

## Innovation Ecosystem and Regional/Professional Labor Market: A Case Study of Boston

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The aim of this article is to clarify the characteristics of the Innovation Ecosystem of Boston, Massachusetts, and its influence on the regional and professional labor market. Boston's route 128 was famous for its innovative economy in the 1970s. Boston has become the world-class innovation city of biotechnology since 2010, although it once experienced an economic decline in the 1980s. How has the innovation ecosystem been established? How does it work, and what are its features? We examine these questions based on our interviews, field research, and published documents.

Firstly, the new ecosystem has been built in a very small area around MIT Kendall Square, not in route 128. Cambridge City Council decided to regulate and give permission for genetic research to only public research organizations. Therefore, some scientists at universities started to create biotechnology companies around Kendall Square, such as Biogen which was founded by Professor Phil Sharp in 1978. In the 2000s, atypical venture capital (VC) firms that focus on investing in scientific research have changed the academic culture drastically. Redevelopment of Kendall Square in the 2000s and the paradigm change in the pharmaceutical industry helped to establish the innovation ecosystem of biotechnology.

Secondly, the stakeholders of the innovation ecosystem are universities/scientists, entrepreneurs, risk capital, large corporations, and governments, including incubators and accelerators. These groups are interconnected and work through collective action. Although there are various opportunities for collaboration, unique incubators like Cambridge Innovation Center (CIC) offer opportunities for the interconnection of these stakeholders through its office architecture and meet-up events. Especially, the CIC's meet-up event called "Thursday Gathering" is well known for offering reliable connections among people who are interested in innovation in Boston.

Cross network transpositions are essential because they make connections between different positions closer. Scientists who start businesses are vital to the innovation ecosystem. In Boston's biotechnology industry, atypical "scientists venture capitalists" are more significant. Flagship Pioneering is one of these VC and employs a large number of scientists that are dedicated to investing in new sciences. As a result, the amount of investment in "early-stage" or "seeds" has significantly increased in Massachusetts.

In Boston, there are both labor market mobility and half-closed regional /professional networks which grow the interactive and robust community. These features are significant for establishing the ecosystem of biotechnology in Kendall Square.