Target discovery: A key factor

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Sanjay Bettadpura is currently chief business officer of Polyclone Bioservices. He has over 12 years of experience in business development and international marketing in the life sciences and IT industries across the US, Europe, APAC and India. Bettadpura's previous roles include, start-up and market expansion of North American division of an Indian bioinformatics company in Connecticut, US; setting up of life sciences division of a knowledge management consulting company in Mumbai; and driving the sales of a software network management solutions provider in Bangalore and Singapore.

As an early stage biology-driven research partner to the drug discovery industry, Polyclone specializes in target discovery and validation services with a focus on cancer and infectious diseases. Our customers include biopharma and diagnostics innovators, developers of high throughput research platforms and oligo and reagent companies. We enable them to achieve their biology research goals by synergistically combining silico and in-vitro approaches, thus giving direction to their research and development pipeline.

Being in this niche and a highly IP sensitive field, we face several challenges spanning commercial, confidentiality and scientific facets that we overcome through a combination of strategies.

Target discovery, being the first step in the drug development process, determines the fate of all the next phases and investment. Given its critical nature, the field is replete with several pitfalls and complexities. In cancer, it is particularly tricky to identify druggable targets owing to the complexity of the disease's origin and its molecular biology. In infectious diseases, the challenge of mutating viral targets (as in the H1N1 and other influenzas) makes finding a target seem impossible.

Added to these are the generic challenges of making sense of the tera bytes of genomic data, linking genotype-phenotype profiles and the implausibility of using humans for studies. Increasingly, the drug industry is realizing the specialized nature of target research and the need to decouple it from in-house R&D. It is no wonder that 80 percent of the validated targets identified in the last nine years, are through smaller biotechs and research alliances.

As a small biotech/research partner, the key challenge for us is to break the myth that it is too early to outsource research at this stage. We need to convince prospects that outsourcing is possible, and we also need to make them understand that it is even more critical, especially at the early stage. According to the Wall Street Journal, several big pharma–small biotech deals in the recent past highlight this growing trend and early-stage and preclinical biotech deals are getting sweeter. The early stage deals in 2009 was 68 percent higher than the year before while, the jump for phase II was a modest 39 percent. This is a clear indication that pharma companies are willing to take risk at an early stage, when it is easy to write-off any experimental products that don't bring positive results in trials.

Closing the deal is only the beginning of the relationship and it takes commitment from both sides to ensure its progress and success. At Polyclone, we work with our partners as a true extension to their team, and offer them the required seamlessness and easy interaction, while ensuring that we provide the scientific insights and nimbleness that the partner requires.

Since this is still the research-intensive conceptualization stage, it is important to have an open and interactive relationship, that fosters creativity and exchange of knowledge points. The success factor here is to ensure that we treat the project not just as a contractual obligation, but as a discovery project guided by specific timelines and objectives.

This is a challenge many a time, since there may be no definitive result or the customer's hypothesis may not be working out. It is important to continually keep the customer updated about our approach and progress, while warming them up to the possible outcomes – positive or not-so-positive.

This is imperative when we work on in-silico aspects like assay design, structural simulation, drug receptor interaction modeling and data analysis.

In-silico approaches provide huge cost savings and provide perspectives that may not otherwise be gained, in vitro validation is critical to ascertain the findings and revert to the drawing board, if required. At Polyclone we intersperse the in silico work with DNA/RNA and cell-based validation on sample data, to ensure biological relevance and thoroughness.
This multi-disciplinary approach that synergizes computational, molecular and cell biology, combined with our access to patient samples and data, gives us the holistic edge that our customers profit from.

Since most projects that we pursue are novel and diverse, we need to be continually abreast of science, skills and technology at a global level. After all, if we are working with innovators, we need to be one step ahead, to be of true value to them. What we discover or validate may often have no precedent or references, and it is the thoroughness of our data and validation, that provides our customers the confidence to take a decision on the next phase.

The other challenges that come up are common to CROs across all phases – ensuring and convincing customers of IP confidentiality, guaranteeing ethical compliance, and providing commercial and innovation value that customers seek from Indian companies.

The mantra is to innovate better, faster and cheaper and make no compromises in the process!