In the 21st century, the soft factors, such as skills, knowledge, experience as well as professional networks, became the accelerators of economic growth of cities and regions. Social capital, with its unique interconnectivity of human capital, has the same effect on productivity and innovation as Internet had few decades ago. The role of social capital and collaboration networks seem to be even more important in the case of such complex and dynamic industries as high-tech industries (Runiewicz-Wardyn 2016; Etxabea and Valdalisoa 2015; Cooke 2007). The major goal of the following research project is to investigate the ways in which social capital effects innovative capabilities and growth of regions. Universities act as platforms for successful social capital creation and university-industry cluster development (e.g. Silicon Valley grew up in the proximity of the top universities like Stanford and UC Berkley). The latter seems to be even more true for biotech industry, that relies very much on the basic research. Unfortunately, there is no straight forward correlation between investment in R&D at universities and successful business innovations (Runiewicz-Wardyn 2013; Runiewicz-Wardyn & Lopez-Rodriguez 2013). It is a more complex and rather circular relationship that requires more in-depth analysis of the linkages between universities, social capital formation, industry clustering and regional development. The scale and scope of these linkages are furthermore related to the clusters origins (spontaneous or policy-driven), level of technological maturity and its innovative performance. The major goal of the research project is to investigate the ways in which social capital affects innovative capabilities and growth of regions, on the example of the biotechnology industry clusters in the European Union (EU) and the United States (US). The biotechnology/life science sector covers pharmaceuticals, biotechnology, medical devices and the R&D in the life sciences.

The critical overview of the subject literature as well as the outcomes of the past studies of the author, lead to the main hypothesis that the biotechnology sectors in the US and EU are characterized by the qualitatively different paths of development, which are characterized by different knowledge production functions (KPF). The differences in these paths can be explained by their different university-industry relationships and social capital dimension.
There is growing number of literature and policy documents demonstrating that the higher levels of social capital and university-industry networks are associated with higher innovative performance of high-tech industries. However, there are almost no studies considering the processes of social capital formation, its impact on innovative capabilities and regional growth in the comparative context of the EU and US, and more so in the context of the biotechnology industry clusters.

In many EU member states the biotechnology clusters are still emerging. Therefore their drivers as well as their impact on the local growth are still poorly understood and under-investigated. Likewise, the literature on the social and institutional factors of economic growth is relatively small, and very few empirical attempts have been made to incorporate the above mentioned technological, geographical, institutional, socio-cultural and economic dimensions into the regional growth model. Thus, the research findings will provide clear grounds for further attempts to develop endogenous growth theory and determine discussion on innovations as a technological, institutional, and evolutionary process.

Such analysis requires multidimensional dynamic research approach (considers technological, geographical and socio-cultural dimensions) deriving from the knowledge on the new economic geography, endogenous growth theory, biotechnology, as well as theories of social capital and social networks. Both quantitative and qualitative comparative research methods are applied in the research. The quantitative research elaborate the theory, contemporary literature and data bases in order to find channels (their strength and directions) of interdependence between social capital formation, biotechnology cluster performance and regional growth. The qualitative part of the research aims to constructs analytical framework to analyze the university-industry R&D relationships and social networks within the clusters. Important contribution (access to the data bases and econometric models) to the research is expected to get from the research visits and interviews-based output with Heads of R&D units/labs in the EU and US leading scientific institutions during the short-term research fellowship visit at Stanford University.