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The Italian Biotech Industry 2016

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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 sectors.

General Information:
The Italian Biotech Industry 2016

As reported by Assobiotec, 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 2015, 489 biotech companies engaged in research and development were recorded. Among these, 256 fall under the definition of pure biotech companies (whose core business activities are exclusively related to biotechnology).

Table 1: Italian Biotech Industry Main Figures

	2015
Number of companies	489
Total turnover (€/000)	9.440.916
R&D Investments (€/000)	1.855.187
Number of employees	9.229

Source: BioInItaly Report 2016

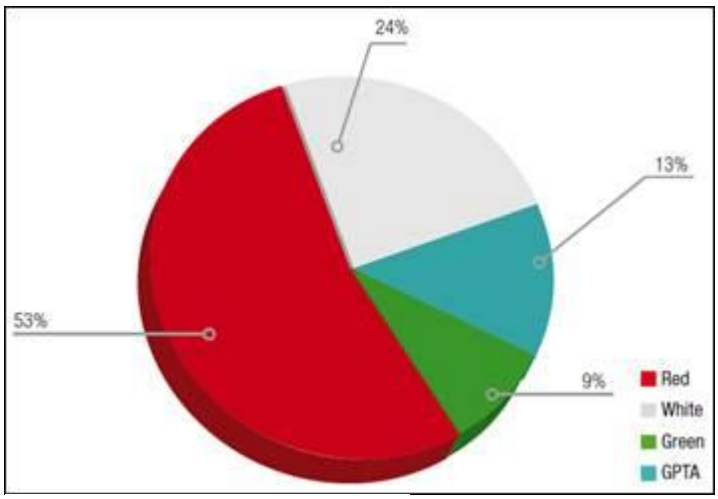
Biotechnology companies can be divided into the following categories according to their field of operation:

- Red Biotech: medical biotechnology
- White Biotech: industrial biotechnology
- Green Biotech: agricultural biotechnology
- Multi-core: mix of the previous categories.

Fifty-three percent of the 489 recorded companies are exclusively active in red biotech, 24 percent in white biotech, 13 percent operate in more than one field of application as multi-core, while 9 percent in green biotech.

Approximately 75 percent of the Italian biotech companies are micro-sized or small (less than 50 employees); 14 percent are medium-sized (from 50 to 250 employees), and the remaining 10 percent are large-sized (more than 250 employees).

Figure 2: Distribution of biotech companies among the 4 sectors in Italy



Source: BioInItaly Report 2016

According to the BioInItaly report 2016, most biotech companies are located in Lombardia (141), Piemonte (57), Lazio (45), Emilia-Romagna (44), Toscana (39), Veneto (38), Friuli Venezia Giulia (25), and Campania (23). Lombardy has been particularly praised for its university infrastructure, strong tradition of entrepreneurship, and its regional government's support for biotech companies.

A) RED BIOTECH (MEDICAL BIOTECHNOLOGY)

Table 3: Italian Red Biotech Industry main figures

	2015
Number of companies	261
Total turnover (€/000)	7.131.284
R&D Investments (€/000)	455.902
Number of employees	6.566

Source: BioInItaly Report 2016

Red biotech accounts for 75 percent of total turnover of the whole biotech industry, representing 90 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.

B) WHITE BIOTECH (INDUSTRIAL BIOTECHNOLOGY)

Table 4: Italian White Biotech industry main figures

	2015
Number of companies	119
Total turnover (€/000)	1.642.815
R&D Investments (€/000)	33.523
Number of employees	1.352

Source: BioInItaly Report 2016

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. Once again, almost all the white biotech turnover can be attributed to approximately 40 pure Italian biotech companies.

C) GREEN BIOTECH (AGRICULTURAL BIOTECHNOLOGY)

Table 5: Italian Green Biotech industry main figures

	2015
Number of companies	44
Total turnover (€/000)	592.906
R&D Investments (€/000)	8.261
Number of employees	897

Source: BioInItaly Report 2016

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.

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-transitional modification, interactions and function), bioinformatics, biochips and other bio-related tools, biopharmaceutical production, molecular basic research, and further enabling technologies.