

AN AUDIENCE WITH...

Darren Carroll

**Executive Director, New Ventures, Eli Lilly and Company.**

Darren Carroll was the founding Chief Executive Officer and is currently Chairman of InnoCentive, an open-source R&D web-site initiative that matches scientists to relevant R&D challenges that are facing companies worldwide. Carroll graduated with a J.D. degree from Syracuse University College of Law and practiced law with a large private law firm in New York, USA. Since then, he has served as Senior Vice President of RealMed, and has held several positions at Lilly, including lawyer for Lilly's blockbuster antidepressant Prozac. Carroll is also a member of the Board of Directors for Lilly Ventures portfolio companies, including InnoCentive, Hydra Biosciences and GlobelImmune.

Where did the concept of InnoCentive come from and how does it work?

Although Lilly has been established for more than 125 years and has 8,000 employees worldwide, we felt that we still did not have access to enough of the world's best scientific minds. So, InnoCentive was formed in early 2001 with the aim of addressing this issue. It represents two significant variations from the way that scientific research is typically done today. First, unlike the traditional complete secrecy of most industrial research, we provide a brief description of the kernel of scientific problems in areas such as chemistry, biochemistry, biology and informatics, and post it on our web site for the world to see. This enables scientists to quickly scan the nature of the problem, and those who are interested in exploring a particular problem further then have to register as a 'solver' — we now have about 120,000 solvers from 175 countries in over 50 scientific disciplines. They can then see the summary description of the challenge to determine whether it is something that they feel ready to undertake. If so, then to see the complete set of criteria, which will in many cases contain confidential information from the company that posted it, then they'll have to sign the online agreement that deals with intellectual property, confidentiality and so on. The companies that post their challenges typically do so on an anonymous basis. That way they believe and we believe that they are able to post their challenges with a lot less concern about competitive intelligence gathering, because the origin of the challenge won't be obvious.

Second, most scientific research services are currently provided on a fee-for-service basis and fees are payable even if the service is unsuccessful. In fact, companies routinely pay for failure, which is expensive and inefficient,

because on a macro-economic basis, companies are paying multiple times for the same failure. In this sense, the InnoCentive model is different because people are only paid when a solution actually meets the criteria that are stated in the problem.

What have you learned from InnoCentive?

Open innovation has begun to significantly enhance Lilly's productivity. From what we have seen, in nearly every stage of drug development after early stage biology, open innovation seems to offer some advantages. We will still need many talented scientists in our employment, but one of the things that we have found is that the nature of the job for scientists has begun to change. Most companies typically hire scientists because they are good problem solvers, but we're asking them also to be sure to focus their energy on asking the right questions, because certainly, for successful open innovation, asking the right question is the single most important thing you can do.

We have also learned about what motivates people to work, and some of those findings challenge the standard beliefs of most Western companies. In the developed world, the standard theory is that people tend to work on the basis of the price for labour, but human nature is far more complex than that. Scientists are motivated to work for a number of reasons, one of which of course is reputation. People are also attracted by specific kinds of problems that interest them. Frequently, what we've found is that the scientists who were solving InnoCentive problems had an expertise in an area that they developed years ago, but their careers took them in different directions, and yet they never gave up their interest and they still want to contribute to the development of science in that area. Another good thing we have found

is that there is a kind of 'excess capacity' of expertise — for example, a scientist working in the plastics industry or petroleum industry might have spent considerable time working on a particular problem and have found a solution, but not know that another industry, such as pharmaceuticals, has a variant of the same problem.

How is InnoCentive developing and what would you like to see it turn into?

The most recent evolution is working with non-profit organizations. We have begun adding problems from this sector; for example from Prize 4 Life, which is a not-for-profit group dedicated to the eradication of amyotrophic lateral sclerosis (also known as Lou Gehrig's disease) that has a very high reward — its total value is ~US\$1 million. We have also recently engaged in a partnership with the Rockefeller Foundation, in which they will act as an aggregator of problems for various agencies that it distributes funds to around the world, and we will engage the community of InnoCentive solvers to work on technological aspects of solving world poverty, for example. Another advance will be that several of the not-for-profit organizations will find ways to work with us to post some of the initial solutions that come in, to make the web site even more open-source for the community, which will hopefully find more comprehensive solutions to some of the most challenging health-care problems.

Ultimately, what I would like to see is the InnoCentive site providing an alternative way of working for scientists that means that people can choose to work in a certain way, at a certain time and in a particular environment that is favourable to their creativity. It should also enable people to remain in their home community if they wish, while still being able to access the benefits of a global scientific community. But most importantly, I believe that if we can more effectively tap into a world mindshare then InnoCentive can significantly contribute to the development of science in the pharmaceutical field in particular, as well as others, because there are still many difficult scientific problems that need to be overcome in order to meet the needs of human health care over the next 50 years.

Interview by Joanna Owens