  |
| **Concluded fair market value of Common  Stock (non-marketable, minority basis)** | | | | | **$0.08** | |  |

The conclusions and opinions expressed in this letter and the accompanying Report are contingent upon the qualifying factors set forth in the Statement of Limiting Conditions attached to the completed Report.

Statement of Limiting Conditions

This Opinion has been prepared pursuant to the following general assumptions and general limiting conditions:

* We assume no responsibility for the legal description of real property or matters including legal or title considerations. For real property included in this appraisal, we were not furnished legal descriptions or other detailed site and improvement drawings. Title to the subject assets, properties, or business interests is assumed to be good and marketable unless otherwise stated.
* The subject assets, properties, or business interests are appraised free and clear of any or all liens or encumbrances unless otherwise stated.
* We assume responsible ownership and competent management with respect to the subject assets, properties, or business interests.
* The information furnished by management is believed to be reliable. However, we issue no warranty or other form of assurance regarding its accuracy.
* We assume that there is full compliance with all applicable Federal, state, and local regulations and laws unless noncompliance is stated, defined, and considered in the appraisal Report.
* We assume that all required licenses, certificates of occupancy, consents, or legislative or administrative authority from any local, state, or national government, private company or organization have been or can be obtained or renewed for any use on which the valuation opinion contained in this Report is based.
* Possession of this valuation Report, or a copy thereof, does not carry with it the right of publication. It may not be used, without our written consent, for any purpose by any person other than the party to whom it is addressed and, in any event, only with proper written qualifications and only in its entirety.
* We, by reason of this valuation, are neither required to give testimony nor to be in attendance in court with reference to the assets, properties, or business interests in question unless arrangements have been previously made.
* This valuation Report has been prepared in conformity with, and is subject to, the requirements of the code of professional ethics and standards of professional conduct of the professional appraisal organizations of which we are members.
* Disclosure of the contents of this valuation Report is governed by the bylaws and regulations of the CFA Institute.
* No part of the contents of this Report, especially any conclusions of value, the identity of the appraisers, or the firm with which the appraisers are associated, shall be disseminated to the public through advertising, public relations, news, sales, or other media without our prior written consent and approval.
* We assume no responsibility for any financial reporting judgments, which are appropriately those of Management. Management accepts the responsibility for any related financial reporting with respect to the assets, properties, or business interests encompassed by this appraisal.

Qualifications

Samuel Renwick, CFA

Sam Renwick provides valuation and advisory services to biopharmaceutical, medical device and equipment, diagnostic companies, and clinical research and manufacturing organizations, as well as other IP-centric technology companies. His experience includes buy-side and sell-side advisory engagements for licensing, financing, and mergers and acquisitions, as well as for tax and financial reporting matters for large public companies to small venture-backed enterprises. Whether developing dynamic, patient flow models for late-clinical therapeutic assets or developing an opinion of value for a security for compliance purposes, Mr. Renwick combines his breadth of industry knowledge with deep expertise in finance and financial models to create compelling communications regarding the value proposition of an asset, portfolio of assets or a company. Mr. Renwick has worked with well over 600 life sciences and technology companies in his career.

Professional Affiliations

* UCLA Anderson Business Honor Society
* CFA Institute
* Chartered Financial Analyst Society of San Francisco
* Member, Fair Value Forum
* Licensing Executive Society

Education

* BA/Economics & Business – Westmont College, Honors
* MBA/Finance – UCLA Anderson, Honors, J. Fred Weston award for Academic Excellence in Finance
* Chartered Financial Analyst (CFA)

Publications

* 409A Administration Handbook Valuation Section – Thomson Reuters, 2014
* Why Your 409A Valuation is Too High – Dis-Incentive Stock Compensation in the Life Sciences – BPM White Paper, May 2013
* Modeling and Forecasting to Communicate the Biotherapeutic Value Proposition – BayBio White Paper, May 2010
* Common Stock Valuation – Tips from the Trade, BayBio NOTES, April 2010
* Defensible Equity Incentive Valuation Opinions Under IRC 409A, Company Newsletter, December 2009
* What is the IRS Doing with IRC 409A, Silicon Valley Bank Newsletter, December 2008
* Eleven of the Top Ten Mistakes to Avoid in Your Options Program, Atlanta CEO Connexions, August 2007

Instruction and Seminars

* Presentation on Valuation and Funding Strategies for Digital Health Companies at the Cedars Sinai Techstars Accelerator, October 2017
* Panelist on Valuation Issues in Early Stage Company Valuations – Fair Value Summit November 2015
* Presentation on Funding Technology Innovation to Caltech Science and Entrepreneurship Group, Pasadena, March 2015
* Presentation to accelerator programs/technology transfer group on Financing Early Stage Technologies – Navigating Valuation Discussions, UC Berkeley, October 2014
* Panelist, Funding Early Stage Ventures, Sand Hill Angels, September 2013
* Panelist on Communicating the Biotech Value Proposition, BayBio Annual Event, South San Francisco, May 2011
* Presentation on the Use of Discount Rates in the PWERM, Fair Value Forum, Palo Alto, November 2008
* Panelist on the Valuation of Biotechnology Companies, Biocom, San Diego, May 2008

Certification

I certify that, to the best of my knowledge and belief:

* The statements of fact contained in this Report are true and correct.
* The reported analyses, opinions, and conclusions are limited only by the reported assumptions and limiting conditions, and are our personal, impartial, and unbiased professional analyses, opinions, and conclusions.
* We have no present or prospective interest in the property that is the subject of this Report, and we have no personal interest with respect to the parties involved.
* We have no bias with respect to the property that is the subject of this Report or to the parties involved with this assignment.
* Our engagement in this assignment was not contingent upon developing or reporting predetermined results.
* Our compensation for completing this assignment is not contingent upon the development or reporting of a predetermined value of direction in value that favors the cause of the client, the amount of the value opinion, the attainment of a stipulated result, or the occurrence of a subsequent event directly related to the intended use of this appraisal.
* Our analyses, opinions and conclusions were developed, and this Report has been prepared, in conformity with the USPAP.

Sincerely,

**

Samuel Renwick, CFA

Exhibits

1. IRS Revenue Ruling 59-60. [↑](#footnote-ref-1)
2. Source: Company website: http://www.medikine.com/. [↑](#footnote-ref-2)
3. Source: Information provided by Management. [↑](#footnote-ref-3)
4. Source: Information provided by Management. [↑](#footnote-ref-4)
5. Source: Information provided by Management. [↑](#footnote-ref-5)
6. Source: Information provided by Management. [↑](#footnote-ref-6)
7. Source: Information provided by Management. [↑](#footnote-ref-7)
8. Source: Information provided by Management. [↑](#footnote-ref-8)
9. Source: Bloomberg, http://www.bloomberg.com/research/stocks/private/person.asp?personId=516011&privcapId=121767&previousCapId=154924&previousTitle=AGILENT%20TECHNOLOGIES%20INC. [↑](#footnote-ref-9)
10. Source: Bloomberg, http://www.bloomberg.com/research/stocks/private/person.asp?personId=30214064&privcapId=28689362. [↑](#footnote-ref-10)
11. Source: Bloomberg, http://www.bloomberg.com/research/stocks/private/person.asp?personId=20669466&privcapId=121767. [↑](#footnote-ref-11)
12. Source: Report, “Oncology/Cancer Drugs Market by Drug Class Type and Indication: Global Opportunity Analysis and Industry Forecast, 2018 – 2025” dated February 2019, https://www.alliedmarketresearch.com/oncology-cancer-drugs-market. [↑](#footnote-ref-12)
13. Source: Report “Global Trends in Oncology – 2018”, published in July 2018, https://www.igeahub.com/2018/07/15/global-trends-in-oncology-2018/. [↑](#footnote-ref-13)
14. Report by Zion Market Research, “Global Immuno-oncology Therapy Market Set for Rapid Growth, to reach Value USD 42.97 Billion by 2022” dated January 17, 2018, https://www.zionmarketresearch.com/news/immuno-oncology-therapy-market. [↑](#footnote-ref-14)
15. Report by Research And Markets “Immuno-Oncology Market, By Type, By Application - Global Forecast to 2022” published in April 2018, https://www.researchandmarkets.com/research/xgsd9r/global?w=5. [↑](#footnote-ref-15)
16. Press Release, PR Newswire, “Global and USA Cancer Immunotherapy Market 2017-2022…”, dated March 7, 2018, https://www.prnewswire.com/news-releases/global-and-usa-cancer-immunotherapy-market-2017-2022-this-space-will-be-a-significant-revenue-generator-excess-of-80-billion-for-the-biopharmaceutical-industry-by-2020-300609848.html. [↑](#footnote-ref-16)
17. Report “Global Immuno-Oncology Drugs Market to Surpass US$ 150 Billion Threshold by 2025 Globally”, dated March 1, 2018, https://www.coherentmarketinsights.com/press-release/global-immuno-oncology-drugs-market-to-surpass-us-150-billion-threshold-by-2025-globally-662. [↑](#footnote-ref-17)
18. Source: https://synthorx.com/press-release/synthorx-to-present-preclinical-data-for-thor-707-a-not-alpha-il-2-synthorin-for-the-treatment-of-solid-tumors-at-sitc-2018/. [↑](#footnote-ref-18)
19. Source: http://www.evaluate.com/vantage/articles/events/conferences/esmo-2018-lilly-and-roche-confirm-their-place-cytokine-race. [↑](#footnote-ref-19)
20. Source: https://ir.celgene.com/press-releases/press-release-details/2017/Celgene-to-Acquire-Delinia-Inc/default.aspx. [↑](#footnote-ref-20)
21. Originally created in 1973, the Black‐Scholes option pricing model attempts to calculate the price of an option by considering several key factors, such as the underlying security price, exercise price, expiration date, risk‐free rate and the standard deviation of a stock’s return. Numerous assumptions underlie Black‐Scholes, including but not limited to, the log‐normal distribution of returns, and static risk‐free rates and volatility. [↑](#footnote-ref-21)
22. The binomial model was first proposed by Cox, Ross and Rubinstein in 1979, and essentially uses a “discrete-time” (lattice based) model of the varying price over time of the underlying financial instrument. In general, such models do not have closed-form solutions. [↑](#footnote-ref-22)
23. Source: Metrick, Andrew and Ayako Yasuda, Venture Capital and the Finance of Innovation, 2nd Edition, Hoboken: Wiley, 2011, Print, 127-134, http://www.ict-industry-reports.com.au/wp-content/uploads/sites/4/2013/09/2011-Book-Venture-Capital-and-Finance-of-Innovation-Metrick-Yasuda-Dec-2011.pdf. [↑](#footnote-ref-23)