

Identification

Please fill out this module once the questionnaire on Innovation in companies 2014 has been completed

A. Current use of biotechnologies

Biotechnology comprises the application of science and technology to living organisms, as well as to their parts, products and models, in order to alter living or inert material, for the purpose of producing knowledge, goods and/or services

A.1 Does your unit currently use any of the biotechnologies shown below?

	YES	NO
1. Genetic code. Technologies referring to DNA	<input type="checkbox"/>	<input type="checkbox"/>
2. Technologies referring to proteins, amino acids, enzymes and other molecules, as well as hormones and growth factors	<input type="checkbox"/>	<input type="checkbox"/>
3. Cultures and cell and tissue engineering, immune response stimulants or vaccines, handling of embryos	<input type="checkbox"/>	<input type="checkbox"/>
4. Bio-processes: use of micro organisms, bacteria, viruses, fungi, mould, yeast, microbial processes (bio-reactors, fermentation, bio-leaching, bio-pulping, bio-whitening, bio-desulphurisation, bio-remedying and bio-filtering)	<input type="checkbox"/>	<input type="checkbox"/>
5. Sub-cellular organisms (gene therapy and viral vectors)	<input type="checkbox"/>	<input type="checkbox"/>
6. Bio-computing (construction of genome databases, protein sequences; modelling complex biological processes, including systems biology)	<input type="checkbox"/>	<input type="checkbox"/>
7. Nano-biotechnology (application of instruments and processes of nano/micro-manufacturing for construction of apparatus for studying biosystems and applications in breaking drug-addiction, diagnoses etc.)	<input type="checkbox"/>	<input type="checkbox"/>
8. Others (specify):	<input type="checkbox"/>	<input type="checkbox"/>

A.2 The activity or activities related to biotechnology carried out in their unit are:

1. Main and/or exclusive ☐ 2. A secondary line of business ☐ 3 Tool necessary for the production process ☐

In the case of marking option 2, please indicate the percentage dedicated to biotechnology %

A company that allocates at least 75% of its economic and human resources to Biotechnology shall mark option 1.

A.3 Please indicate the area(s) of final application of products obtained from use of previous biotechnologies

	YES	NO
1. <u>Human health</u> : diagnosis, molecular therapy, advanced therapies, biological technologies supporting discovery and development of pharmaceuticals	<input type="checkbox"/>	<input type="checkbox"/>
2. <u>Animal health and aquaculture</u> : diagnosis, molecular therapy, animal production	<input type="checkbox"/>	<input type="checkbox"/>
3. <u>Food</u> : diagnosis, food bio-processes, additives/ingredients, others	<input type="checkbox"/>	<input type="checkbox"/>
4. <u>Agriculture and forest production</u> : biological control, culture and propagation techniques, new varieties, diagnosis, others	<input type="checkbox"/>	<input type="checkbox"/>
5. <u>Environment</u> : diagnosis, environmental management	<input type="checkbox"/>	<input type="checkbox"/>
6. <u>Industry</u> : biofuels, industrial bio-processes, others	<input type="checkbox"/>	<input type="checkbox"/>

B. Internationalisation of activities relating to biotechnology

B.1 In relation to activities based on biological sciences and technologies, did your unit have income of an international origin during 2014?

YES ☐ NO ☐ ⇒ Go to section C
↓

B.2 Of turnover for 2014, please indicate the amount represented by income of an international origin related to activities based on biological sciences and technologies

Value (€ without decimals)

Income of an international origin _____

Of the previous figure, indicate the percentage represented in 2012 by income from...

... EU _____ %
... all other countries _____ %
TOTAL

1	0	0
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 %

B.3 Distribution of turnover of an international origin related to activities based on biological sciences and technologies

Breakdown, as a percentage, of the figure listed in B.2 according to the following classification. (Do not write decimals, and check that the sum of the column is 100%).

1. International trade in products and services (including research by contract) _____ %
2. Milestones, royalties, sale or licensing of technologies outside Spain _____ %
3. Subsidies of foreign origin (framework programme, multilateral funds, etc.) _____ %
4. Other (specify) _____ %
TOTAL

1	0	0
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 %

C. Resources intended for R&D in biotechnology in 2014

C.1 Has your unit carried out internal R&D activities related to biotechnology?

YES ☐ NO ☐ ⇒ Please go to section C.5
↓

C.2 Staff at the unit working in R&D activities in biotechnology (annual average)

	Total	Women	Total (FTE) (1 decimal)	Women (FTE) (1 decimal)
1. R&D researchers in biotechnology _____	_____	_____	_____	_____
2. Technicians and assistants in R&D in biotechnology _____	_____	_____	_____	_____
TOTAL STAFF IN R&D IN BIOTECHNOLOGY (1+2)	_____	_____	_____	_____

C2.1. Hiring of external consultancy to carry out internal R&D activities in 2014

Out of the preceding TOTAL PERSONS, please indicate the number of external consultants working in situ, if any _____
Out of the preceding TOTAL FTE, please indicate the number of external consultants working in situ _____

C.3 Expenditure in internal biotechnology R&D activities in 2014

Expenses on remunerations are those corresponding to the total paid to the researchers on FTE and to the total technicians and assistants on FTE specified in **C.2**. For the rest of the items in this section, expenditure will be calculated as a percentage of the part that corresponds to R&D.

The costs of the external consultants working "in situ" should be included only in the sections "3. Other current expenses "and "3.1. Total cost of the hiring of external consultants working "in situ" ".

	Value (€ without decimals)
1. Remuneration of researchers on FTE (this includes the remuneration of the interns)	
2. Remuneration of technicians and assistants on FTE	
3. Other current expenses (without VAT or amortizations)	
3.1. Out of the previous figure, please indicate the total cost of the hiring of external consultants working "in situ" to carry out internal biotechnology R&D activities	
A. Total current expenses on R&D (1+2+3)	
4. Equipment and instruments (without VAT)	
5. Land and buildings (without VAT)	
6. Acquisition of specific software for R&D (including licence instalments) (without VAT)	
B. Total capital expenses on R&D (4+5+6)	
C. TOTAL (A+B)	

C.4 Origin of funds for internal R&D activities in biotechnology in 2014

Breakdown of the total internal expenses on biotechnological R&D from question **C.3.C**, according to the original source of the funds received. In the case of public funds for carrying out biotechnological R&D, we must distinguish between subsidies (including non-refundable loans) and contracts (and purchases) with the Administration. Refundable loans for carrying out biotechnological R&D obtained from both the Administration and other sources, shall be included as their own funds.

The amount set in this section should correspond to the funds executed during 2014.

Origin of the funds	Value (€ without decimals)
A. Financing by the company itself	
- Own funds	
- Loans (applied amount in this year)	
B. Financing from other Spanish companies	
- From companies in the same group	
- From other public companies	
- From other private companies and research associations	
C. Public financing	
- Subsidies from the Central State Administration and dependent entities	
- Contracts with the Central State Administration and dependent entities	
- Subsidies from the Autonomous Community and Local Administrations	
- Contracts with the Autonomous Community and Local Administrations	
D. Other national sources	
- From universities	
- From private non-profit institutions	
E. Funds from abroad	
- From foreign companies in the same group	
- From other foreign companies	
- From European Union programmes	
- From foreign Public Administrations	
- From foreign universities	
- From foreign private non-profit institutions	
- From other international organisations	
TOTAL (must coincide with C.3.C)	

C.5. Purchase of biotechnology R&D in 2014

This is expenditure motivated by the acquisition of R&D services in biotechnology outside the body or centre by means of purchase, contract, agreement, etc. This does not include institutional fees for financing other public or private, international organisations, ... not involving a direct purchase of R&D in Biotechnology

Value (€ without decimals)

A. Purchase of R&D in biotechnology in Spain (without VAT)

1. To companies in the same group _____
2. To other companies _____
3. To research associations _____
4. To Public Administration organisations (including hospitals) _____
5. To universities _____
6. To private non-profit institutions _____

B. Purchase of R&D in biotechnology abroad (without taxes)

1. To foreign companies in the same group _____
2. To other foreign companies _____
3. To institutions from foreign Public Administrations _____
4. To foreign universities _____
5. To foreign private non-profit institutions _____
6. To other international organisations _____

C. Total purchase of R&D in biotechnology (A+B)

D. Obstacles to the development of biotechnologies

(Please mark with a cross (x) the appropriate alternatives)

	High	Medium	Low	Does not know
1. Resources / Contributions for biotechnology				
1.1. Access to capital	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.2. Access to technology / information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.3. Access to human resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Biotechnology markets				
2.1. Disconnection from the value chain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.2. Lack of access to international markets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.3. Lack of distribution and marketing channels	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Limitations				
3.1. Public acceptance / awareness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.2. Legal and regulatory requirements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.3. Time / cost	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.4. Difficulty accessing patenting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

E. Industrial and intellectual property rights related to Biotechnology

E.1 During the period 2012-2014, did the company apply for any patents to protect its inventions or innovations related to biotechnology?

Yes ☐ NO ☐ → Continue in the section E.2



• Indicate the number of priority patents requested between 2012-2014 _____

• Indicate the number of priority patents requested between 2012-2014 by type of patent according with the Patent Offices in which they have been presented

SPTO Patent _____ USPTO Patent _____ Other offices' Patents _____

- Indicate the number of patents in force as of 31st December 2014 according with the Patent Offices in which they have been presented

SPTO Patent _____ USPTO Patent _____ Other offices' Patents _____

How many of these are exploited directly by the Company? _____

What is the value you would quantify in the said direct exploitation in 2014? ____ - whole numbers

SPTO: Spanish Patent and Trademark Office. USPTO: U.S. Patent and Trademark Office.

E.2 During the 2012-2014 period, did the company carry out any of the following operations: ...

	YES	NO
... acquisition of IN*licenses or purchase of patents, industrial design rights, royalties or registered trademarks from other companies, universities or research centres, related with Biotechnology? _____	<input type="checkbox"/>	<input type="checkbox"/>
... OUT* licenses granting or sale of patents, industrial design rights, royalties or registered trademarks to other companies, universities or research centres, related with Biotechnology? _____	<input type="checkbox"/>	<input type="checkbox"/>

*Acquisition of licenses of routine software for computers, such as operating systems, word processors, spreadsheets, etc. is excluded

IN license: Acquisition of a license or right of use of a product or technology for R&D, industrial and commercial purposes.

OUT license: concession of a license or right of use of a product or technology for R&D, industrial and commercial purposes.

If the answer was NO to both questions, go to section E.3

E.2.1 Indicate the number of licenses acquired and/or conceded related with Biotechnology and their value in 2014 by type:

	Number	Value (- whole numbers)
National IN license	_____	_____
National OUT license	_____	_____
International IN license	_____	_____
International OUT license	_____	_____

E.3 Expenditure for the protection of intellectual and industrial property rights related with Biotechnology in 2014

Indicate the value of the expenditure effected in 2014 for the protection of intellectual and industrial property rights (expenses generated by the registration of new intellectual or industrial property titles are included, as well as the maintenance of the existing ones):

_____ - whole numbers

Annex

1. Biotechnology applications

1.1 Red or health biotechnology

Biotechnology applied to medical processes (human and animal health), in both the therapeutic field and in the diagnosis of illnesses. Biotechnology is customarily identified with genetics, but there are other useful and important applications of this scientific area, such as the development of medication.

EXAMPLES: BIOTECHNOLOGY USE IN MEDICINE

- a) Production of antibiotics, vaccinations and serums, through the use of micro organisms (moulds, bacteria, etc.).
- b) Production of other substances, such as hormones.
- c) Some blood coagulation factors or certain enzymes, used in pharmaceutical products, may be obtained from the culture of micro organisms in which the genes of interest have been inserted.
- d) In regenerative therapies: such as the use of biomaterials for bone regeneration. The term “biomaterial” refers to those pharmacologically inert materials used in the manufacture of devices that are to be implanted within a living being and that will interact with that living being.

1.2 Green or food and agriculture biotechnology

Agricultural biotechnology

Biotechnology applied to agricultural processes.

Food biotechnology

The set of techniques or processes that use living organisms or substances that come from them, in order to produce or modify a food, improve the plants or animals from which the food comes, or develop micro organisms that intervene in the preparation thereof.

Through biotechnological processes, it is possible to improve the physical and chemical characteristics of plants and animals, as well as the sensory and nutritional properties of foods.

Micro organisms such as bacteria, fungi or yeast are the active agents in the transformation of foods. Likewise, these micro organisms are selected and improved, seeking adequate characteristics.

Foods may also be subjected to non-denaturalising biotechnological processes that preserve the original biological properties of the species or bioprocesses that improve their preservation.

EXAMPLES: BIOTECHNOLOGY USE IN AGRICULTURE AND FOOD

- a) New or improved seed varieties; fruit and horticultural varieties that require less use of agrochemicals and are more resistant to pathogens; more flavourful fruit, vegetables and pulses.
- b) In the horticultural field: coloured varieties that are impossible to obtain through crossing or hybridisation.
- c) Nutraceuticals: foods with more vitamins and minerals; probiotic foods: with significant physiological effects.
- d) Processes such as the production of beer, bread, wine, cheese or yoghurt imply the use of bacteria or yeast. The use of enzymes in the manufacture of juice.
- e) In bread baking: the use of enzymes to whiten flour, to improve its behaviour in kneading or the plasticity of the dough.
- f) Production of glucose- or fructose-rich syrups, used as sweeteners in foods and beverages.
- g) Use of biosensors (devices built with at least one component of a biological nature) in any state of food production, as in the control of raw materials. Diagnosis kits for the detection of pathogens in foods.

1.3 White or industrial technology

Combination of biotechnology and biochemical processes. The main objective is to create easily degradable products that consume less energy and generate less waste during production.

EXAMPLES: BIOTECHNOLOGY USE IN INDUSTRY

- a) Chemical compounds and enzymes, synthesised by micro organisms, for producing valuable chemical products or destroying hazardous chemical pollutants. Some basic chemical products may be obtained by fermentation.
- b) The soap and detergent industry uses enzymes and products derived from biomass. Many oils and fats used in soaps are from a vegetable or animal origin, and many detergents contain enzymes that are produced by natural micro organisms or by organisms that are genetically modified.
- c) Biotechnology processes, employing bacteria, enzymes and other micro organisms, used in cosmetics and dermopharmaceuticals.
- d) In paper manufacturing, cellulose may also be obtained by bacterial synthesis. Through biotechnological procedures, it is possible to increase the cellulose production in trees, and the quality of the fibres, as well as decrease the energetic and chemical costs in paper production. For recycling paper, enzymes can also be used, which are used in bio-whitening as well.
- e) Textile industry. Improvement in natural fibres; obtaining new natural-origin fibres through proteins, or synthetic-origin fibres.
- f) Production of biodegradable compounds, such as bioplastics, using bacteria.
- g) Production of bioenergy: biofuels, such as biomass, biodiesel, using vegetable oils; bioalcohol using cane sugar; conversion of sugars into ethanol; biogases; biobatteries.
- h) Wastewater filtering; use of micro organisms for the decomposition of petroleum.

1.4 Blue or sea biotechnology

Biotechnology developed in marine and aquatic environments. Identification and study of natural marine substances as the basis for new products that are useful in sectors such as the pharmaceutical, food, cosmetic sectors, etc.

EXAMPLES: BLUE BIOTECHNOLOGY USE

- a) Fertilisation of ponds to increase the availability of the fodder. Micro seaweed constitutes a source of new and diverse products, such as biopolymers, colourings, and different therapeutic substances.