

Investors update

BB Biotech: Using big data and AI to find tomorrow's biotech leaders

A growing array of medical innovations are emerging from biotechnology laboratories. BB Biotech is using big data and algorithms to analyze a mountain of data to identify tomorrow's winners at an early stage.

2023 was without a doubt one of the most difficult investment years for BB Biotech since it was established 30 years ago. At this year's BB Biotech Events in Switzerland, Germany and Italy, Dr. Daniel Koller, Head Investment Management Team, pointed out why most biotech shares traded lower this year, in some cases sharply lower. Most generalist investors are still avoiding the biotech sector, mainly because interest rates are so high, according to Daniel Koller. This is particularly true for small-cap companies that are not yet turning a profit. Their present and future values were slashed as discount rates increased in the face of rising inflation.

Strong innovation, low valuations

The fundamentals of the biotech industry remain positive though. New drug approvals in the US will again exceed the 50 mark in 2023, thus on a par with the average number of 51 for the period 2017 to 2021. 29% of these new drugs stemmed from biotech companies. That compares to 11% ten years earlier. Meanwhile the pharmaceutical industry is facing another wave of patent expiries in the coming years. Koller therefore expects plenty more announcements of strategic deals with biotech companies – whether licensing agreements or acquisitions – next year too.

In the wake of the prolonged sell-off, the valuations of most small and mid-cap biotech stocks have dropped to very low levels. The commercial success of these companies ultimately depends on their ability to obtain long-term funding for their operations amid the current rate environment, so that they can press ahead with their initial clinical studies. In BB Biotech's portfolio, 80% of all shareholdings are financially secure in this sense, and one-third of its portfolio companies are already turning a profit.

Fast-growing large-cap companies a portfolio anchor

BB Biotech modified its investment strategy slightly in view of the current market environment. This means that a few core positions in companies will be held somewhat longer with a high weighting after they pass the break-even point and continue their journey towards profitable growth. Daniel Koller cited Moderna as an example. During the coronavirus pandemic, this pioneering US company attracted the world's attention because it was at the vanguard of the global race to develop a COVID-19 vaccine based on a new class of messenger RNA therapeutics.

After its initial investment in Moderna in 2018, BB Biotech steadily increased this position until 2021, at which time it was by far the largest position in the portfolio. This was when Moderna's stock price peaked and the billion-dollar sales potential of its Spikevax vaccine was priced into the stock, which prompted BB Biotech to sell most of its shares in the company. This year BB Biotech increased its shareholdings of Moderna in view of its attractive valuation levels and long-term growth prospects. There are more than ten product candidates in Moderna's mRNA pipeline covering a wide range of diseases. Over the entire holding period, BB Biotech's investment in Moderna has generated a relative annual return of 85%.

Artificial intelligence improves the investment process

Moderna is a good example of BB Biotech's "home runs", earning it a place alongside other outstanding BB Biotech investments such as Actelion, Gilead Sciences, Celgene and Vertex. To ensure that we continue to pick the right 30 to 35 stocks for our portfolio, we must monitor and evaluate a huge flow of data from our investment universe, which now numbers more than 8 800 companies, and we must do so in a timely manner. Artificial intelligence (AI) is instrumental in this regard. Drug discovery and development activity is generating an ever-growing amount of data. Automated algorithms allow this data to be evaluated much faster and more efficiently compared to conventional tools.

BB Biotech employs a data scientist team consisting of Samuel Croset, Olivia Woolley and Can Buldun so it can effectively harness the potential of AI in its investment process. At the BB Biotech Events, these data scientists talked about BB Biotech's BioCarta project, with which it has amassed a vast pool of data backed by analysis software, big data applications and the necessary hardware. Internal sources of data have been merged with data from publicly available sources as part of this project. Artificial intelligence synthesizes this data with the help of algorithms, giving BB Biotech's portfolio management experts a better understanding of the medical landscape for the relevant disease areas. The analysis of clinical trial data plays a key role. In drug development, more than 60% of all data sets stem from clinical trials. Data from a wide variety of sources of information must be analyzed. This includes input from BB Biotech's own international network of experts and from scientific literature, as well as general news flow, trial readouts and broker research reports.

One data pool, four subject areas

There are four pillars in BioCarta's data collection process. The Documents segment represents public information sources distinguished by a high level of data exclusivity. Examples here are disease-specific databases, paid scientific journal publications and expert transcripts. Texts can be generated from this data using GPT-4, a multimodal language model maintained by OpenAI. The Therapeutics segment is fed with all available data on the competitive environment for approved and newly developed treatments in specific indication areas. In the field neurology, for example, analysis of this data provides answers to questions such as, "Which indication areas have the highest number of approved drugs and ongoing clinical trials, How many novel therapeutic approaches are under way and at which stage of development are they, and What's the commercial potential of new products?"

Patient-centric data collection represents the greatest challenge when building a comprehensive data pool. The aim here is to select a suitable patient cohort for clinical trials and their investigative medicines. In oncology, for example, the epidemiology of specific gene mutations can be leveraged by analyzing the available sequencing data. A key objective in all disease areas is to determine which patient groups have developed resistance after a specific therapy over a certain period of time. Most of the currently available patient data comes from the United States. Private-sector US health insurance companies and the federal government's Medicaid and Medicare programs have amassed anonymized data on more than 30 million people. Biomedical financial data enhanced with data science and AI technology is the fourth pillar. This process is still at an early stage of development. Long-term, by 2030, the goal is to embed AI into the investment process to enable personalized AI analyses.

What is already clear is that artificial intelligence will be an important tool in the future, and not only for drug developers. Investors will use AI within the scope of their investment process to ensure they are "first to market" and one step ahead of the competition. It goes without saying that BB Biotech will continue to develop and refine its own screening and valuation tools and models with the help of AI technology.

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Company profile

BB Biotech AG is an investment company with its registered office in Schaffhausen/Switzerland and listed on the Swiss and German stock exchanges. It has invested in innovative drug developers headquartered primarily in the US and Western Europe. BB Biotech is one of the world's largest investors in this sector. The competent Board of Directors with its long-standing experience set the investment strategy and guidelines. Investment decisions are taken by the experienced investment management team of Bellevue Asset Management AG based on their extensive investment research.

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