Tech Providers or Biotechs: The Quest to Find an Optimal Business Model Continues for AI Drug Discovery Companiesâ€¦

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The AI drug discovery industry has already gathered momentum with AI start-ups having signed more than 200 deals with 50+ pharma companies over the last few years, and these are just the disclosed deals. Few top companies like InSilico Medicine and Cyclica claim to have over 100 collaborations each with Academia and Industries. With billions of dollars pouring-in, it is likely to gain further impetus with the industry approaching maturity in the next few years from its formative stage.

A conundrum that has been bothering these groundbreaking start-ups is the business model.

AI companies have been shuffling with their partnership models, having to display high flexibility to tend to the specific requirements of the partners. The roles could range from utilizing AI to develop internal pipelines as a biotech or providing AI as software or AI-driven services like a CRO.

AI-driven biotechs

In this model, AI companies' model is analogous to that of a typical biotech, either repurposing old drugs in new indications or designing new drugs and fill their pipelines. Such companies usually aim to utilize AI and create assets with lower costs and faster development timelines. These assets could be then partnered or licensed out to pharma companies having clinical development capabilities to generate revenue.

Such AI-driven companies would face the same challenges just as a regular biotech pharma, needing a strong internal team with robust therapeutic knowledge, having an experimental R&D infrastructure or capabilities across the spectrum to outsource work, commercial or regulatory knowledge, etc.

These biotech's, while powered by AI for better success, will still have to compete for attention by the pharma. These companies will have to attract an investor community with an appetite for high-risk opportunities and long incubation periods. A few AI-powered biotechs like BERG or AI therapeutics are well funded and have a few assets in clinical development.

Tech providers

In this model, AI companies sell their software or services to pharma companies to build revenue. These companies develop platforms to work with client's data and aid with their programs. The aim is to create the best computation tools which are usually therapeutic domain agnostic and can be leveraged in a wide variety of applications. The companies like Atomwise, PathAI, or Trails.ai are some good examples of this segment.

A challenge with such companies is the revenue generation model. While software subscriptions are usually straightforward, payments in the services segment are often structured in milestones to de-risk the investments and bound with the ability to deliver what they claim, be it identifying new targets or find new drug candidates. This could be a significant barrier considering the development cycles of drugs can range from 4-6 years even after entering clinical trials.

Another challenge is 'AI is as good as the data, and it's the pharma companies that own the data.' While even having developed the best algorithms, these AI companies strive to prove their worth by collaborating or providing free-of-cost services to academic labs or pharma companies as they seek to develop and validate their platforms. Only after the proof of concept has been generated, these companies transition to revenue-expecting models.

Spinning-out the star

Learning from early collaborations, many service provision companies quickly discovered the enormous market value of assets and started working on a few internal programs or in joint ventures with other small

biotech's. Internal programs can also help in generating enough validation data to further attract pharma companies.

Likely forced by investors who did not want to amalgamate a relatively low-risk service model to a high-risk biotech model, Spin-offs became a sophisticated way to divest the offerings.

BioXcel therapeutics was among the first ones to spin-off its AI platform in a service provider-only company, InveniAI in 2017. In 2019, Atomwise spun-off X-37, to develop small molecule therapies for endodermal cancers. More recently, InSilico Medicine spun-off its internal programs in aging biomarker and deep aging clock as Deep Longevity to remain a service-only company.

Taking one step at a time towards a robust business strategy

As the industry moves to maturity, the competition is going to be fierce between upcoming start-ups and the big-pharma companies, who are the major consumers of these technologies. In the coming years, majority of the 'big-pharma' players are likely to either acquire such platforms or build internal capabilities, considering the overall skepticism to share their data.

Both, biotech and service provision (with or without spin offs), models have robust potential when executed correctly. However, succeeding simultaneously in both provisions is going to be difficult as resources are going to be limited. Investors are also likely to specialize to prioritize one business model over the other, after carefully understanding the risks that accompany each side.

More important question is that considering the advantages and improvements that AI platforms offer, what is the fraction of the pie that they deserve? How can the pharma companies quantify the value including the time and cost advantage to compensate the AI companies? Or, what is the reasonable proportion of IP that an AI-company deserve while developing a program in a joint venture?

There are no correct answers to these questions yet.

However, the takeaway is to stay agile early in the journey, experiment early, and move in a direction where the executive leadership observes key strengths and experience.