

## Chapter 24

# Start-Ups and Spin-Offs in Biotechnology Sector in Poland: Business Models Analysis

**Anna Białek-Jaworska**  
*University of Warsaw, Poland*

**Renata Gabryelczyk**  
*University of Warsaw, Poland*

### ABSTRACT

*This chapter concerns the subject of research-developmental activity of biotech spin-offs in Poland with particular reference to their strategy, determinants of their development and determinants of their financial standing. In the chapter, the authors analyse the determinants of biotech spin-offs and start-ups development in Poland in the light of the research commercialisation cooperation on the universities-business line. The literature overview contains the definition of a process for the commercialisation of the results of research and development (R&D) activity and components of companies' business models. The chapter defines key activities in the development of business models in the context of the commercialisation process and the life cycle of the company, especially at the start up and early stage. Quality-quantitative analysis includes the business models of seven biotechnology spin-offs traded on the alternative market of the Warsaw Stock Exchange, especially the structure of their intellectual capital, R&D expenses in relation to received subsidies and grants, third-party shares in start up equity, and the ability to realise the "Go Global" strategy.*

### INTRODUCTION

In order to enhance the competitive position of the Polish economy, it is necessary to strengthen linkages between the science sector and economic needs, as well as to increase the qualifications of R&D staff in intellectual and industrial property protection, research project management and the commercialisation of the results. This is part of the flagship initiative 'Innovation Union' aiming to form better links between R&D innovation and job creation, crucial if Europe is to recover from the current economic

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crisis (European Commission, 2013). We are analysing the impact of innovation and of the intellectual capital structure on companies development and on the Polish economy's competitive edge based on the situation in the biotechnology sector in Poland, especially that of academic entrepreneurship - spin offs and start ups.

The bioscience industry is changing rapidly in Poland. Companies active in the bioscience industry are facing new challenges and must find new business models. Old established structures are likely to be replaced with more innovative and network-based models spanning the public and private sectors. This change creates a demand for people capable of bridging the gap between bioscience research and business creation, and for individuals capable of identifying new business models. An increase in the number of start-ups run by creative, well educated people who are able to turn ideas into action, who understand the role of market and risk analyses, tax law and accounting in successful business activity and who are equipped in the entrepreneurial capabilities necessary to create value from innovative research by commercialisation is required for sustainable growth based on innovation and excellence. The innovation of biotechnology requires considerable expense for R&D work that is burdened with the risk of failure, as well as the possibility of a positive outcome and the implementation of the production and sale of achieved solutions. On that account, active, relatively young entities at the start of building their credit history, dealing with research-developmental activity from the area of biotechnology, are seeking sources to fund research on the alternative floor of the stock exchange, e.g. NewConnect. This chapter concerns the subject matter of research-developmental activity of biotech spin-offs in Poland, with particular reference to the strategy, determinants of their development, and determinants of their financial standing. The aims of the chapter are to analyse and diagnose if Polish biotech spin-offs are getting the chance to develop, including the completion of their R&D work and the commercialisation of the results of this R&D activity. We will analyse business models adopted by biotech spin-offs, at the start-up and early stage, based on the results of quality-quantitative analysis including the model of cooperation with universities in the commercialisation process, structure of their intellectual capital, R&D expenses in relation to received subsidies and grants, and third-party shares in start up equity. The purpose of this chapter is to identify those business model attributes that are key to the development of an innovative biotech spin-off towards the "*Go Global*" strategy. The survey covers seven biotechnology spin-offs traded on the alternative market of the Warsaw Stock Exchange, the majority since 2011.

## **DETERMINANTS OF BIOTECH SPIN-OFFS AND START-UPS DEVELOPMENT IN POLAND IN THE LIGHT OF RESEARCH COMMERCIALISATION**

The research potential in the field of biotechnology and pharmacy in Poland constitutes more than 2,800 scientists specialising in life and medical sciences and working at universities and research institutes, as well as over 8,000 biotechnology students attending 50 higher education institutions where biotechnology is offered as a path of specialisation (93 faculties). More than 100 institutions of science are involved in biotechnology and pharmaceutical R&D projects. Most of the ongoing R&D projects in Poland, including more than 70% of all biotech projects have been initiated with the purpose of developing innovative products (Poland Biotech & Pharma, 2012; GUS, 2013). Poland is ranked 10<sup>th</sup> worldwide in terms of the number of centres carrying out clinical trials and 1<sup>st</sup> among the so-called rising markets (1.6% of the global involvement). The Polish market of clinical trials is the largest such market in Central and Eastern

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