

PARTNERSHIPS IN PHARMA

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Partnerships in the pharmaceutical industry help in gaining access to innovative drugs and allow companies to enter foreign markets, whilst mitigating associated risk. There are multiple reasons why pharmaceutical companies are always on the look for potential partners.

Access to new manufacturing technology in a less expensive, easier, and faster way than having to do everything on-house is one of them. More stringent laws and regulations restrict market access. Some emerging economies have made local manufacturing a prerequisite of granting access to the market. Thus, pharmaceutical companies seek out local partnerships as a more economical and practical way of setting up base in these countries. Varying local regulations and high market entry costs make it difficult for small and mid-sized companies to expand into international markets by setting up own affiliates. Companies that partner with local companies gain marketing authorization faster and thus better position themselves in the market. For example, in 2015 Sanofi Pasteur launched a technology transfer partnership with Nanolek in Russia to produce the combination vaccine Pentaxim there. Often, these transnational collaborations are facilitated by project management companies that have knowledge about local regulations and support in striking successful deals with local partner companies.

There is a reduced trend in the approval of drugs. According to a 2018 study from the MIT Sloan School of Management, only 14 percent of all drugs in clinical trials eventually win approval from the US FDA. This is the most important reason why innovative drugs are expensive. The pharmaceutical companies have to include the failure into the costs of approved drugs. The high failure rate leads to high investor risk. This further makes it difficult for small and mid-sized companies to get their drugs into the market without support from large pharmaceutical companies.

In addition to financial benefits, these partnerships lead to improved training, innovation, and flexibility. All these challenges, leading to increased need for partnerships in the pharmaceutical industry, in turn act as drivers for related and targeted business services in this industry.

Artificial Intelligence and Data leading to more partnerships

Artificial Intelligence (AI) and Machine Learning raise the expectations in drug discovery and support in a data-driven approach to improve the entire healthcare ecosystem. AI in drug discovery alone accounted for the largest market size, increasing from US\$159.8 million to US\$2.9 billion in the forecast period. As of December 2019, around 180 start-ups were using AI for drug discovery (Fig.).

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Close to 180 startups applying AI to drug discovery

No. of AI startups	Area of AI drug discovery
59	Generating novel candidates
29	Aggregating and synthesizing information
13	Designing drugs
12	Understanding mechanisms of disease
10	Validating and optimizing drug candidates
9	Recruiting for clinical trials
9	Designing clinical trials
9	Designing preclinical experiments
8	Establishing biomarkers
8	Repurposing existing drugs
7	Optimizing clinical trials
5	Running preclinical experiments
4	Analyzing real-world evidence and publishing data
1	Generating data and models ¹⁶⁸

Source: Simon Smith, "177 startups using artificial intelligence in drug discovery," BenchSci Blog, December 3, 2019.

As of November 2019, 34 pharma companies were using AI for drug discovery, including, partnering with AI start-ups. Pharmaceutical companies are partnering with each other to quickly advance in the adoption of AI in R&D. Cloud computing can help big companies to create alliances with other pharmaceutical companies, smaller biotech companies, research laboratories and academic institutions. Novartis is a great example for this. They have partnered with STRIDE for their data transformation project, which has made the data easy to access, use and analyze. Also, they have the Data42 project that is being used for data analytics, machine learning and AI for finding leads for possible new drugs. Over the next decade, patients can expect these developments to have a significant impact on treatment options, particularly in areas where there is no treatment currently.

Thus, there is a need for more partnerships among pharmaceutical companies and the healthcare and tech sector in collaborative and scalable business models. These partnerships will increase the rate of drug discovery and product introductions.

Increased M&A

2019 has been a record year for life sciences mergers and acquisitions. Deals reached US\$357 billion.

The four forces that combined to drive M&As are the following:

1. Readily available capital for deals
2. Slowing revenue growth at life sciences incumbents
3. A recalibration of the US and European public markets
4. A desire to deepen therapy area focus

Since 2013, researchers at Ernst & Young have used a metric, called Firepower, to understand the deal making dynamics of the life sciences industry. In 2019, Firepower was at all-time highs, meaning companies had plenty of scope to pursue acquisitions, including transformative M&A. Indeed, the year's four megadeals – BMS/Celgene, AbbVie/Allergan, Danaher/GE, and Pfizer/Mylan – helped drive the M&A spike, contributing a combined US\$231 billion to the total.

Thus, considering both the cases of M&A and product acquisitions it is evident that either one of the two options will be prevalent in the near future.