

A novel target for accelerating drug development: Biomedical science training

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Demand for a qualified biomedical science workforce to tackle the challenges of making better medicines remains high; however, few scientists and clinicians learn about drug development during their training. To assist trainees with appreciating differences between basic science (understanding disease mechanisms) and applied science (drug development), Biogen and the Cornell Broadening Experiences in Scientific Training (BEST) program convened a conference in June 2018 at the Biogen headquarters in Cambridge, Massachusetts (#BiogenBESTDDConf2018).

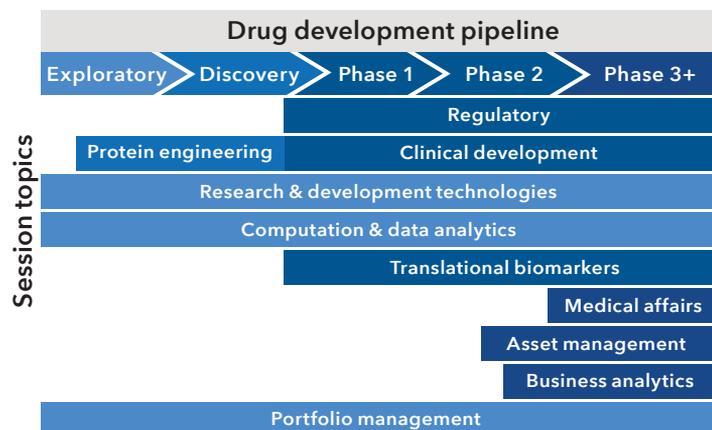


FIGURE 1.

Selection process

Participants were identified primarily from academic institutions with U.S. National Institutes of Health (NIH) BEST programs (www.nihbest.org; <https://commonfund.nih.gov/workforce>), as they are familiar with biopharma career pathways. Trainees* were exposed to key drug development questions, different roles in and out of the laboratory or clinic, and skills needed to be successful in biopharma. To ensure that information from the conference extended beyond those who attended, a requirement was that trainees share key concepts with others at their home institutions.

Unique approach

The average time for developing a new drug is approximately 12 years and costs over USD 1 billion, predominantly due to failures at each stage of drug development (1). An appropriately trained workforce is one mechanism for accelerating timelines and reducing the risk of failure. As many biomedical sciences training programs do not offer activities related to drug development, trainees must opt for additional specialized fellowships (ranging in duration from several weeks to a few years) or transition to industry with little knowledge of the skills necessary to be successful in this sector. As an initiative of Biogen's Portfolio Transformation, a short-term, intensive conference was developed to demystify drug development for academic trainees. The goal was to create a model for similar events across the country.

High-performing project teams are a hallmark of biopharma, but are less common in academia (2). Conference activities, therefore, focused on providing participants with a project-team experience that highlighted key drug development questions; stage-appropriate composition of project teams; the importance of team dynamics and of maximizing the strengths of each member; and how the biopharma ecosystem supports project teams.

Purposeful outcomes

Participants were introduced to the drug development process (from concept to approval), and sessions were led by individuals from across Biogen, who offered insight on their roles—including how they support project teams. The topics included asset management, biomarker development, business and data analytics, clinical development, medical affairs, portfolio management, protein engineering, and regulatory affairs and policy (Figure 1). In addition, participants served on teams that generated a business case and recommendations for progression of a mock project to the next drug development stage (Figure 2).

Refining and reframing

A new training model is needed to strengthen and refine the necessary skills for those who wish to translate new biomedical discoveries into beneficial drugs. More trainees with the right experience will increase the pace of drug development, reducing the burden of debilitating medical conditions on society. Such a reframing of the training experience will positively change the conduct of science and expand the ways that meaningful contributions to biomedical science are defined. This conference emphasizes the importance of experiential learning and serves as a model for such training.

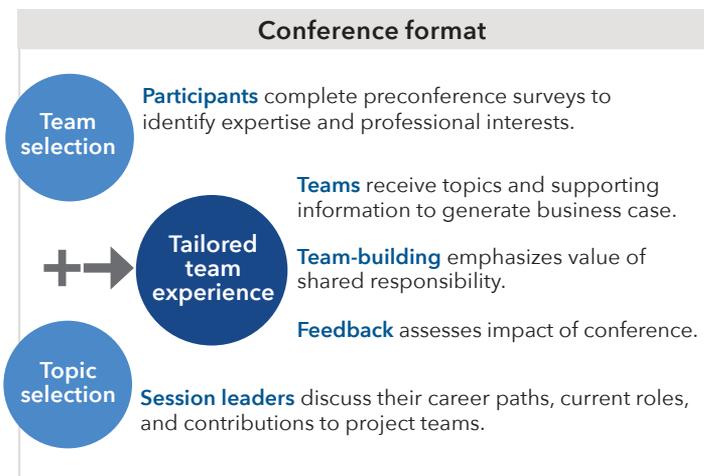


FIGURE 2.

References

1. G. A. Van Norman, *JACC: Basic to Translational Science* **1**, 170-179 (2016).
2. J. R. Katzenbach, D. K. Smith, *Harvard Business Review* **71**, 111-120 (1993).

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