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GAIN Report

Global Agricultural Information Network

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The Italian Biotech Industry 2014

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Report Highlights:

Again, this year, Italy's biotechnology industry is characterized as a dynamic and promising sector, despite the difficult economic situation that biotech companies have to confront on a daily basis. Italy has a large and profitable biotech industry operating in the medical, industrial, and agricultural sector, ranking 3rd in Europe in the number of pure biotech companies.

The Italian Biotech Industry 2014

Overview

Table 1: Italian Biotech Industry main figures

	2013	2014
Number of companies	435	422
Total turnover (€mln)	7.0	7.0
R&D Investments (€mln)	1.5	1.5
Number of employees in R&D	6,726	6,626

Source: Assobiotech report 2014

As reported by Assobiotech, the Italian Association for the Development of Biotechnology, again, this year, Italy's biotechnology industry is characterized as a dynamic and promising sector, despite the difficult economic situation that biotech companies have to confront on a daily basis. The number of biotech companies in Italy has sharply increased over the last decade. At the end of 2013, 422 biotech companies engaged in research and development were recorded. Among these, 264 fall under the definition of pure biotech companies (whose core business activities are exclusively related to biotechnology), ranking third in Europe just behind Germany and the United Kingdom.

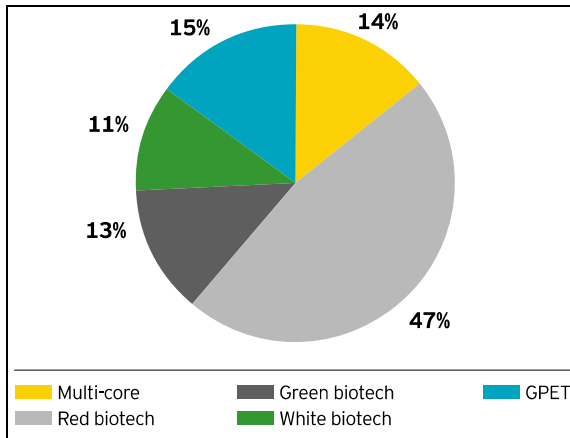
Biotechnology companies can be divided into the following categories according to their field of operation:

- Red Biotech: medical biotechnology
- Green Biotech: agricultural biotechnology
- White Biotech: industrial biotechnology
- Genomics, proteomics and enabling technologies (GPET)
- Multi-core: mix of the previous categories.

Forty-seven percent of the 422 recorded companies are exclusively active in red biotech, 15 percent in Genomics, Proteomics, and Enabling Technologies (GPET), 13 percent in green biotech, 11 percent in white biotech, while 14 percent operate in more than one field of application as multi-core.

Per Figure 2 below, approximately 77 percent of the Italian biotech companies are micro-sized or small (less than 50 employees); 12 percent are medium-sized (from 50 to 250 employees), and the remaining 11 percent are large-sized (more than 250 employees). The large entities are mainly pharmaceutical companies, accounting for 81 percent of total turnover.

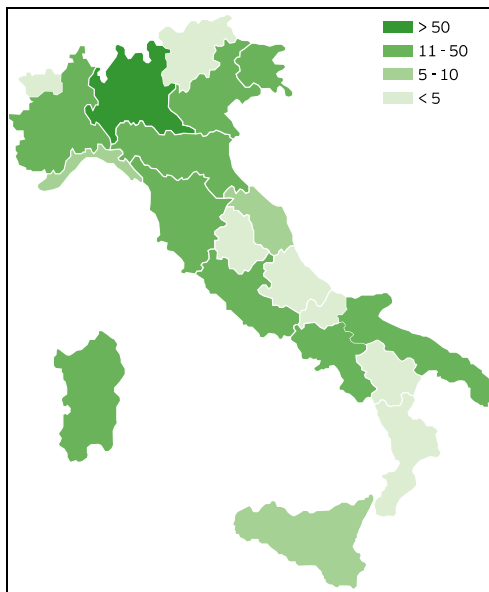
Figure 2: Distribution of biotech companies among the 5 sectors in Italy



Source: Assobiotec report 2014

Most biotech companies are located in Lombardy (127), Piedmont (48), Tuscany (39), Emilia-Romagna (38), Latium (36), Veneto (27), and Friuli Venezia Giulia (23). Lombardy has been particularly praised for its university infrastructure, strong tradition of entrepreneurship, and its regional government’s support for biotech companies. 41 percent of the biotech companies works within science parks or incubators, 40 percent has independent headquarters, while 19 percent is located near universities, clinical centers, or research institutes.

Figure 3: Geographical distribution – number of biotech companies



Source: Assobiotec Report 2014

A) RED BIOTECH (MEDICAL BIOTECHNOLOGY)

Table 4: Italian Red Biotech Industry main figures

	2013	2014
Number of companies	244	241
Total turnover (€mln)	6.6	6.6
R&D Investments (€mln)	1.3	1.4
Number of employees in R&D	5,345	5,217

Source: Assobiotech report 2014

Red biotech accounts for 95 percent of total turnover of the whole biotech industry, representing 91 percent of total investments.

Red biotech activities can be categorized as follows:

Therapeutic: development of drugs and other therapeutic approaches, such as gene- or cell-based therapies for the treatment of various diseases;

Vaccines: biological preparations for prophylaxis and treatment;

Drug delivery: technologies to convey the drugs to a specific site through optimization of their absorption and distribution (advanced materials, liposomes, antibodies, cell therapy, etc.);

Molecular diagnostics: DNA/RNA-based tests for the diagnosis, prognosis, and detection of any predispositions to specific diseases and for the analysis of pathogenic mechanisms;

Drug discovery: synthesis, optimization, and characterization of drug candidates; assay development, screening, and validation activities on medicinal products.

Currently, 241 enterprises are active in red biotech: the majority of biotechnology companies are dedicated exclusively to human health (81 percent), while the remainder consists of multi-core companies (19 percent). Most of the latter are active in GPET, which also includes nanobiotechnology, confirming the fact that companies tend to manage their ancillary activities internally. 38 percent of the companies that operate in the red biotech field derive from start-ups, 20 percent from subsidiaries of multinational companies, 18 percent from academic spin-offs, 7 percent from Italian pharmaceuticals, and 8 percent from industrial spin-offs or spin-outs.

B) WHITE BIOTECH (INDUSTRIAL BIOTECHNOLOGY)

Table 5: Italian White Biotech industry main figures

	2013	2014
Number of companies	70	69
Total turnover (€mln)	289	241
R&D Investments (€mln)	31	29
Number of employees in R&D	526	567

Source: Assobiotech report 2014

The white biotech refers to the use of modern biotech methods for the processing and the production of chemicals, materials, and fuels, including “bioremediation” technologies for environmental protection. The majority of white companies (85 percent) are micro-sized or small with 44 percent of the white companies originating from start-ups, 26 percent from academic spin-offs, and 13 percent from industrial spin-offs or spin-outs. Almost all the white biotech turnover can be attributed to approximately 42 pure Italian biotech companies. Total turnover reached €241 million, with a 20 percent decrease compared to 2011 which is almost due to the drop in revenues of one single company. Once again, the whole white biotech turnover can be attributed to pure biotech companies.

C) GREEN BIOTECH (AGRICULTURAL BIOTECHNOLOGY)

Table 6: Italian Green Biotech industry main figures

	2013	2014
Number of companies	95	94
Total turnover (€mln)	143	147
R&D Investments (€mln)	120	106
Number of employees in R&D	854	843

Source: Assobiotech report 2014

The green biotech category includes the use of modern biotech methods for the production of transgenic plants with applications in the food, chemical, material or fuel sector, molecular pharming (production of drugs in plants), and testing to reveal the presence of ingredients/contaminants in food. The majority of companies (71 percent) operating in the green biotech sector are made up of pure biotech, while the remainder (29 percent) is divided among other Italian biotech (26 percent) and Italian subsidiaries of multinational companies (3 percent). The predominant presence of small (19 percent) and micro (66 percent) companies, followed by big (8 percent) and medium (7 percent) enterprises, characterize the green sector. Testing represents a relevant share of green biotech.

Below is a short list of applications that biotechnology provides to the agro-food sector in Italy:

Identification of a pathogen genotype in food: the use of DNA-based tests allows for distinguishing

different bacterium varieties (i.e. Salmonella, Listeria, and Escherichia coli) and identifying the pathology source;

Analysis of food allergens: the use of advanced DNA-based technologies (PCR) allows for identifying food allergens much more easily than using traditional methods;

GMO Identification: the analysis to investigate the presence of GMO products through biotechnology has become a wide spread standard procedure, as a result of EC Regulation N.1830/2003, concerning the traceability and labeling of genetically modified organisms and the traceability of food and feed products produced from genetically modified organisms.

D) GENOMICS, PROTEOMICS AND ENABLING TECHNOLOGIES (GPET)

Genomics, proteomics, and enabling technologies (GPET) include all genomic (investigation of the structure and function of genes) and proteomic activities (analysis of protein regulation, expression, structure, post-translational modification, interactions and function), bioinformatics, biochips and other bio-related tools, biopharmaceutical production, molecular basic research, and further enabling technologies.