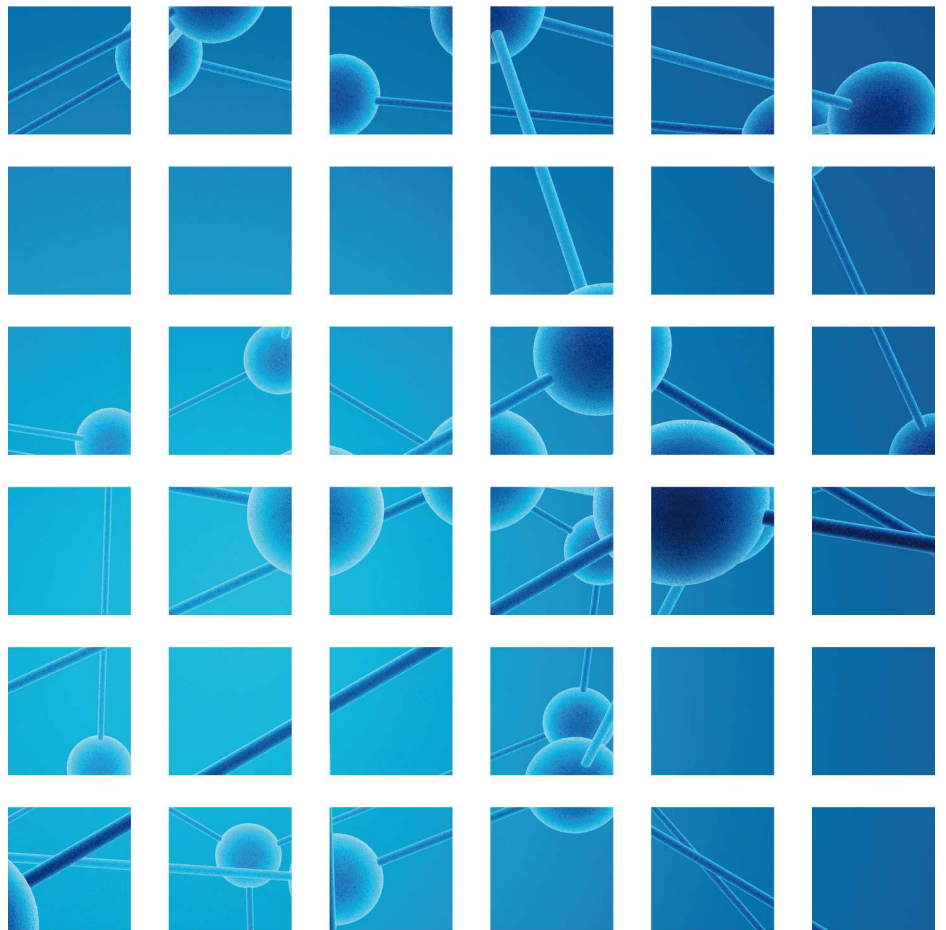


# MONITORING LIFE SCIENCES LOCATIONS

Life Sciences Report 2009/2010  
Executive Summary



**Editor**

BAKBASEL

**Project Management**

Thomas Schoder, T +41 61 279 97 16  
thomas.schoder@bakbasel.com

**Editorial Staff**

Christoph Kuhn  
Pia Luginbühl

**Information & Sale**

Marc Bros de Puechredon, T +41 61 279 97 25  
marc.puechredon@bakbasel.com

**Postal Address**

BAK Basel Economics AG  
Gueterstrasse 82  
CH-4053 Basel  
T +41 61 279 97 00  
F +41 61 279 97 28  
info@bakbasel.com  
<http://www.bakbasel.com>

© 2010 by BAKBASEL AG

All rights reserved. No part of this book may be reproduced, in any form or by any means, and this book and all parts of it may not be passed on to third parties without permission from the publisher.

## «Life Sciences Report 2009/2010» - Executive Summary

**The change in the economy that has resulted from globalisation and from the revolution in information and communication technology is increasing its pace. This is forcing regions to keep a watchful eye on economic developments in the regions they compete with. Due to the particular success of the Life Sciences industry, regions, states and countries aggressively compete with each other to attract research and development (R&D) dollars, talents and new companies. Those currently doing business at a given location are challenged to promote the region's specific strengths so that they will be in a position to secure their international competitiveness in scientific and commercial fields with promising futures.**

In order to provide detailed information for all parties interested in the performance capabilities and framework conditions of the Life Sciences industry – including economic policymakers looking to keep abreast of developments and their effects on society, business and politics – BAKBASEL has developed a comprehensive information database comparing 15 countries and 16 regions in North America, Western Europe and Japan. The present «Life Sciences Report 2009/2010» compares these countries and Life Sciences regions on the basis of brand new data from the «Monitoring Life Sciences Locations» database. The spotlight is put not only on Life Sciences regions that are already firmly established, but also on emerging regions that exhibit strong growth potential or regions which are perceived as possible competitors in the public realm. That's why, currently, various Asian Life Sciences locations are being integrated into the project.

## Importance and performance of the Life Sciences industry

With strong growth, above average productivity and job creation, the Life Sciences industry is among the most dynamic industries in many countries and regions. In the Basel Region, an amazing 9 percent of all employed individuals work in the Life Sciences industry. Other regions with a high share of Life Sciences employees are the SF Bay Area, New Jersey and Milan, but no other region in the world comes anywhere near the Basel Region's density.

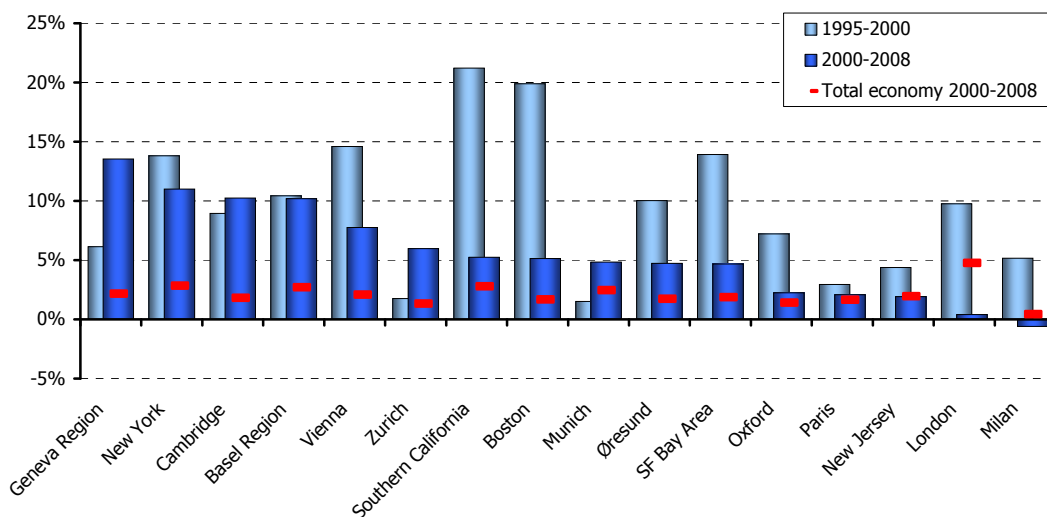
### Employment in the Life Sciences industry in the regions, 2008

	Employment in Life Sciences	Share of Total Employment
Basel Region	31'900	9.00%
SF Bay Area	72'300	3.15%
New Jersey	79'600	1.90%
Milan	33'800	1.54%
Øresund	23'400	1.19%
Boston	38'500	1.14%
Southern California	88'600	1.13%
Geneva Region	6'900	1.04%
Cambridge	2'700	0.84%
Zurich	6'600	0.75%
Vienna	11'100	0.64%
Paris	34'500	0.63%
New York	55'900	0.63%
Oxford	1'500	0.47%
Munich	7'900	0.44%
London	13'500	0.36%

Employment in the Life Sciences industry (in persons) and the industry's share of total employment  
Source: BAKBASEL

The gross value added (GVA) measures the value of goods and services produced in an area or sector of an economy. Its increase is therefore a performance indicator for the dynamics of the Life Sciences industry. As one can see in the figure below, Life Sciences has in general demonstrated high growth potential in the last decade. Annual average growth in Life Sciences has outpaced the aggregate economy in most regions.

**Increase in real gross value added (GVA) in Life Sciences**

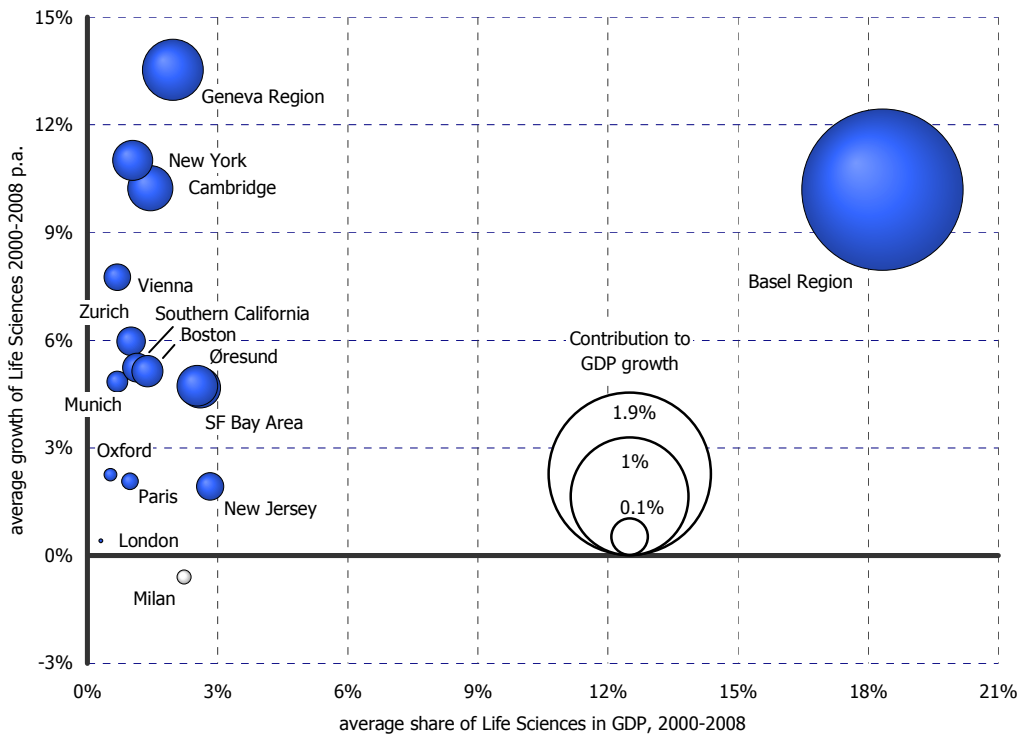


Annual average growth rate  
 Based on USD at 2000 prices and 1997 PPP  
 Source: BAKBASEL

Between 2000 and 2008, the highest growth rate of GVA in Life Sciences across all regions was seen in the Geneva Region. When comparing the eight big Life Sciences locations which have more than 30'000 employees (Boston, SF Bay Area, New York, New Jersey, Southern California, the Basel Region, Milan, Paris), New York has the highest 2000-2008 growth rate in value added, but the Basel Region follows in a close second place. Another interesting point is that many regions with enormous growth rates between 1995 and 2000 were not able to sustain these growth rates in recent years.

Due to its dynamic growth and its high importance, the Life Sciences industry contributes strongly to total economic growth. The larger the bubble in the figure below, the larger is the Life Sciences industry's contribution to regional GDP growth.

**Contribution of the Life Sciences industry to economic growth**



Average growth in 2000-2008, based on USD at 2000 prices and 1997 PPP  
 Average share from 2000-2008, based on USD, current prices  
 Source: BAKBASEL

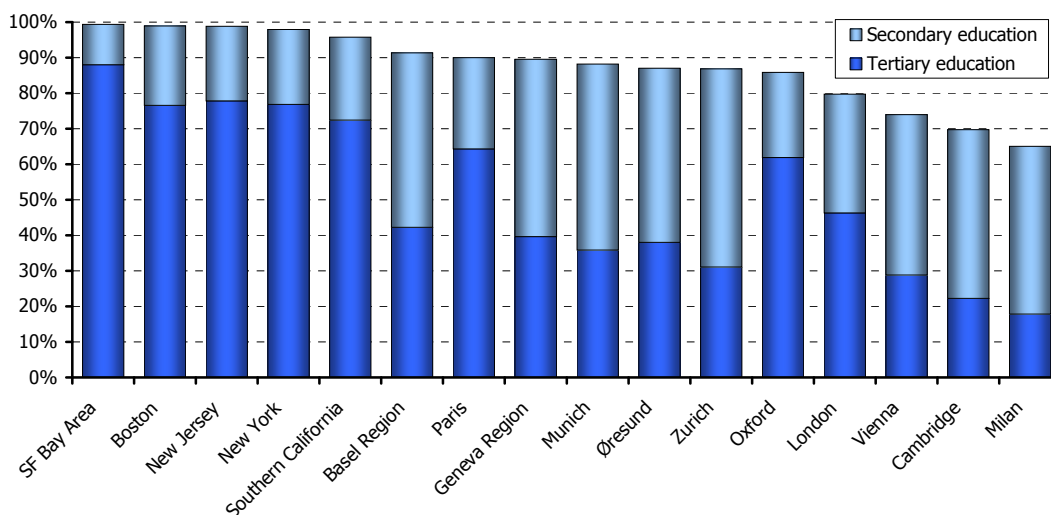
The central finding of this comparison is obvious. Nowhere else is the Life Sciences industry as important to the local economy as it is in the Basel Region. Nearly 1.9 percent of the total 2.7 percent average annual GDP growth between 2000 and 2008 was contributed by the Life Sciences industry. This high contribution can be explained by the region's strong cluster of high-performing pharmaceutical companies.

## Innovation capacity as central driving force for the Life Sciences

The Life Sciences industry is not just very promising and dynamic, it also has high expectations of its host locations. Besides generally important framework conditions like taxation and regulation, a region's innovation capacity is a crucial requirement. Nowadays, competition between companies in knowledge-intensive businesses is no longer driven primarily by price but rather by innovation. The availability of a highly skilled workforce and the existence of knowledge are even more vital for the Life Sciences industry than for the total economy because its products and processes are very knowledge-intensive.

When making statements about the educational qualifications of the labour force, one has to keep in mind that the institutional settings vary substantially from country to country. Furthermore, a highly qualified workforce with a high degree of practical know-how is a key factor for productivity and consequently for sustained economic growth. Therefore, even for the exacting Life Sciences industry, it is important not only to look at the share of people with tertiary education, but to include the share of people with a secondary education as well.

**Highest completed education in the Life Sciences labour force, 2008**

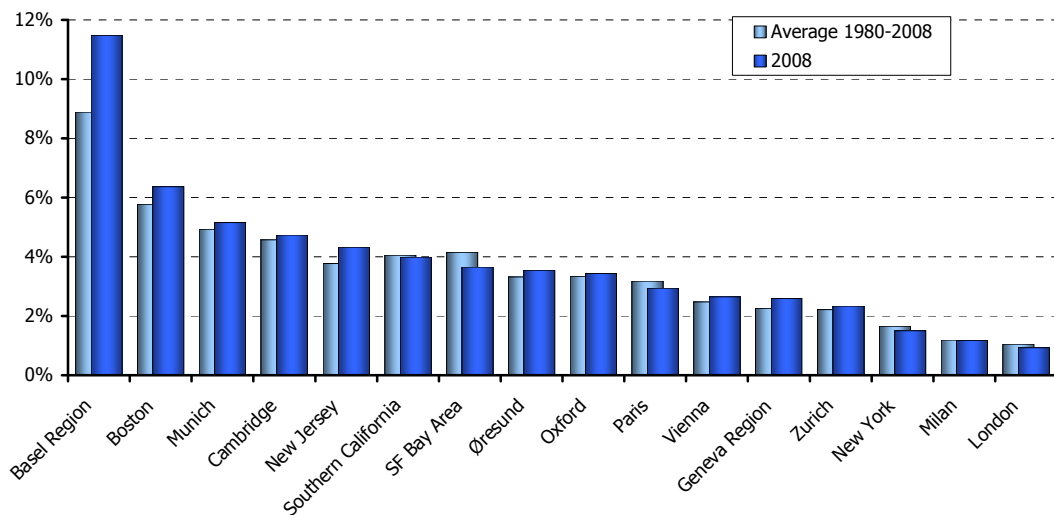


Share of individuals with secondary/tertiary degree in total employment  
Source: BAKBASEL

In most regions, between 80 and 100 percent of individuals employed in Life Sciences have a secondary or tertiary education. In general, strong national patterns are present in the ranking which reflect differences in school systems. The US Life Sciences regions lead the ranking. All of the US regions show a strong concentration on tertiary education. On the contrary, the continental European regions generally show a stronger concentration on secondary education because of the important part vocational training plays there.

Innovation is crucially dependent on the expenditures on R&D, too. This input for innovation is of great importance, especially for the Life Sciences industry. The R&D expenditures comprise total internal R&D expenditures in all sectors of performance, i.e. business enterprise sector, government sector, higher education sector and private non-profit sector. To make different regions of different sizes comparable, R&D expenditures are depicted as a share of the regional GDP.

**Share of expenditure on R&D in GDP**

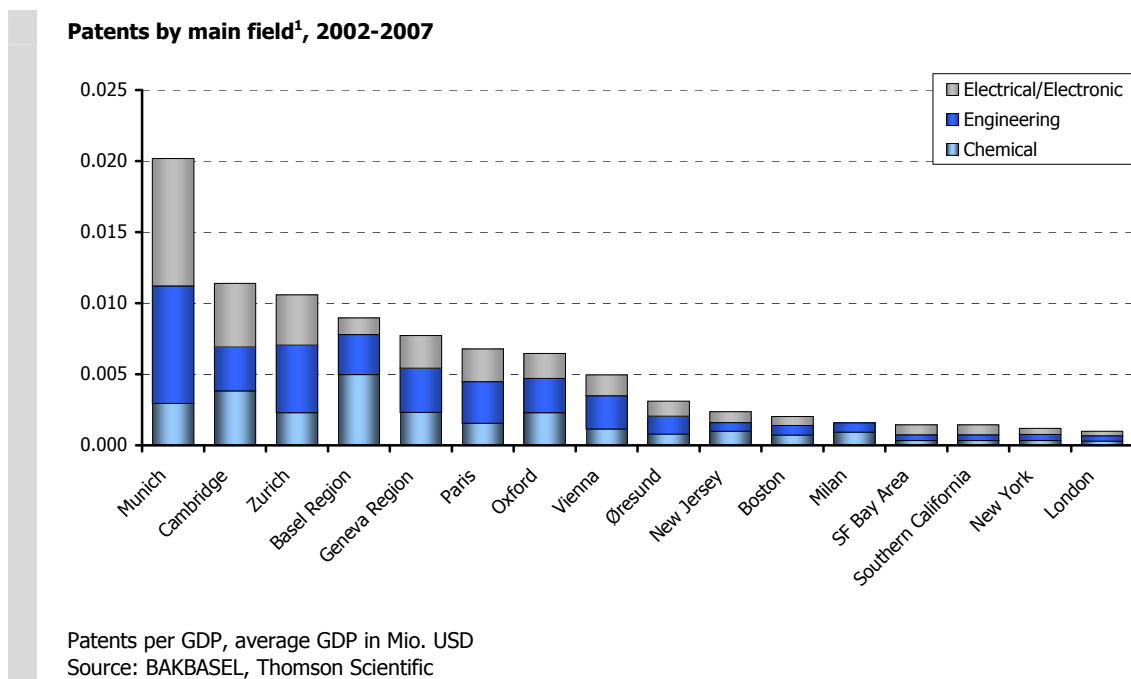


Source: BAKBASEL

In 2008, the highest share of expenditures on R&D in GDP is found in the Basel Region. This high share is mainly driven by the local pharmaceutical industry which invests intensively each year. The highest increase in investment is also seen in the Basel Region: expenditure on R&D in 2008 is 2.6 percentage points higher than the long-run average.

In order to evaluate innovative capacity, it is important to determine the extent to which the individual regions are capable of converting their resources such as financial means or human capital into new products and production processes which, in turn, improve the economic prosperity of the region. A chosen indicator for this capability is the number of approved patent applications. Patents are the indicator most often used for the innovation potential of an entity. The underlying reason for this is that something new has to be invented in order to obtain a patent and since applying for a patent is costly, only promising ideas get patented. An innovation is by definition a new product or process that has been implemented successfully on the market, so patents can indeed reflect a region's innovation potential.

The data in the figure below consists of all patents that have been registered at and approved by the European Patent Office between 2000 and 2007. In order to correct for the size of a region, the absolute number of patents per region is not used, rather, the ratio of patent filings to GDP is used instead. The GDP is the average GDP of the years 2000 to 2007.



Munich, Cambridge and the three Swiss regions are the top regions concerning patents in all fields of knowledge. For the Life Sciences industry, patents in the chemical field of knowledge are of primary importance. The analysis of the share of patents in the chemical field of knowledge enables the identification of those regions which are more focused on research in Life Sciences than others. Among the big Life Sciences locations, the Basel Region is clearly the leading research region with about 55 percent of its patents in the chemical field of knowledge. Only Milan shows a higher share (58%) but on a considerably lower level of total patents per GDP.

<sup>1</sup> Following the DWPI classification system of Thomson Reuters.

## **Future prospects and availability of the «Life Sciences Reports »**

After the reports in 2005, in 2007/2008 and the update in 2008/2009, the «Life Sciences Report 2009/2010» is the latest step in the on-going monitoring programme that collects information on the development of the industry, the progress already made, and the need for further improvements to the Life Sciences locations. The Life Sciences regions already participating in the project get the full version of the Life Sciences report as well as individual analysis on the topic. Even though the full version of the Life Sciences report is only available for project partners, Executive Summaries are available to the public.

By updating the indicators of the «Monitoring Life Sciences Locations» project frequently, it can be ensured that the benchmarking is always done on the basis of the most recent data available. In the fast changing Life Sciences industry, it is especially important that the latest evolutions in Life Sciences locations are always included. The goal for the next Life Sciences Report is a broadening and deepening of the analyses which will generate further benefits. The main objective is to fully incorporate several emerging Asian Life Sciences locations into the performance analysis. Currently, BAKBASEL is collecting data on the Life Sciences industry in Singapore and China.