

When a major new drug is released, you may be thinking that all the brainstorming and stringpulling has happened in the industrial sites of the major pharma companies. In fact, some of it may have happened in the offices on the fifth floor of a modern office block right in the middle between St. Paul's Cathedral and Fleet Street, in the City of London. This is where the technology commercialization company BTG, which also boasts offices in Philadelphia and Tokyo, has its headquarters (www.btgplc.com). It evolved from the National Research Development Corporation set up by the British government in 1949 to further the commercialisation of academic research, which in 1981 merged with the National Enterprise Board to become the British Technology Group, which in turn was privatised in 1992 as BTG. It acquires, develops and licenses intellectual property rights covering innovative products and processes in the fields of life sciences and high technology.

What exactly does that mean in the life sciences? A major focus of BTG's activities is in drug development. The biggest challenge in this field is to identify the successful drugs of the future out of the millions of potentially useful substances discovered. The big pharma companies are currently taking the approach of tapping the ever narrowing product pipeline at a rather late stage, typically by licensing products in late development or by acquiring biotech startups with their product. At that stage (late phase II or phase III trials), there are only around 600 products to choose from, and their chances of reaching the market are already quite good. But of these, less than a dozen have blockbuster potential. As the companies are competing for a very small number of promising, highly developed products, they may have to pay excessive fees to secure one of them.

Therefore, the success or failure of such products can make or break the fortunes even of big companies. If they work, blockbuster drugs can make billions. On the other hand, if a blockbuster fails for whatever reason, it can leave a catastrophic hole in your pocket. To avoid these risks and more generally the cost of licensing in products that are already quite advanced, pharma companies could try to identify their future products somewhat more upstream in the development process. For instance, they may decide to in-license drugs in phase I or early phase II from Biotech companies, or buy up the companies along with their development project.



Bridging the Gap

In contrast, BTG's approach is to try to pick the winners even earlier, in the earliest development stage. In the drug development field, BTG has a unique position as it oversees a large section of the development pipeline. Essentially, BTG can assess or fund the fundamental research, provide broker venture capital, contribute their intellectual property (IP) expertise, and combine all three to an efficient strategy that can see a promising lead from its identification through to the stage of licensing by big pharma companies, thus efficiently bridging the gap between drug discovery and the market.

Tapping the pipeline at a very early stage, BTG assesses a large choice of technologies and potential products, but has to be highly selective. Of the more than 600 technologies the company looks at every year, less than 40 are taken on board. Although further selection processes have to occur along the way, a number of highly successful products have come out of BTG's development sponsorship. Success stories from the early days include the cephalosporin antibiotics which have generated a total license income of GBP 152 million for the inventor, Sir Edward Abraham, and BTG, and the interferons which generated nearly GBP 4 million. More recently, BTG has developed and licensed successful products including the cancer drug Campath and the hemophilia drug BeneFIX.

Talent Spotters

Finding the most promising compounds and technologies from either academic or corporate sources requires a vast network of contacts and experience. But it is of equal importance that the IP position be assessed and developed. A recent example of a new technology that BTG has identified in academia and led towards commercialisation is that of amyloidosis inhibitors developed by researchers at Cambridge and Manchester. BTG helped to set up the spin-out company, Senexis, which is to develop these inhibitors through to medical applicability, and also provided part of the venture capital for the company.

Once identified, the promising new technologies have to be developed to become saleable or at least licensable products. While the original discoverers, especially in academia, often lack the necessary experience to drive this process forward, BTG can help them with experience, contacts and possibly funding to ensure swift progress.

Putting Things Together

Before investing into further development, however, BTG must assess the state and potential of the intellectual property involved. Apart from helping the inventors to secure suitable patent protection for the key markets, this can also involve bringing together IP from separate sources. For instance, the



successful development of BeneFIX depended on the combination of patents held by the universities of Oxford and Washington. Similarly, the new company KetoCytonyx which BTG helped to create in order to develop the approach of using ketone bodies for acute stroke treatment is founded on IP rights from the US and from Japan.

Once the product has passed the initial hurdles, there are many different ways to bring it to market, and BTG has to assess the possibilities in each case individually. While academics with a commercially interesting idea often think of setting up a spin-out company, experience shows that most of these fail. In many cases, alternative routes, such as licensing, joint ventures, or virtual companies might be considered.

BTG's experience with founding companies dates back to 1980, when the then National Enterprise Board helped to set up Celltech, the UK's first biotechnology company. After successful mergers with Chiroscience and Medevar, the Celltech Group is now a middle-sized biopharmaceutical company with a broad product portfolio and development pipeline. More recently, BTG was involved in the foundation of further companies including Peptide Therapeutics which was later renamed Acambis and specializes on peptide based vaccines, and the above mentioned KetoCytonix,

which is based on IP rights managed by BTG and financed by several co-investors including BTG.

While the most common route is still the one where the BTG-sponsored development eventually leads to a license agreement with a major company, each case is a different story, and each product may require a different combination of the essential ingredients money, development, and IP expertise.

Michael Gross

He is a science writer in residence at the school of crystallography, Birkbeck College, University of London. His latest book, "Light and Life" is available from Oxford University Press. See www.proseandpassion.com for details.



School of Crystallography
Birkbeck College
Malet Street
London WC1E 7HX, Great Britain
Tel.: +44 20 7631 6858
Fax: +44 20 7631 6803
michaelgrr@yahoo.co.uk
www.michaelgross.co.uk