Chapter 76
Influence of Star Bioscientists on Obtaining Venture Capital for Canadian Dedicated Biotechnology Firms

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ABSTRACT

As organizations based on science, dedicated biotechnology firms (DBFs) establish very narrow links with universities and public research institutions in developing their technologies. This chapter examines the influence of DBF relationships with star bioscientists on their venture-capital funding. It proposes a new definition of bioscientists anchored in today's technological practices. It also classifies Canadian bioscientists into four categories to give a national overview of their involvement with DBFs. The cross-analysis of 150 Canadian DBFs active in human-health applications and 431 bioscientists confirms the positive impact of these relationships on obtaining venture capital when a star is involved because of the credibility it brings to the firm. Moreover, results show that bioscientists most often chose to establish contractual agreements with existing firms or start their own. Future research directions and implications for policy makers are discussed.

INTRODUCTION

As organizations based on science, dedicated biotechnology firms (DBFs) establish very narrow links with universities and public research institutions. This development of new relationships constitutes the base of an innovation structure that connects basic research, applied research, and development as never before (Etzkowitz, 2010). Recognizing the role of universities and public research institutions in the development of new technologies opens the door to a systemic conception in which a vast set of institu-

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tions can co-evolve with the technology. The literature contains little about this new dynamic and even less so about the impact academic researchers have on the growth of private businesses.

More than ever, knowledge is the force driving economic growth, leading to ever-closer ties between science and technology (Buigues, 2000; Freeman, 1982; Gibbons et al., 1994). In particular, much of the technological change in biotechnology depends on the efforts put into exploiting new scientific and technological discoveries. Moreover, these inventions turn into commercial applications more rapidly than in the past, which is why biotechnology businesses are forming ties with universities and government research institutes. This constitutes the basis for a new innovation structure bringing basic and applied research closer to development (Etzkowitz, 2008, 1994). As a result, technology companies based on scientific discoveries sometimes succeed in growing according to specific criteria. Indeed, just a few factors seem to account for biotechnology-firm performance during the 1990s, specifically patent ownership, venture capital, expansion into export markets, and strategic alliances with multinationals (Niosi, 2003; Niosi & Bas, 2001). Zucker et al. (1998) identified another performance determinant, namely star-scientist ties with American biotechnology firms. These star scientists, who have made major biotechnology discoveries, prefer to enter into contracts with existing firms or launch their own biotechnology companies in the same region instead of turning over their research to their university or a government research institute.

Zucker and Darby (1995) define a star scientist as one who has discovered and published more than 40 gene sequences over a five-year reference period (1990–1994), such as compiled in GenBank. Because of the development of technology since then and research also showing the importance of patents (Hagedoorn & Cloodt, 2003; Niosi, 2003), a new definition of star bioscientist must be proposed.

This chapter looks specifically at the influence of intellectual capital that academic researchers bring to DBFs and which impacts positively on the obtaining of venture capital. Becoming allied to researchers that have made important discoveries somehow increases a firm's value. In this field in which scientific excellence is essential, the SBE has to establish links of reciprocity with active researchers. Yet, in biotechnology, the importance of active researchers' contributions cover several dimensions. Often, the simple presence of a very renowned researcher on a company's scientific committee influences investors (Veilleux & Roy, 2015). For example, the value of firms on the stock exchange is connected to the reputation of the university scientists affiliated with the firm (Higgins et al., 2012). Moreover, the number of researchers connected to a DBF indicates to the financial community the quality of the company's scientific team and influences the decision of venture capitalists. This study measures the links between the innovativeness of a DBF, the obtaining of venture capital, and the links with bioscientists. Sometimes, the reputation of a bioscientist associated with a company is enough to get financing. It also happens that the mere presence of a productive researcher (in terms of patents and scientific publications) on a company's scientific committee arouses investor interest. So, besides supplying knowledge to the SBE, these researchers also symbolize the firm's quality to the scientific community (Audretsch & Stephan, 1996).

This study focuses on human-health DBFs because the most important discoveries in the last year were made in this field. Moreover, most of the DBFs have their field of application in human-health industries. Their technology development process and regulatory approval requirements add to their specificity. Indeed, the added complexities increase their need for capital, delay commercialization, and therefore increase investor risk (Baeyens et al., 2006). Furthermore, our research targets the role of very renowned researchers—individuals ranked at the top of the scale in terms of scientific productivity (patents and publications)—having direct links with Canadian human-health DBFs.