
Commercializing Successful Biomedical Technologies

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The number of bioentrepreneurs and bioentrepreneurship educational programmes are growing throughout the world in response to several converging forces. First, the intersection of new technologies and discoveries in the life sciences, engineering, information technology and materials sciences are creating new commercial opportunities not only in biotechnology, drug discovery and development and medical devices, but also in the emerging ‘clean tech’ worlds of environmental and industrial engineering and nanotechnology, for example. Combination devices, incorporating elements of both drugs and devices, are rapidly appearing. Smart devices with artificial intelligence and embedded software are becoming commonplace.

Secondly, a better understanding of disease at the cellular, subcellular and genetic level has created opportunities to develop new, innovative drug therapies. Bioclusters have formed in virtually every state in the US and most developed countries to accelerate the commercialisation of these discoveries and reap the economic rewards that result. In response to this staggering economic opportunity, and realising that jobs and funding for basic academic research are declining, students at the undergraduate and graduate level whose interest is in science, engineering, technology and mathematics are

demanding educational programmes that will provide them with the knowledge, skills and attitudes required to start a bioscience company or find a job in one. As a result, there has been an exponential growth in programmes, such as MD/MBA and PhD/MBA offerings, providing biobusiness education to doctors, life scientists and engineers.

Bioscience commercialisation is different from other technology commercialisation. It is highly regulated, has unique market and reimbursement characteristics, has long product development cycles, consumes enormous amounts of capital, is very risky and requires not only technical expertise, but also a working familiarity with business, financial, legal and regulatory challenges. As such, textbooks that attempt to guide students through the bioscience value creation process need to introduce them to several interdisciplinary concepts as they apply to the ever-growing array of companies attempting to use cellular and molecular processes to solve problems or make products.

‘*Commercializing Successful Biomedical Technologies*’ is such an attempt. Written by Shreefal S. Mehta, a bioscience entrepreneur and professor at the Rensselaer Polytechnic Institute (RPI), the book reflects both the author’s experience and his teaching an undergraduate capstone design course at RPI.

The book includes seven chapters describing the essential elements of the author's concept of the bioscience product commercialisation pathway including planning, market research, intellectual property protection, new product development, regulatory approval, manufacturing and reimbursement. While life science ideas rarely progress through this clean sequence in a step-by-step fashion, the model is useful for understanding the different elements of the process. Each chapter includes some suggested exercises for readers, a list of references and additional readings, useful websites, and appendices and relevant black-and-white graphics or sidebars.

This book is written for professionals, students and entrepreneurs who are interested in an introductory text in bioscience technology development and provides readers with an easy to read, concise description of the basics. Instructors and students will find the final chapter on reimbursement, marketing, sales and product liability particularly useful in providing students with a comprehensive overview of the US healthcare reimbursement market, particularly those who come from nonhealthcare background like business, law, computer science and engineering.

Written from the perspective of a US bioentrepreneur, the author makes only superficial mention of other global bioclusters, how they work and the mechanics of non-US healthcare systems. As such, it could be improved by a more in-depth discussion of how globalisation is affecting the development

of biotechnologies and how the kinds of challenges entrepreneurs will face when trying to identify foreign resources and markets.

The book is intended to offer the reader a high-level perspective on the bioscience commercialisation process. Consequently, it makes little mention of critical practical skills like securing bioscience venture funding, how to communicate your new idea by crafting a value proposition, an elevator pitch and a business plan pitch, how to recruit and develop the leadership team and how to deal with inevitable bumps in the road like regulatory disapproval, investor issues and product roll-out failures.

In addition, the book links to a publisher website that offers minimal additional material, there are no accompanying media for classroom use, and there are no instructor's copies that could provide some additional pedagogical tools, things that are standard in more and more textbooks, particularly given their cost.

Despite these minor drawbacks, readers who are interested in an introductory overview of bioscience commercialisation will find this book to be a good starting point and a welcomed addition to the growing list of bioentrepreneurship textbooks. Those looking for more hands-on, nuts and bolts advice about how to start, finance and lead a bioscience company should probably look elsewhere.

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