
Editorial

Applying design thinking to biotechnology

Journal of Commercial Biotechnology (2011) **17**, 1. doi:10.1057/jcb.2010.33

I was recently invited to assemble a panel on applying design thinking to biotechnology for the conference, 'A Better World by Design', hosted by Brown University and the Rhode Island School of Design. This event was highly educational for me (and hopefully the other participants as well).

Although many have been claiming that the business models used by biotechnology companies are flawed, and that the very structure of the biotechnology industry is likewise dysfunctional, there is a dearth of practical solutions. I am intrigued by the potential of applying design thinking to biotechnology, because it represents the introduction of a structured framework with a record of success in diverse areas. As a potential improvement to the often-narrow solutions directed by focused industry insiders, design-based solutions are often based on broad analysis and use a wide variety of interventions.

Design thinking is a problem-solving protocol that emphasizes a deep definition of problems and open process to find and refine solutions. The basic elements of the design process are a thorough investigation of the problem (for example, the Toyota system of asking 'why' five times to find the roots of an observed problem) followed by the creation of many possible options. These options are then refined and potentially reiteratively reconsidered until potential solutions emerge. This process is an alternative to a simple focus on addressing observed bottlenecks (for example, funding gaps or clinical trial transitions).

Design thinking has been used to improve the design of many consumer goods, and in scientific disciplines it has been applied to improve the ergonomics of research tools, and even the bottles containing cell culture media.^{1,2} However, my primary interest is the application to non-engineering areas such as the methodologies of discovery-stage research (for example, can design thinking improve on the scientific method?), development-stage activities such as lead optimization and clinical trials, and commercial-stage activities such as reimbursement and regulatory compliance.

This issue of the *Journal of Commercial Biotechnology* presents brief commentaries from two panelists at the design conference, Patrick Nef from the Malaria Medicines Venture and Art Boni from Carnegie Mellon University, who describe the use of design thinking in their own work. I have also begun soliciting papers from groups with extensive expertise in the application of design thinking to biotechnology, and look forward to sharing their perspectives in future issues.

REFERENCE AND NOTE

1. Life Technologies Corporation. (2010) Invitrogen earns AmeriStar award for GIBCO cell culture bottle design, <http://www.lifetechnologies.com/news-gallery/press-releases/2009/invitrogen-earns-ameristar-award-gibco-cell-culture-bottle-design.html>, accessed October 2010.
2. Life Technologies Corporation. (2010) The new GIBCO® bottle, <http://www.invitrogen.com/site/us/en/home/Products-and-Services/Applications/Cell-Culture/CC-Misc/gibcoevolution.html>, accessed October 2010.

Yali Friedman
Managing Editor