

# World Congress on Beneficial Microbes : Food, Pharma, Aqua and Beverages Industry

Date & Venue: 25-27 August , Valencia, Spain

(Theme: Exploiting the Power of Microbes for the Industrial Development)

## Summary

Valencia is the third largest city in the Spain. Valencia stands on the banks of the Turia River, located on the eastern coast of the Iberian Peninsula and the western part of the Mediterranean Sea, fronting the Gulf of Valencia. Valencia enjoyed strong economic growth over the last decade, much of it spurred by tourism and the construction industry with concurrent development and expansion of telecommunications and transport. Valencia's port is the biggest on the Mediterranean western coast. And due to its location western coast makes it a big contributor in the Spanish aquaculture market. There is huge amount of micro flora on the coastal area. Valencia is also major exporter Food and beverages through-out the Spain as well as Europe. University of Valencia is the oldest and one of the distinguished universities in the Spain. Grupo calvo is the one of the major beverages company in the Spain. And cinfa laboratories are leading pharmaceutical universities in Spain.

Microbes are present everywhere in earth. They are used in food products, drug production, medicines, energy sector and agriculture. Even present in human systems and plays vital role in human health system, basically they are becoming one of the key sources of fulfilling our requirements due to their variety of applications. Due to their wide variety of applications, microbes present a huge scope for industrial sector for productions of microbial products.

For more details please visit- <http://beneficialmicrobes.omicsgroup.com>

## Importance & Scope

Microbes are useful for us in many ways in various industries.

## Production of Foods

Microbes are a key component in both home and industrial food preparation. Lactic acid bacteria are used to make yogurt, cheese, sour cream, buttermilk and other fermented milk products. Vinegars are produced by bacterial acetic acid fermentation. Yeast is used in the manufacture of beer and wine and for the leavening of breads. It is also involved in fermentations to convert corn and other vegetable carbohydrates into ethanol to make beer, wine, or gasohol; but bacteria are the agents of most other food fermentations. Other fermented foods include soy sauce, sauerkraut, dill pickles, olives, salami, cocoa and black teas.

## Medical, Pharmaceutical and Biotechnological Applications

Certain microbes can help us in the fight against other microbes. In human and veterinary medicine, that is used to treat and prevent infectious diseases, microbes are a source of antibiotics and vaccines.

Antibiotics are substances produced by microorganisms that kill or inhibit other microbes. They are used in the treatment of infectious disease. Antibiotics are produced in nature by molds such as Penicillium and bacteria such as Streptomyces and Bacillus.

Vaccines are substances derived from microorganisms and are used to immunize against disease. The microbes that are the cause of infectious disease are usually the ultimate source of vaccines.

Biotechnology Microbiology makes a significant contribution to biotechnology, an area of science that applies microbial genetics to biological processes for the production of useful substances. Microorganisms play a central role in recombinant DNA technology and genetic engineering. Important tools of biotechnology are microbial cells, microbial genes and microbial enzymes.

## Other benefits of microbes

The microbes that normally live in association with humans on the various surfaces of the body (called the normal flora), such as Lactobacillus and Bifidobacterium, are known to protect their hosts from infections and otherwise promote nutrition and health. They help purify waste water in waste water treatment facilities. They help reduce atmospheric nitrogen and transform it to ammonia important for agriculture. (1)

## Current Research

### Recent benefits / advantages of bacteria

Gulf Oil Spill Gases Eaten by Bacteria-Certain types of bacteria can actually clean up troublesome environmental pollutants like spilled petroleum. In fact, a specific strain called Alcanivorax drastically increases in population when an oil spill provides them with large amounts of food, so that they're able to remove much of the oil. They're at work on the Deep water Horizon spill in the Gulf of Mexico right now, and while they certainly can't undo the vast damage that has been done to this region as a result, they definitely provide a beneficial effect.

Bacteria Eat Pollution and Generate Electricity-Bacteria with tiny wire-like appendages called nanowires not only digest toxic waste - including PCBs and chemical solvents - they produce electricity while they're at it. One type in particular, called Shewanella, is a deep-sea bacteria that grows these oxygen-seeking nanowires when placed in low-oxygen environments. Researchers discovered that when the microbes' nanowires are pricked with platinum electrodes, they can carry a current. If these capabilities can be harnessed effectively, they could one day be used in sewage treatment plants to simultaneously digest waste and power the facilities.

Geobacter Consume Radioactive Contamination-The nanowires grown by certain types of bacteria can also be used to immobilize harmful materials - like uranium - and keep them from spreading. A research team at Michigan State University has learned that Geobacter bacteria, which is found naturally in soil, essentially electroplates

uranium, rendering it insoluble so it can't dissolve and contaminate groundwater. These bacteria can be brought into uranium contamination sites like mines and nuclear plants in order to contain the radiation, potentially limiting the disastrous consequences of these types of spills. (2)

### Members Associated with Microbial Research

City Statistics- Microbiology department of university of Valencia. There are 50 researchers working in the field of microbiology in university of Valencia.

Country Statistics- There is total 78 universities in Spain.

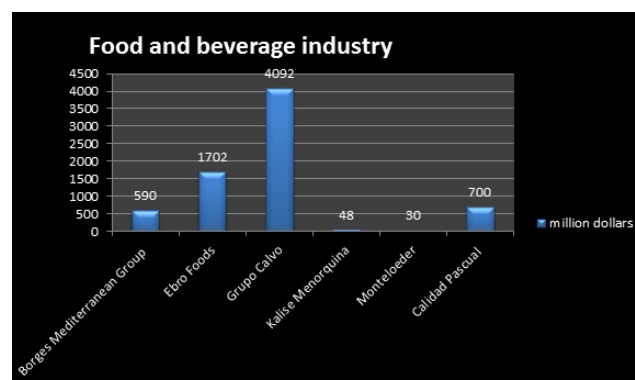
Worldwide statistics- Approximately 20000-30000 researchers working in the field of microbiology.

### Societies Associated with Microbial Research in Europe

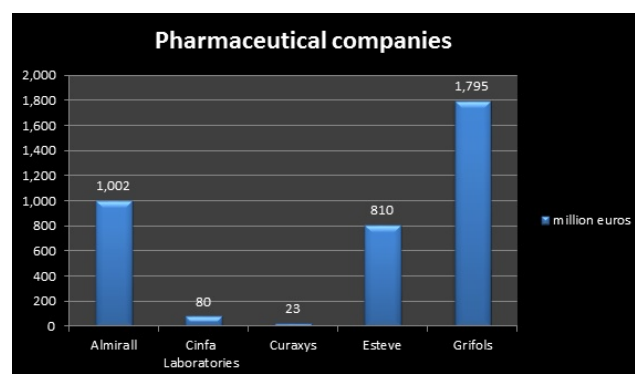
- Country Statistics- Spanish Society for Microbiology
- European statistics-52
- Armenian Microbiological Association
- Austrian Society for Hygiene, Microbiology and Preventive Medicine
- Belgian Society for Microbiology
- Bulgarian Society for Microbiology (Union of Scientists in Bulgaria)
- Microbiology Society of BiH
- Belarussian Non-governmental Association of Microbiologists
- Swiss Society for Microbiology
- Czechoslovak Society for Microbiology
- German Society of Hygiene and Microbiology
- Association for General and Applied Microbiology
- Danish Microbiological Society
- Estonian Society for Microbiology
- Spanish Society for Microbiology
- Spanish Society for Virology
- European Culture Collections' Organisation
- Finnish Biochemical, Biophysical, and Microbiological Society
- French Society for Microbiology
- International Biodeterioration and Biodegradation Society
- Society for Anaerobic Microbiology
- Greek Society for Microbiology
- Croatian Microbiological Society
- Hungarian Society for Microbiology
- Israel Society for Microbiology
- Microbiological Society of Iceland
- Italian Association for Clinical Microbiology
- Italian Society of Microbiology
- Italian Society of General Microbiology and Microbial Biotechnologies
- Italian Society of Agro-Food and Environmental Microbiology
- Italian Society for Virology
- Latvian Society for Microbiology
- Society for Microbiology of Moldova
- Macedonian Microbiological Society
- Royal Netherlands Society for Microbiology
- Norwegian Society for Microbiology
- Polish Society of Microbiologists
- Portuguese Society of Microbiology
- Society for Virology
- Romanian Society for Microbiology
- Serbian Society for Microbiology

- Interregional Association for Clinical Microbiology and Antimicrobial Chemotherapy
- Interregional Russian Microbiological Society
- Swedish Society for Microbiology
- Slovenian Microbiological Society
- Turkish Microbiological Society
- Society of Microbiologists of Ukraine
- British Mycological Society
- British Phycological Society
- Society for Applied Microbiology
- Society for General Microbiology
- Scottish Microbiology Society (3)

### Industries Associated with Microbes in Spain



**Figure 1:** Market Analysis of Food and beverages Industries companies in Spain (Source)



**Figure 2:** Market Analysis of Pharmaceutical companies in Spain (5)

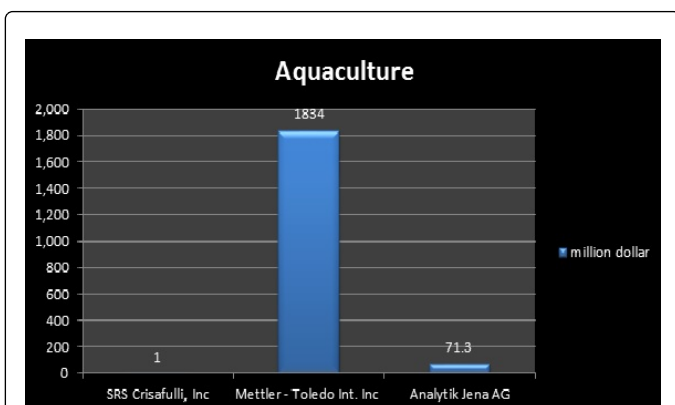


Figure 3: Market Analysis of Aquaculture companies in Spain (6)

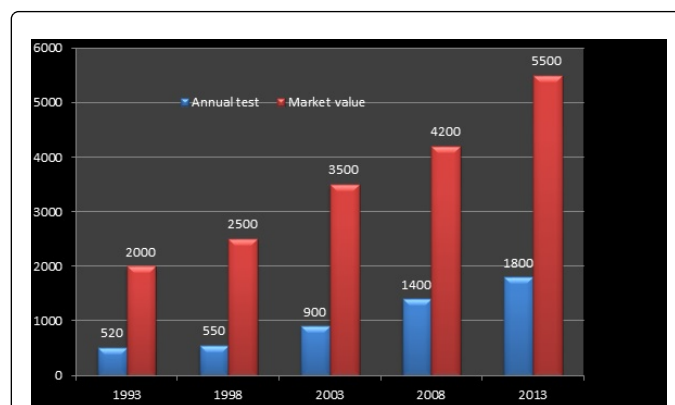


Figure 6: Pharmaceutical Industries Market Analysis (10)

Turnover €mill	>20	10-20	5-10	1-5	<1	Total No.	Total turnover €mill	Mean turnover €mill
UK	4	5	6	5	6	24	4857	204
Germany	7	6	5	56	39	113	6254	55
Spain	2	3	4	32	55	94	1802	19
France	1	2	7	46	99	155	139	1.5
Italy	1	4	2	43	109	159	1228	1.4
Other EU-27	0	3	5	36	149	193	2251	1.2

Figure 3: Aquaculture companies in Europe (Total no of companies=738 Total turn-over =1982.2 million euros (7)

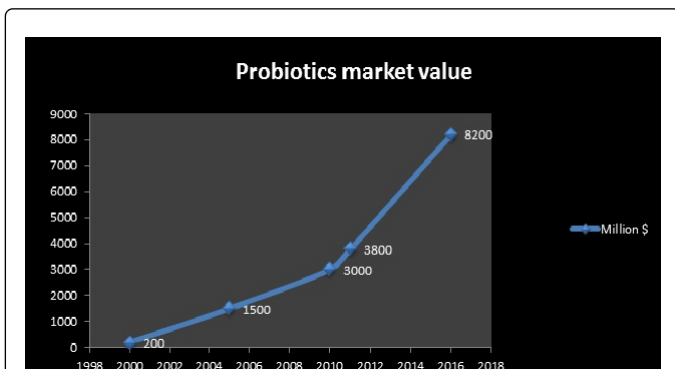


Figure 4: World-wide Probiotics Market Analysis (8)

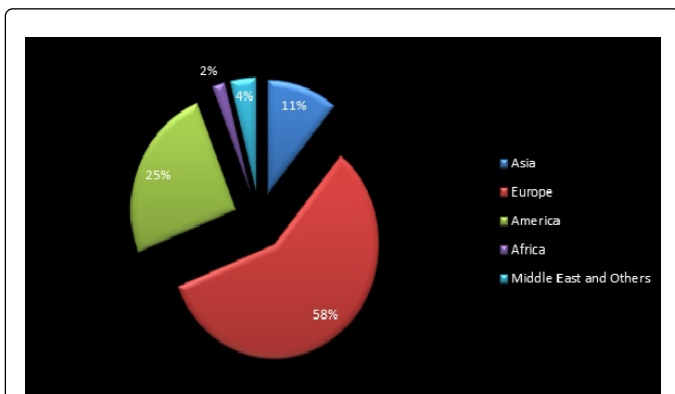


Figure 5: World-wide Food Product production Analysis (9)

### Associations/ societies

- Spain
- Spanish Society for Microbiology
- Spanish Aquaculture Society
- The National Association of the Pharmaceutical Industry in Spain
- World data
- Approx. no of major associations and societies in world
- Aquaculture societies- 100
- Pharmaceutical societies-160
- Microbiology societies -170

### Target Audience

#### From Academics

- Directors
- Professors
- Visiting professors
- Senior scientists
- Lectures
- Associate professors
- Assistant professors
- Post doc fellows
- Ph.D students

#### From industries

- Directors
- President
- CEOs
- Vice presidents
- Chairman
- R&D heads
- Research scientist of Bio firms
- Board of directors of Biotech firms
- Food industry
- Pharmaceutical firms
- Aquaculture firms and Beverage industry
- Experts in microbiology
- Experts in microbial fermentation
- Experts in pharmaceutical industry

**Fund Allotment to Beneficial Microbes Research**

European Commission

**Funding agency in Europe**

The European Research Council

<b>Name of Agency</b>	<b>Budget</b>
<b>The European Research Council</b>	for year 2020-€ 70 billion
<b>European Commission</b>	€ 1.7 billion
<b>European Science Foundation</b>	€ 52.8 million
<b>Spanish National Research Council</b>	€ 665 million

**Figure 7:** European Science Foundation (11)**References**

1. <http://www.life-materials.com/microbes-and-human-life.html>
2. <http://webecoist.momtastic.com/2011/09/26/beneficial-bacteria-12-ways-microbes-help-the-environment/>
3. <http://www.fems-microbiology.org/member-societies.html>
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11. <http://www.europski>