Summary
For pharmaceutical companies to succeed, it is crucial that they approach collaboration in an innovative way, looking for partners beyond their immediate circle. Partnerships with biotech companies, academic institutions, CROs and even individual experts are all invaluable in driving modern drug development. However, identifying the right partners can be just as data-intensive as researching diseases and drugs themselves.
Pharmaceutical companies have determined that forging mutually beneficial partnerships is crucial to expeditious and cost-effective translation of new molecules into life-saving drugs. Such partnerships go beyond connections with other pharma companies. It has also proven extremely important to partner with biotechnology companies, academic and other institutions, and expert individuals.

Researchers and marketers now leverage data in countless ways to develop and bring to market new drugs that will have a positive impact on lives worldwide. Importantly, to succeed at identifying potential organizational and individual collaborators, pharmaceutical companies must use data as robustly as they do in the laboratory and in their marketing and sales efforts.

Critical Drivers of Pharma Partnerships

Building internal knowledge, expertise and processes for data-driven drug discovery and development is extremely intensive in terms of time and resources. It requires organizational infrastructures either to advance along with the expanding and changing stream of information—as well as with rapidly evolving markets—or to turn to new collaborative models that will help foster innovation and growth.

Pharmaceutical companies are increasingly moving away from traditional growth strategies and toward more innovative forms of collaboration. In fact, every major research-based pharmaceutical company in the world is now accessing external innovation to drive their R&D programs (1).

Translational medicine researcher C. Simone Fishburn describes the situation thus (2): “The pharmaceutical companies no longer own a monopoly on drug development and have all but acknowledged that they are not the primary source of innovation. As biotech companies have emerged on the scene and academia has embraced translational research as a way to help advance their own discoveries, pharma companies have begun to foster relationships with those sectors as part of a strategy to externalize innovation.”
Many powerful forces are driving pharmaceutical companies in the direction of external collaboration. According to PwC experts, "the biopharmaceutical industry, already among the most research-intensive industries, faces an immense challenge to develop a constant stream of profitable new products. Thousands of drug compounds are in some phase of clinical trial today. Additionally, companies now have to factor in therapeutic development along with biomarker/companion diagnostic development for most new products." (3)

These pressures—along with others, which include the need for leaders to maximize ROI on R&D expenditures, the failure of the "one drug fits all" approach, global economic and demographic trends, rising customer expectations, the advent of healthcare reform in the U.S., and the growth of new clinical-development models—have forced pharma companies to look for synergetic collaborations with organizations and expert individuals beyond their own corporate borders in unprecedented and innovative ways.

Because the complexity of pharmaceutical R&D has increased, modern collaborations are now used to access to the enlarged set of skills and technologies needed for success. This enables identification and validation of novel drug targets, signal transduction pathway elucidation, animal model work, and more critical points (1).

These new organizational collaborations are taking several forms, as the PwC experts explain (3): "In this new pressure-cooker environment, traditional competitors are teaming up to tackle shared R&D challenges. Partnerships with academic medical centers (AMCs) and third parties, such as contract research organizations (CROs), are the two most common, aside from government contracts. Consortiums, alliances with foundations and crowdsourcing are among the new approaches. Done well, these relationships complement in-house R&D and allow companies to share both risk and reward with external partners."

These new types of partnership can have different goals: basic scientific investigation, the establishment of new technologies and methods, and the discovery, development and commercialization of therapeutic agents (4).

Partnering to Enhance Collaboration and Benefit Patients

The rising number of partnerships and other types of collaborations in the pharmaceutical industry is a paradigm shift that is advantageous not only pharma but also for the patients who ultimately stand to benefit from the results of these joint efforts.

McKinsey experts explain the benefits of collaboration in detail (5): "Pharmaceutical R&D has been a secretive activity conducted within the confines of the R&D department, with little internal and external collaboration. By breaking the silos that separate internal functions and enhancing collaboration with external partners, pharmaceutical companies can extend their knowledge and data networks.

"External partners, such as CROs, can quickly add or scale up internal capabilities and provide access to expertise in, for example, best-in-class management of clinical studies [while] academic collaborators can share insights from the latest scientific breakthroughs and make a wealth of external innovation available."

They cite Eli Lilly’s Phenotypic Drug Discovery Initiative stating that the provision of proprietary tools and data so that external researchers can submit compounds for screening to identify whether a substance’s potential as a drug candidate is just one example of successful collaborations between pharmaceutical companies and academic institutions.

They also note that “collaborative ‘open space’ initiatives can enable experts to address specific questions or share insights. Examples include the X PRIZE, which provides financial incentives for teams that successfully meet a big challenge (such as enabling low-cost manned space flight), and InnoCentive, which offers financial incentives for individuals or teams that address a specific problem (such as determining a compound’s synthesis pathway).”
Data analysis tools are transforming the way pharmaceutical executives identify and qualify potential partners.

Using Data to Identify Potential Partnerships

While there’s no doubt that some successful partnerships have their roots in old-fashioned networking between professional colleagues, it is no longer safe to assume that all an enterprise needs to do to find the ideal collaborator is to attend the right conference or read the relevant journals and make a few calls to authors.

While they haven’t rendered traditional networking totally obsolete, invaluable data analysis tools like those used by clinical scientists, researchers, and marketing and sales professionals are transforming the way pharmaceutical executives identify and qualify corporations and other organizations with which to partner. In other words, these tools have turned what used to be an art into a science—an extremely valuable one.

The McKinsey Global Institute estimates that pharmaceutical companies that apply big data strategies to better inform their decision making “could generate up to $100 billion in value annually across the U.S. health-care system, by optimizing innovation, improving the efficiency of research and clinical trials, and building new tools for physicians, consumers, insurers and regulators to meet the promise of more individualized approaches.” (5)

Data-Driven External Network Mapping

Finding the right expert individuals with whom to collaborate can be as challenging as identifying corporations or organizations with which to partner. However, in both cases, data analysis is the key to success.

According to a scientist at a leading pharmaceutical company with experience in managing clinical trials as well as leading a medical affairs function, identifying and qualifying external collaborators is of particular importance in the early days of a venture into new therapeutic area, and is greatly facilitated by data analysis tools (6).

He and his team used data analysis to create an “external network map” that detailed the topics on which potential collaborators had published, the kind of programs on which they had previously worked and the types of patients with whom they had experience. The tool also helped the team identify whether prospective collaborators had relationships with any of their company’s competitors.

The data-driven external network mapping resulted in the development of a database of experts they could draw on to perform critical functions, including managing clinical trials. This process proved particularly useful when it came to finding experts to work on clinical trials this U.S.-based company was holding in Asia, Europe and Latin America. Although his colleagues in these locations had good contacts with local potential collaborators, the headquarters team found it very helpful to be able to support the efforts to find experts using the data analysis and visualization tools they had at their fingertips.
Data will ultimately lead to successful, mutually rewarding collaborations.

**Data: the Most Critical Decision-Making Input**

When it comes to identifying potential partners—be they academic institutions, CROs or individuals—data is the most critical input that needs to be included in the decision-making process. Data, along with the ability to analyze it and understand it, is what will allow pharmaceutical companies to “connect the dots” that ultimately lead to successful, mutually rewarding partnerships and collaborations.

**REFERENCES**

6. Interview given to Elsevier, unpublished
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