Based on what has been developed in the previous chapter, it clearly appears that the pharmaceutical sector occupies a prominent place in the Swiss invention landscape. Besides contributing to a large number of patent applications, it also exhibits unique geographical patterns underlining a particularly strong concentration in the employment basin of Basel. However, the globalization of the economy has deeply altered the innovation process. As explained in the second part of this book, firms can now draw on the specific profile of many different types of environment and tap into foreign knowledge by instituting a global network of subsidiaries and partnerships. The globalization of competition and the increasing importance of knowledge and innovation as the main sources of competitive advantage have led firms to rethink and rearticulate their innovation processes.

In this new economic reality, the pharmaceutical industry of the Basel employment basin represents an exclusive “laboratory” for exploring the transformation of the innovation process in a region widely recognized as one of the world’s leading life sciences clusters. Based on an in-depth analysis of pharmaceutical patent applications at the EPO by applicants located in the Basel employment basin, the goal of this chapter is therefore to assess the new geography of innovation and the importance of pharmaceutical clusters in that process. In order to do so, this chapter has been divided in three sections. Section 9.1 emphasizes some idiosyncrasies of innovation in the pharmaceutical sector as well as making some observations on the Swiss pharmaceutical industry. Section 9.2 evaluates the internationalization of the inventive process of pharmaceutical actors active in the Basel employment basin and Section 9.3 investigates the role of pharmaceutical clusters worldwide as sources of knowledge and innovation. This
chapter has also been enriched by insights from interviews conducted with
two executives of two Swiss pharmaceutical companies established in the
U.S., Mr. Jeffrey Lockwood, Global Head of Communications at Novartis
Institutes for BioMedical Research, and Mr. Mark Noguchi, Global Head of
Alliance Management for Roche Partnering. Their comments have been
extremely valuable in giving a qualitative dimension to patent-based results
and providing a better understanding of the current challenges of pharma-
ceutical firms in the management of their innovation process in a global
economy.

9.1 Notes on innovation in the pharmaceutical sector and
the Swiss pharmaceutical industry

As noted by Scherer (2010, p. 541): “The discovery and development of new
pharmaceutical substances are among the most interesting of innovation
processes.” Although ethical considerations have occasionally darkened the
image of the pharmaceutical industry, the ultimate goal of research in phar-
maceuticals is to make a difference in people’s lives. As stated, for example,
by Roche in its annual report (2012c, p. 22), its mission has almost never
changed since its foundation and is “to improve health and help patients
live longer, better lives”. Evidence has clearly confirmed that progress in the
pharmaceutical industry has contributed to curing diseases and increasing
life-expectancy (Long et al., 2006; Murphy and Topel, 2006; Lichtenberg,
2007; Scherer, 2010, p. 541). The nature of innovation in pharmaceuticals
has nevertheless significantly evolved over time, and innovation in the
pharmaceutical sector shows idiosyncratic characteristics (Cockburn, 2004;
Gertler and Levitte, 2005; Cooke, 2008).

On the one hand, the discovery of new drugs requires extremely high
R&D investments, and these are mainly undertaken by private firms (Drews,
1997; Gilbert et al., 2003; Munos, 2009; Paul et al., 2010; Pammolli et al.,
were nearly five times those of their all-manufacturing counterparts” in the
U.S. Similarly in Switzerland, pharmaceuticals accounted for more than
50 percent of total R&D expenditure in manufacturing in 2008 (OECD,
2012a, Internet source). The significance of these investments is explained
not only by the strengthening of the regulatory environment surrounding
the preclinical and clinical phases necessary to the introduction of new drugs
to the market but also by a radical evolution of the innovation process in
pharmaceuticals (Drews, 1997, p. 72; Horrobin, 2000, p. 341; Gassmann and
Reepmeyer, 2005, pp. 233–234; Gassmann et al., 2008, p. 1; Scherer, 2010,

While the pharmaceutical industry grew “at a time of unusual scientific,
political and economic opportunity” (Drews, 1997, p. 72) between the
19th and 20th centuries, in which new and effective drugs were developed