
Foreword

Michael J. Lynskey

St. John's College
University of Cambridge
Cambridge, CB2 1TP, UK
E-mail: mjl44@cam.ac.uk

Biographical notes: Michael J. Lynskey is a researcher with several years' experience in managerial, consulting and non-executive directorship roles in business and industry. His research interests are in innovation, entrepreneurship, strategic management, and technology management. He was previously in the Institute of Innovation Research (IIR) at Hitotsubashi University, Tokyo; at the National Institute of Science and Technology Policy (NISTEP), Tokyo; and in the Department of Intellectual Property at the Research Center for Advanced Science and Technology (RCAST), University of Tokyo.

Writing nearly 50 years ago, the Harvard economic historian, Arthur H. Cole, criticised economists who did not recognise the importance of the individual and who did not take the role of the entrepreneur into consideration in their models: "Nothing that I have learned ... has led me to alter the view ... that to study the entrepreneur is to study the central figure in modern economic development, and to my way of thinking, the central figure in economics". My own thoughts echo this sentiment, and hence it was a pleasure to be invited to edit this special edition of the *International Journal of Biotechnology*, and to have my proposed theme for the issue, 'Bioentrepreneurship: Nurturing the Business of Biotechnology', accepted so enthusiastically.

The topic of bioentrepreneurship is certainly timely, and it merits investigation in its own right as a subset of the field of entrepreneurship studies. After a prolonged exile from the mainstream of economic and management studies for much of the 20th century, the entrepreneur has recently come back into vogue, and is seen as a legitimate economic agent. Entrepreneurship is at the top of the social, political and economic agenda. It is seen as the key to unlocking economic growth, and, as a result, policy makers worldwide have attempted to develop and implement strategies that nurture and sustain entrepreneurial activity (Lynskey, 2002). Moreover, the reappearance of the entrepreneur has coincided with the emergence of the techniques of modern biotechnology and the remarkable increase in dedicated biotechnology firms. These firms are a vital actor in the network of innovation within the pharmaceutical industry, and have dramatically altered the landscape and dynamics of that industry.

For this special issue on the theme of bioentrepreneurship, we were fortunate to attract an eclectic and international range of contributors, and the papers include theoretical, empirical and descriptive contributions. After an editorial paper on managing

intellectual property in biotechnology for optimising business value, the second paper is by Călin Gurău, of the Ecole Supérieure de Commerce Montpellier. It provides a comparative empirical analysis of the profile of bioentrepreneurs in France, Germany and the UK, looking at factors such as the number of founders of a firm and their professional backgrounds, and posits a model of the characteristics and competencies required by successful bioentrepreneurs. The third paper, by Robert Junold, of the Ruhr Forschungsinstitut für Innovations und Strukturpolitik at the Ruhr Universität Bochum, and Rüdiger Wink, of the Hochschule für Technik, Wirtschaft und Kultur in Leipzig, is also empirical and discusses the prospects for the commercialisation of stem cell (cells able to undergo epigenetic modification that tells them to specialise and turn into any cell type) research in the light of experience with the recombinant drugs market. Advances in research, such as the growth of human tissues from embryo and adult stem cells for the treatment of various diseases, promise far-reaching therapeutic applications, and the authors consider what conditions would enable commercialisation and entrepreneurship to flourish in this field, looking at the situation in North America, Germany, Sweden and the UK. In the next paper, Dan Marsh, of the University of Waikato, provides an empirical analysis of the biotechnology sector in New Zealand. He proposes a framework for such analysis, and tests a series of hypotheses, using national survey data, to derive several recommendations for strengthening the nation's biotechnology capabilities. These include advocating a mix of large and small biotechnology enterprises having complementary competencies, and active participation in international collaborative linkages.

The following paper, by Anna Nilsson, of the Karolinska Institutet in Sweden, considers the practical challenges faced by bioentrepreneurs in developing new products. From a study of several firms in the Bay Area of California, Nilsson identifies three primary types of obstacles – difficulties in coordinating R&D, the cost of novelty in science, and failing relationships – and also proposes ways to surmount them. On a somewhat related topic, the subsequent paper, by Holger Patzelt, Andreas Zaby and Dodo zu Knyphausen-Aufseß, from the University of Bamberg and the firm Curacyte in Munich, considers the situation when firms experience a near catastrophic obstacle (analogous to Nilsson's cost of novelty): that of the failure of a technology to realise its expectations. Using a case study approach, the paper illustrates how a firm in this position deployed a crisis management strategy that enabled it to build a new technological platform. The papers by Nilsson and Patzelt *et al.* ably illustrate the potential threats and vulnerabilities to which biotechnology ventures are exposed and the risks that bioentrepreneurs have to undertake.

The subsequent paper is by Lars Schweizer, of the Otto-Friedrich University of Bamberg, and develops a typology of four different business models used by German biotechnology firms. These are not left hanging in isolation, however, as in most treatments of business models; instead, Schweizer explains the interdependencies between them and analyses how firms evolve by taking paths from one business model to another. The penultimate paper, by Romuald Rudzki, of Massey University in New Zealand, is descriptive in nature and gives an overview of the development and future prospects of the biotechnology in New Zealand, including the role of public-private partnerships to overcome limitations imposed by the country's size. Finally, a thought-provoking paper by Isabell Welp, of the Ludwig-Maximilians-Universität, and Holger Kollmer, of the University of Regensburg, examine the influence of Venture Capital (VC) companies on biotechnology start-up

firms' technology and commercialisation strategy. Using case study findings and questionnaire results, they test several hypotheses to analyse how, and to what extent, the VC companies' relatively short-term strategies and planning may contradict, or otherwise shape, biotechnology firms' long-term development. This is a highly pertinent topic for bioentrepreneurs, since they tend to rely on venture capital funding, and it addresses the question of whether VC companies' influence is supportive of biotechnology firms' long-term growth, or whether it merely maximises their own short-term returns.

It is hoped that the papers in this issue will provide some insight into the particular issues and challenges faced by the bioentrepreneur, and provide impetus for further research in the field.

Reference

- Lynskey, M.J. (2002) 'Introduction', in M.J. Lynskey and S. Yonekura (Eds.) *Entrepreneurship and Organization: The Role of the Entrepreneur in Organizational Innovation*, Oxford: Oxford University Press.