



Biotechnology Report

CROATIA

PREPARED BY EUROPABIO AND VENTURE VALUATION IN 2009

STATUS OF THE CROATIAN BIOTECHNOLOGY SECTOR

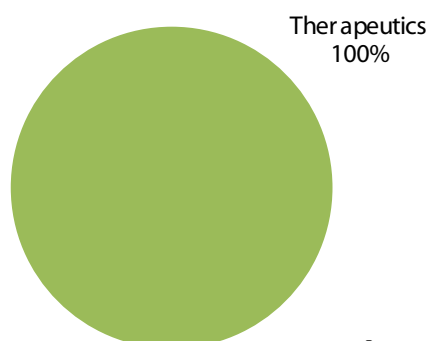
(Financial data in €)

2	Total Biotech Companies
2	Biotech-Therapeutic
0	Biotech-Services
0	Biotech-Other
494	Employees
157	R&D employees
NA	R&D spending
NA	Revenue
NA	Equity Raised
NA	Government grants
50%	Percentage of SMEs
50%	Percentage of companies publicly owned

Two biotechnology companies are currently operating in Croatia conducting research and development for human therapeutics. The Institute of Immunology is listed on the Zagreb Stock Exchange (IMZV-R-A) and its origins can be traced back as far as 1893. Currently, the company is supplying and developing new vaccines and blood plasma products. The GlaxoSmithKline Research Centre Zagreb Ltd. is a subsidiary of GlaxoSmithKline (GSK) and one of nine new centres of excellence for drug development that the company has set up around the world. As the company employs less than 250 people in Croatia it qualifies as an SME. Both companies chose to keep information about their early stage product pipelines confidential.

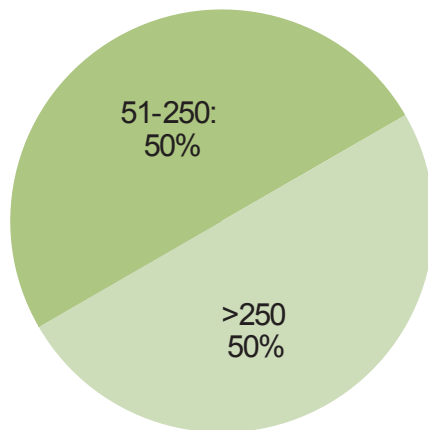
Biotechnology Companies in Croatia

Breakdown by Subcategory based on 2 entries by 2 companies



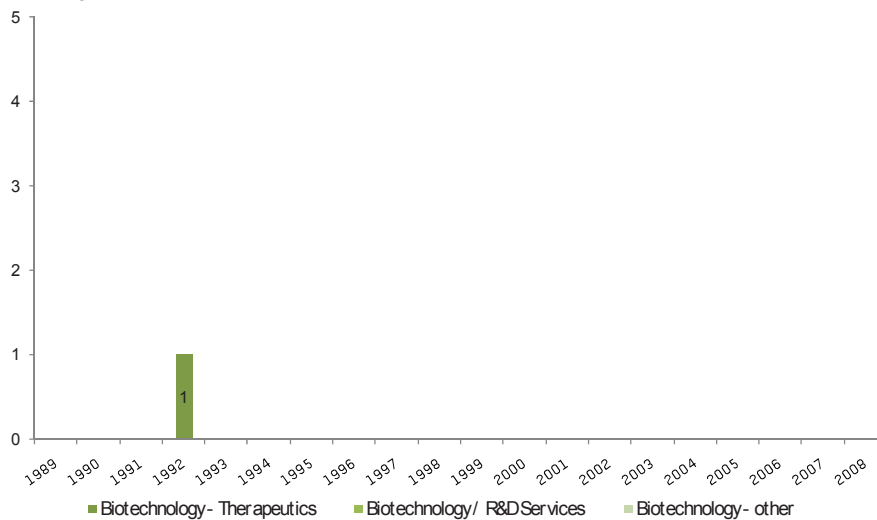
Source: www.croatianbiotech.com

Biotechnology Company Size in Croatia (number of employees)



Source: www.croatianbiotech.com

Company Foundations in Croatia



Source: www.croatianbiotech.com

CROATIA – AN INDUSTRY OVERVIEW

There is both a Croatian Pharmaceutical Society and a Croatian Society of Biotechnology operating in the country. The country has a long tradition of successful research in healthcare, chemistry and engineering. There are over 50 international pharmaceutical companies with representative offices in Croatia, mostly focusing on generic drugs.

The national Science and Technology Action Plan for 2006-2010, which emphasizes agri-food, healthcare and industrial biotechnology as top priorities, was recently established by the government to promote a shift to a knowledge based economy. Currently around 55 biotechnology research projects are funded by the government.

Political and Economic Environment

The political climate in Croatia is comparable with other new Member States. The government has expressed interest in supporting innovation and biotechnology but the development and implementation of public policy has been slow and there is a lack of commitment from the government.

The majority of R&D funding (about 80%) comes from government organizations,

such as the Ministry of Science, Education and Sports. Other investors include BICRO-Business Innovation Centre, Horizonte Venture Management GmbH, the Croatian Angel Network, and members of the Croatian Private Equity and Venture Capital Association. Local investors are not particularly experienced or specialized in biotechnology.

Support Infrastructure

The biotechnology industry in Croatia is concentrated in Zagreb and Split and the majority of research and development takes place at the universities. There is notable competition between the universities themselves which both stimulates and stifles innovation as competitive spirit alone cannot compensate for the benefits of collaboration. Both individual researchers and the institutions benefit from the research on a case by case basis. There are no formal technology transfer offices attached to the universities and links between the universities and industry are rare. There is also a shortage of good business advice, experienced management and premises.

The workforce

A broad range of life science courses is offered in the country. However, there are few science graduates as the humanities are still generally preferred by students. Those who do choose the sciences are unfortunately faced with university labs that often do not have up-to-date equipment or infrastructures. As a result, graduates are aware of the latest research and technology in their fields but lack applied experience and the connection between academia and industry. Nevertheless, Croatia has a skilled and productive workforce and boasts a high level of language proficiency skills in English, German and Italian.

Technology and intellectual property

Croatia recently adopted new IP laws including the Copyright and Related Right Act, The Patent Law, the Trademarks Law, and the Industrial Design Law which bring the country in line with European Union standards.

As publishing scientific papers has traditionally been the main focus of researchers, awareness of intellectual property is quite low but slowly improving. There are few to no systems or policies in place at the universities in this area and technology transfer is very underdeveloped. The Croatian Innovators Society and the State Intellectual Property Office of Croatia are mandated to advise on these topics however their activity and efficiency is insufficient.

There are a few external technology transfer offices in place including Rudjer Innovations, the Office for Technology Transfer and Farmavita.Net that are gaining experience in the area. There is a Technology Park in Zagreb since 1994; a Technological Innovation Centre in Rijeka, a BIOS Business Incubator in Osijek and a biotechnology park is in the concept stage of being established in Varazdin.

"Croatia has a skilled and productive workforce and boasts a high level of language proficiency skills in English, German and Italian"

Products in the Pipeline:

Neither company chose to disclose their pipeline products therefore this information is unavailable.

DEVELOPMENT CAPACITY INDEX

The development capacity index was calculated for Croatia according to the description in Appendix A and can be used to compare the status of the Croatian biotechnology sector with that of the other new Member States and candidate countries. It consists of a qualitative factor of 25 and a quantitative factor of 19.

4 DCI

KEY FEATURES

3 positive key features:

- **The government is focused on establishing a knowledge based economy through implementation of a national Science and Technology plan for 2006-2010 with a focus on biotechnology and healthcare**
- **Innovation funds are in existence with some venture capital firms and business angels present**
- **Recent adoption of IP laws brings the country in line with EU standards**

3 negative key features:

- **The implementation of public policy is slow**
- **Access to public funding is highly competitive**
- **Infrastructure and technology transfer is limited**

Good planning and innovation support are in place in Croatia therefore accelerating the implementation of public policy and improving the access to funding would benefit the biotechnology sector.



SOURCES

The Croatian Biotechnology Database (www.croatianbiotech.com) part of the global Biotechgate database (www.biotechgate.com)

Survey from Croatian Society of Biotechnology; 2008

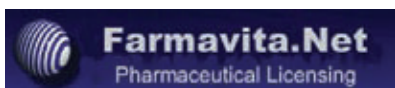
Survey from Farmavita d.o.o.; 2009

Company interviews; 2008-2009

BioPolis – Inventory and analysis of national public policies that stimulate research in biotechnology, its exploitation and commercialisation by industry in Europe in the period 2002-2005 – National Report of Croatia; March 2007

Pharmaceuticals and Biotechnology in Croatia – Attractive Investment Opportunities; 2007

In collaboration with:



APPENDIX A: CALCULATION OF THE DCI

The Development Capacity Index (DCI) was developed as a means of representing the development status of a country in a format that allows comparison with other countries and regions. The resulting value indicates the respective countries' relative rank among their peers and considers both the existing state of affairs (represented by the quantitative factor) as well as the potential for development (represented by the qualitative factor). A higher DCI indicates the presence of a more advanced biotechnology industry and a more favourable environment for future growth.

Evaluation of the Qualitative Factor:

The qualitative factor was used to evaluate the framework available for the development of the biotechnology sector. Factors considered were existence of a pharmaceutical industry, level of government support, availability of public and private financial support, existence of a qualified workforce, establishment of technology transfer offices and technology parks, and general awareness of patenting and the IP protection processes.

As shown in the following table, each factor was assigned a weight based on the subjective assessment of its relative importance for the evaluation of a country's development potential. Each factor was then evaluated for each country based on information gathered from literature, and interviews with local stakeholders and companies. A rating was assigned for each factor ranging from 0 (non-existent) to 4 (excellent) and individual ratings were summed to give the total qualitative factor for that country.

QUALITATIVE FACTOR	WEIGHTING	RATING	POINTS	WEIGHTED POINTS
Pharma Industry (existing know-how)	2	Non-existent	0	0
		Minimal	1	2
		Average	2	4
		Good	3	6
		Exceptional	4	8
Government Support	2	Non-existent	0	0
		Minimal	1	2
		Average	2	4
		Good	3	6
Public Financial Support	3	Exceptional	4	8
		Non-existent	0	0
		Minimal	1	3
		Average	2	6
Private Financial Support	3	Good	3	9
		Exceptional	4	12
		Non-existent	0	0
		Minimal	1	3
Qualified Workforce	3	Average	2	6
		Good	3	9
		Exceptional	4	12
		Non-existent	0	0
		Minimal	1	3
Tech Transfer	4	Average	2	8
		Good	3	12
		Exceptional	4	16
		Non-existent	0	0

Tech Parks or Clusters	4	Non-existent	0	0
		Minimal	1	4
		Average	2	8
		Good	3	12
		Exceptional	4	16
IP Protection Awareness	4	Non-existent	0	0
		Minimal	1	4
		Average	2	8
		Good	3	12
		Exceptional	4	16

Evaluation of the Quantitative Development Factor:

The quantitative factor was calculated based on the number of biotechnology companies present, their category of activity (therapeutics, services and other biotechnology sectors), and the number of products under development. Parameters were all individually measured with emphasis placed on smaller and medium sized companies conducting research on human therapeutics, as these are considered to be the drivers of innovation for the industry.

Within each country, points were assigned per company depending on the type of company, number of employees, products on the market and products in development, as shown in the following table. Fewer points were attributed to products on the market as this is an indication of existing industry and know-how, whereas the development of new products indicates the potential for growth.

It is to be noted that few companies chose to disclose their product information therefore these parameters have only a small impact on the overall DCI. It was assumed that all biotechnology companies developing therapeutics had at least one product in the pipeline.

Factor	Points
Biotechnology therapeutics company	5
Biotechnology services company	1
Other biotechnology company	3
< 10 employees	5
10-100 employees	4
100-500 employees	3
500-1000 employees	2
> 1000 employees	1
no data or 1 product in development	1
2 products in development	2
3 products development	3
4 products development	4
5 or more products development	5
1-2 products on the market	0.25
3-5 products on the market	0.5
5-10 products on the market	0.75
10-20 products on the market	1
more than 20 products on the market	1.25

Points calculated for all companies in the country were then summed to give the total quantitative factor for that country.

Prepared by:



The European Association for Bioindustries

www.europabio.org



www.venturevaluation.com

Information about the project can be found at www.14allbio.eu

All company details and data are available on:



www.biotechgate.com