

Commentary: John Rountree

Pharma and academia are natural partners for R&D

The history of relationships between pharmaceutical companies and academic institutions can be cast as one of both success and frustration. There is no doubt that many successes of the industry have been down to excellent scientific discovery within academic institutions. And yet many pharmaceutical companies have been frustrated by the speed of securing tangible output from their collaborations with academia.

The last five years or so have seen some significant changes to both the structure of the industry and complexity of the science involved in drug research and development (R&D). These have been to the benefit of relationships between pharma companies and all other parties including academia. To start with, Big Pharma has realised that discovering and developing new drugs more or less on its own is now truly over.

However, the traditional model of pharma companies passively drawing on insights from academic publications and providing grant-like support to academia, funding students and the like is now simply insufficient. A more recent model of trusting the ecosystem of academia, technology transfer, biotech spin-outs, seed funding and venture capital to do the early drug discovery work while Big Pharma buys the fruits of such nimbleness to bring the drugs to market has therefore evolved. Yet this is again insufficient. Many of the universities' spin-out biotechs are poorly funded and do not have the resources to accelerate drug discovery to a pharma-quality standard.

So pharma companies are now rethinking how they engage directly with the academic institutions themselves rather than relying on seed funders and willing postdocs to create small biotechs that they can later partner with or acquire. The reality now is not whether pharma should engage seriously with academia, but how.

The first model of pharma and academia engagement has been consortia approaches such as the Innovative Medicines Initiative (IMI), Europe's largest public-private partnership that aims to speed up the development of medicines. Such approaches enable pharma and academia to engage with each other in pre-competitive research to the benefit of the whole industry. IMI now boasts an impressive 57 projects aimed at driving a better understanding across a range of pharma R&D areas. Similarly the Structural Genomics Consortium (SGC), which is working on three-dimensional structures targeting human proteins that represent potential drug targets, provides a further example of how pharma companies and academia can get together to solve difficult problems. Together with GSK, the SGC identified the potential of Brd4 as a drug discovery target for example.

While consortia approaches continue to be promising, the risk is that the focus and drive required to bring medicines through the drug discovery and development process may get compromised by the need to involve multiple parties with conflicting interests. A more focused one-to-one pharma to academia collaboration model is coming to the fore.

Here in Europe, mid-sized pharmaceutical companies have shown how it can be done. These companies typically have a more focused approach to technology development and drug discovery than their larger peers. They have therefore been engaging in direct relationships with academic institutions to develop both assets and the technologies and capabilities that are needed to accelerate their R&D. This model of engaging with institutions is highly specialised. The scientific area is typically focused and very tailored to the goal of bringing new assets into the pipeline of the pharma company.

Ipsen, LEO Pharma and Grünenthal are three European mid-sized companies that have been aggressively seeking out direct relationships with academia to complement their partnerships with other pharma/biotech companies.

In the neurology area, Ipsen's relationship with Harvard University was initiated in July 2013 to complement one of Ipsen's specialist fields: engineering novel recombinant botulinum toxin molecules. Ipsen already had significant expertise in toxins, and this collaboration cemented and broadened that. The success of this relationship resulted in the signing of a further multi-year research alliance agreement in 2015.

In dermatology, LEO Pharma has had similar success through a collaboration with The Scripps Research Institute (TSRI) in one of its specialist areas, in this case the synthesis of ingenol as an enabler for a compound to treat actinic keratosis. After solving this tough challenge with LEO Pharma, Professor Baran of TSRI said, "I think that most organic chemists had considered ingenol beyond the reach of scalable chemical synthesis."

In the pain field, Grünenthal formed an innovative alliance with the Boston Children's Hospital to develop a novel anaesthetic for local anaesthesia and post-operative pain management. This alliance was the first fruit of Grünenthal's Innovative Medicines Unit (IMU) concept, a group with a specific remit to engage in such collaborative activity. The deal was also structured with an upfront and milestone and royalty format related to a specific asset, Neosaxitoxin, and involved a biotech (Proteus SA) in the three-way agreement.

The three European mid-sized companies are exemplars of a highly focused and one-to-one pharma-academic relationship model that has great promise for the industry. For the academic institution this model provides both funding and a direct and practical application for its scientific research. For pharma companies the model enables a strengthening of their own specialist capabilities to direct effect in accelerating drug R&D and/or creating assets for their pipeline and future medicines for patients.

John Rountree is the Managing Partner of Novasecta, a London-based specialist strategy consulting firm for pharmaceutical companies.