Gut biology and probiotic microorganisms in food template

Contents

Objective

To create a technology landscape report on **Gut Biology and Probiotic microorganisms in food**

- Identify market players with prolific IP activity in the technology area
- Segment the players by the industry they belong to

Note: *This report is just a template and gives an indication of what the paid report contains.*

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Background

Definition

Etymologically, the term probiotic appears to be a composite of the Latin preposition **pro** ("for") and the Greek adjective ???????? (biotic), the latter deriving from the noun ???? (**bios**, "life").Miller et al British Journal of Nutrition, 2003 Lilly and Stillwell coined the term probiotic in 1965 and defined it as "a substance produced by one microorganism stimulating the growth of another microorganism" and understood a probiotic as opposite to an antibiotic.Rusch 2002 Over the course of time various definitions of probiotics have surfaced and the internationally adopted FAO/WHO definition was coined in 2001 which describes probiotics as
"Live microorganisms which when administered in adequate amounts confer a health benefit on the host" FAO report 2002

The International Study Group on New Antimicrobial Strategies (ISGNAS), developed a concept for the detailed definition of probiotics in three categories.

1. Medical probiotics (drugs) - a microbial preparation which contains live and/or dead microorganisms including their components and products determined to be employed as a drug for therapeutic purposes.

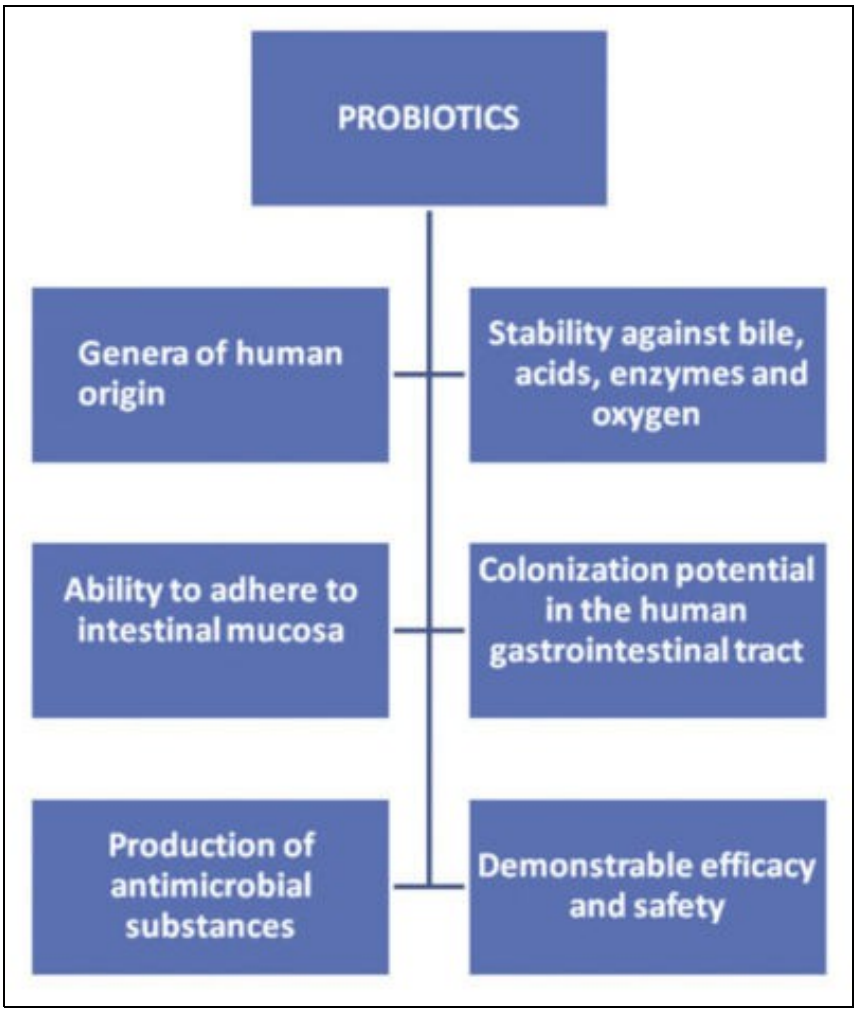
2. Pharmaceutical probiotics (food supplements) - a microbial preparation designed for manufacture of food supplements.

3. Alimentary probiotics (food) - a microbial preparation designed for use in food fermentation or food production. The mode of action includes immunomodulation, host microflora modulation, and the modulation of metabolic processes. Rusch 2002


Please click here to view the Common probiotic microorganisms

Science behind probiotics

An organism may be classified as a probiotic(in human beings) based on the following criteria.



Therapeutical use of probiotic formulations in clinical practice T.Lannitti et al Clinical Nutrition Journal, 2010
Of the probiotic microbes, the genera *Bifidobacter* and *Lactobacillus* are very prevalent. They restore the normal intestinal microflora after antibiotic treatment, produce digestive enzymes, improves food digestibility, suppresses food-borne pathogens.

Probiotics as food

Probiotics essentially work by helping to maintain and replenish these colonies of beneficial bacteria. They can be ingested through a variety of means, including daily capsules, yogurt shots, or enhanced dairy products. Capsules of probiotics are similar to capsules of any nutrient, and contain live bacteria within an easily digestible shell. Small yogurt shots, which contain less than one ounce of yogurt infused with high numbers of probiotics, can be taken once a day instead of the capsule. Significant numbers of probiotics have also become included in many types of milk, cheeses, and yogurts to help keep numbers of gut flora high. Probiotic effects ehow.com

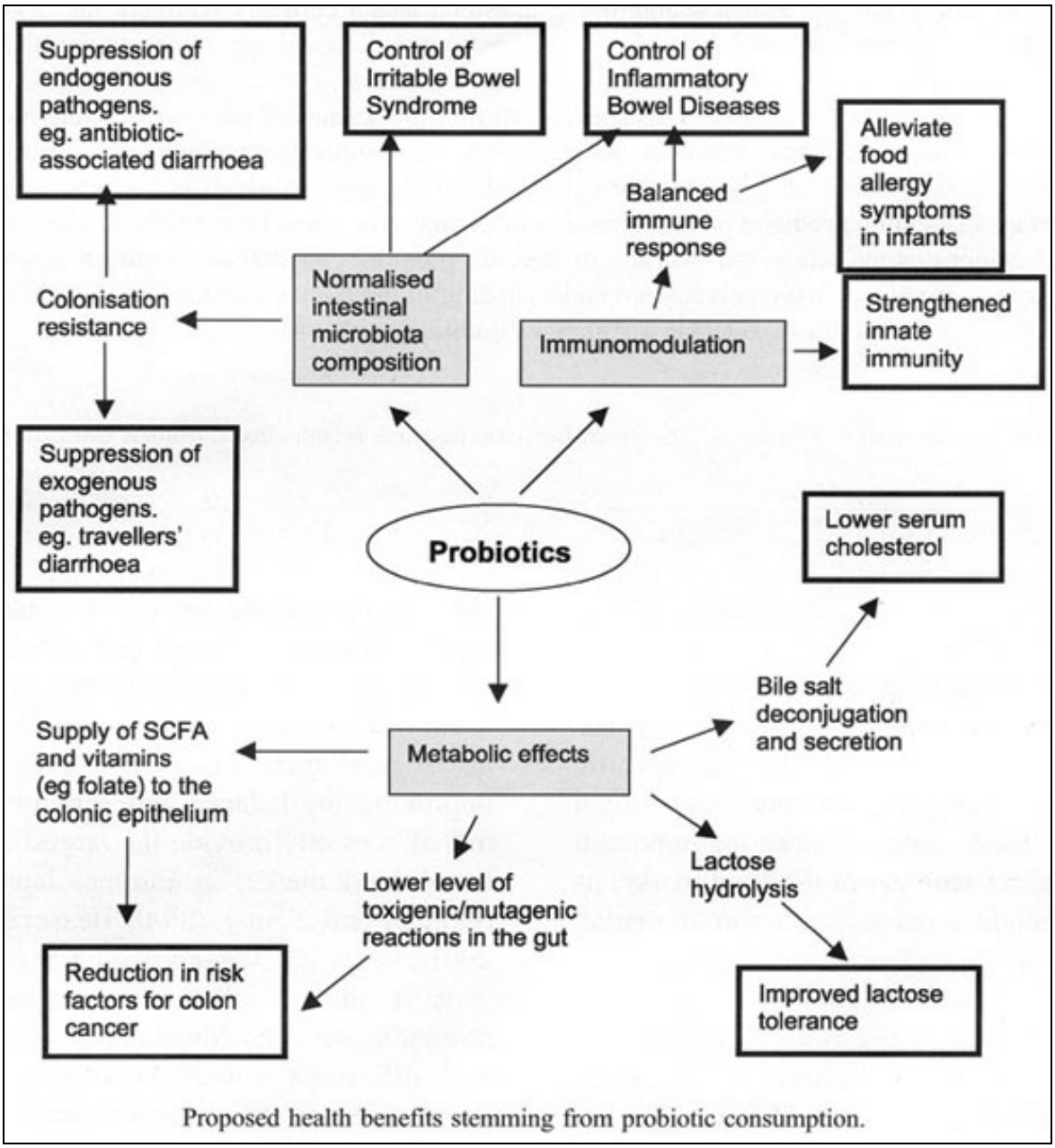
Health benefits of probiotics

The world is full of microorganisms (including bacteria), and so are people's bodies -- in and on the skin, in the gut, and in other orifices. Friendly bacteria are vital to proper development of the immune system, to protection against microorganisms that could cause disease, and to the digestion and absorption of food and nutrients. Each person's mix of bacteria varies. Interactions between a person and the microorganisms in his body, and among the microorganisms themselves, can be crucial to the person's health and well-being.

This bacterial "balancing act" can be thrown off in two major ways:
1. By antibiotics, when they kill friendly bacteria in the gut along with unfriendly bacteria. Some people use probiotics to try to offset side effects from antibiotics like gas, cramping, or diarrhea. Similarly, some use them to ease symptoms of lactose intolerance -- a condition in which the gut lacks the enzyme needed to digest significant amounts of the major sugar in milk, and which also causes gastrointestinal symptoms.
2. "Unfriendly" microorganisms such as disease-causing bacteria, yeasts, fungi, and parasites can also upset the balance. Researchers are exploring whether probiotics could halt these unfriendly agents in the first place and/or suppress their growth and activity in conditions like:

- Infectious diarrhea
- Irritable bowel syndrome
- Inflammatory bowel disease (e.g., ulcerative colitis and Crohn's disease)
- Infection with Helicobacter pylori (H. pylori), a bacterium that causes most ulcers and many types of chronic stomach inflammation
- Tooth decay and periodontal disease
- Vaginal infections
- Stomach and respiratory infections that children acquire in daycare
- Skin infections
- TumoursProbiotics medicinenet.com

Probiotics contribute to well-being in various ways as shown in the figure



Proposed health benefits stemming from probiotic consumption.

Health benefits of probiotic consumption customprobiotics.com

Concept Table

S.No	English Keywords				German Keywords				French Keywords		
	Gut	Biology	Probiotic	Food	Gut	Biology	Probiotic	Food	Gut	Biology	Probiot
1	Gut	Biology	Probiotic	Food	Darm	Biologie	Probiotischen	Lebensmittel, Essen, Nahrung, Nahrungsmittel, Futter	Intestin, Boyau, Corde De Boyau, Étriper	Biologie, La Biologie, De Biologie	Probiotiqu Des Probiotiqu Les Probiotiqu De Probiotiqu
2	Stomach	Mechanism	Probiotics	Feed	Magen	Mechanismus	Probiotika	füttern, Zuführung, Beschickung, Viehfutter	L'Estomac, Estomac, Caillette,	Mécanisme De, Mécanismes, Mécanisme De	Probiotiqu Des Probiotiqu Les Probiotiqu De Probiotiqu
3	***	***	***	***	***	***	***	***	***	***	***

- *An indicative list of terms to show how a concept table is generated. View paid report for complete list.*
- *Concept Table was enriched by searches related to gut biology and probiotics in food from pubmed mesh, relevant patents, scientific articles and various thesauri*

Class code definitions

US CLASSES

424	Drug, bio-affecting and body treating compositions	
	424/93.1	Whole live micro-organism, cell, or virus containing

IPC CLASSES

A	Human Necessities			
	A01	Agriculture; Forestry; Animal husbandry; Hunting; Trapping; Fishing		
		A01N	Preservation of bodies of humans or animals or plants or parts thereof; Biocides, e.g; as disinfectants, as pesticides or as herbicides; Pest repellants or attractants; Plant growth regulators	
			A01N 63/00	Biocides, pest repellants or attractants, or plant growth regulators containing micro-organisms, viruses, microbial fungi, animals, e.g. nematodes, or substances produced by, or obtained from micro-organisms, viruses, microbial fungi or animals, e.g. enzymes or fermentates

F-terms

Theme	Theme definition	F-term	F-term definition
4B001	Dairy products	AC31	Materials=>Lactic acid bacteria
		AC50	Materials=>Use of bifids (i.e., Lactobacillus bifidus bacteria)

- *An indicative list of various class codes used for the IP search. View paid report for complete list.*

Search Strategy

- **Search Engine:** Thomson Innovation
- **Databases covered:** US, Europe, German, Japanese and Korean applications and granted patents
- **Coverage:** Title, Abstract and Claims
- **Timeline:** 1991- 20th Sep 2011

S.No	Concept	Search Query	Number of hits
	English keyword search		
1	Keywords for probiotic + IPC class codes for food	(probiotic OR ***) AND (A23C**** OR ***)	###
2	Keywords for probiotic + US class codes for food	((probiotic OR ***) AND (42**** OR ***)	###
3	1 OR 2		###
4	Keywords for food + IPC class codes for probiotic	(Food OR ****) AND (C12**** OR ***)	###
5	Keyword for food + US class code for probiotic	(Food OR ***) AND (424** OR ***)	###
6	4 OR 5		###
7	**Final English query- 3 OR 6**		###
	German keyword search		
8	Keywords for probiotic + IPC class codes for food	(Probiotischen OR ***) AND (A23****** OR ***)	###
9	Keywords for food + IPC class codes for probiotic	(Säuglingsanfangsnahrung OR ***) AND (C12R**** OR ***)	###
10	**Final German query- 8 OR 9**		###
	French keyword search		
11	Keyword for probiotic + IPC class codes for food	(probiotique OR ***)AND (A23C**** OR ***)	###
12	Keywords for food + IPC class codes for probiotic	((formule ADJ2 pour) ADJ2 bébé) OR ****)) AND (C12R**** OR ***)	###
13	**Final French query- 11 OR 12**		###
	Search with Japanese F terms		

14	Keywords for probiotic + Japanese F term for food	(probiotic or ***)) AND (4C0*** OR ***)	###
15	Keywords for food + Japanese F-term for probiotic	(Food OR (Food ADJ2 stuff*1) OR ***) AND (4B0***** OR ***)	###
16	**Final query with F-terms- 14 OR 15**		###
17	**FINAL SEARCH QUERY- 7 OR 10 OR 13 OR 16**		###

Taxonomy

The companies with IP in the area as categorized by their industry segments

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Relevant patents (Sample Set)

S.No	Publication No	Title	Abstract	Date of patent	Inventors	Assignee
1	US20070286888	Additive For Feeds And Feed Containing The Same	An additive for feeds is provided which is efficacious in preventing and ameliorating digestive disorders such as diarrhea occurring as the side effects of the administration of antibiotics and a feed containing same. More specifically, an additive for feeds which comprises (A) Lactobacillus equi cells and (B) cells of at least one bacterium selected from the group consisting of Lactobacillus salivarius, Lactobacillus crispatus and Lactbacillus johnsonii.	13-Dec-07	Kado; Yukiko ; Morotomi; Masami.	Kabushiki Kaisha Yakult Honsha
2	US7906112	Canine probiotic Lactobacilli	According to the invention there is provided a strain of lactic acid bacteria of the genus Lactobacilli obtainable by isolation from resected and washed canine gastrointestinal tract having a probiotic activity in animals. Methods of use and compositions comprising the Lactobacilli of the present invention are also provided.	3-Sep-03	Reid; Gregor, Bruce; Andrew W. , Han; Victor	Urex Biotech, Inc.
3	US7288245	Composition having immunoregulating activities	The invention provides a composition comprising novel lactic acid bacteria having immunoregulating activities. Specifically, the invention provides food, drinks or medicaments containing novel lactic acid bacteria separated from "Shibazuke," one kind of traditional Kyoto pickles, and having immunoregulating activities. The lactic acid bacteria belong to Lactobacillus pentosus and have a weak assimilating activity or no assimilating activity for glycerol.	30-Oct-07	Nonaka; Yuji, Izumo; Takayuki, Iida; Keiko	Suntory Limited
4	US20060121015	Probiotic bifidobacterium strains	A Bifidobacterium strain, AH208, AH209, AH210, AH211, AH212 or AH214 or mutants or variants thereof are useful in the prophylaxis and/or treatment of inflammatory activity especially undesirable gastrointestinal inflammatory activity, such as inflammatory bowel disease or irritable bowel syndrome.	8-Jun-06	Collins; John Kevin; O?Sullivan; Gerald Christopher; O?Mahony; Liam; Shanahan; Fergus;Kiely; Barry	Alimentary Health Limited

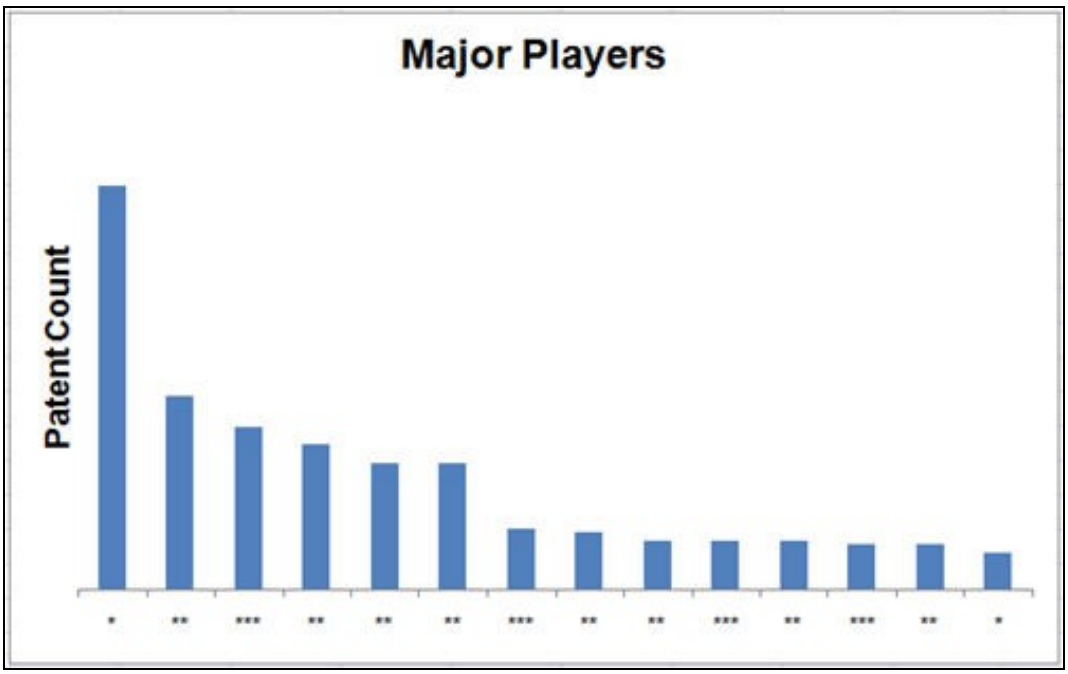
Sample Patent Analysis Sheet

Click here to download the sample patent analysis sheet

Assignee analysis and IP Activity

- *Labels for all the charts below are available in the paid report.*

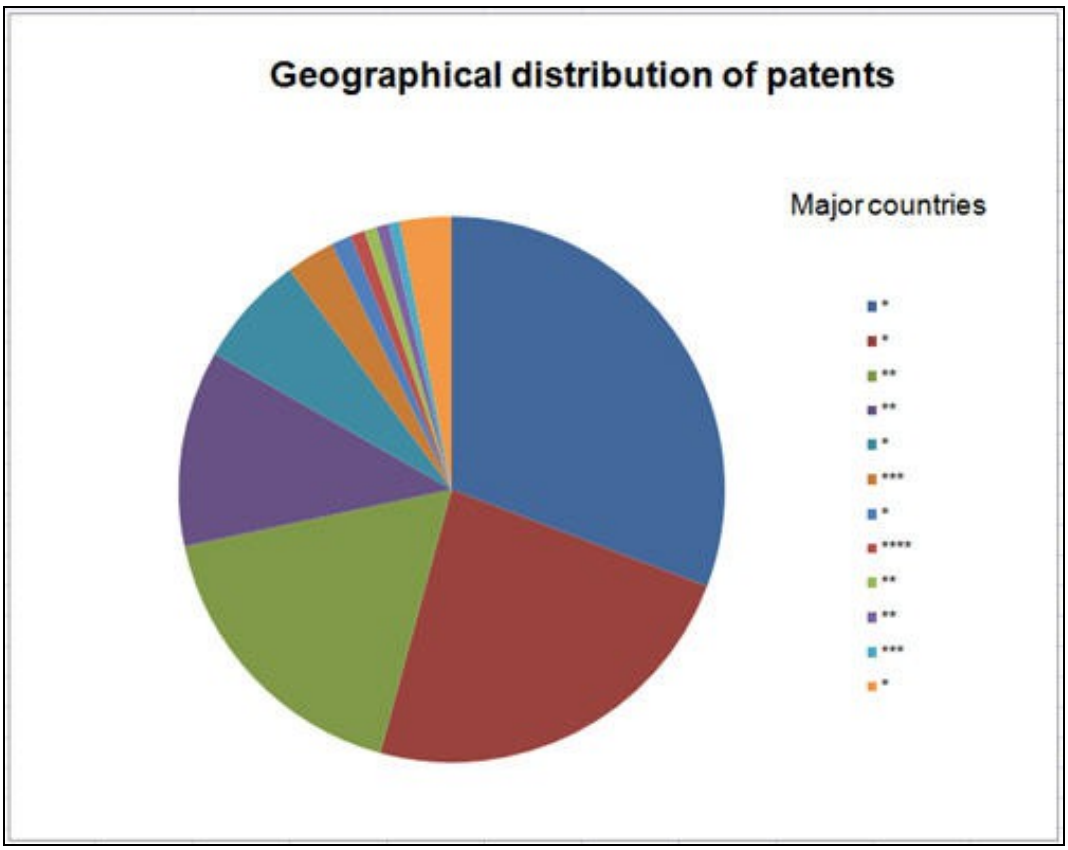
Top Assignees



Top Assignees

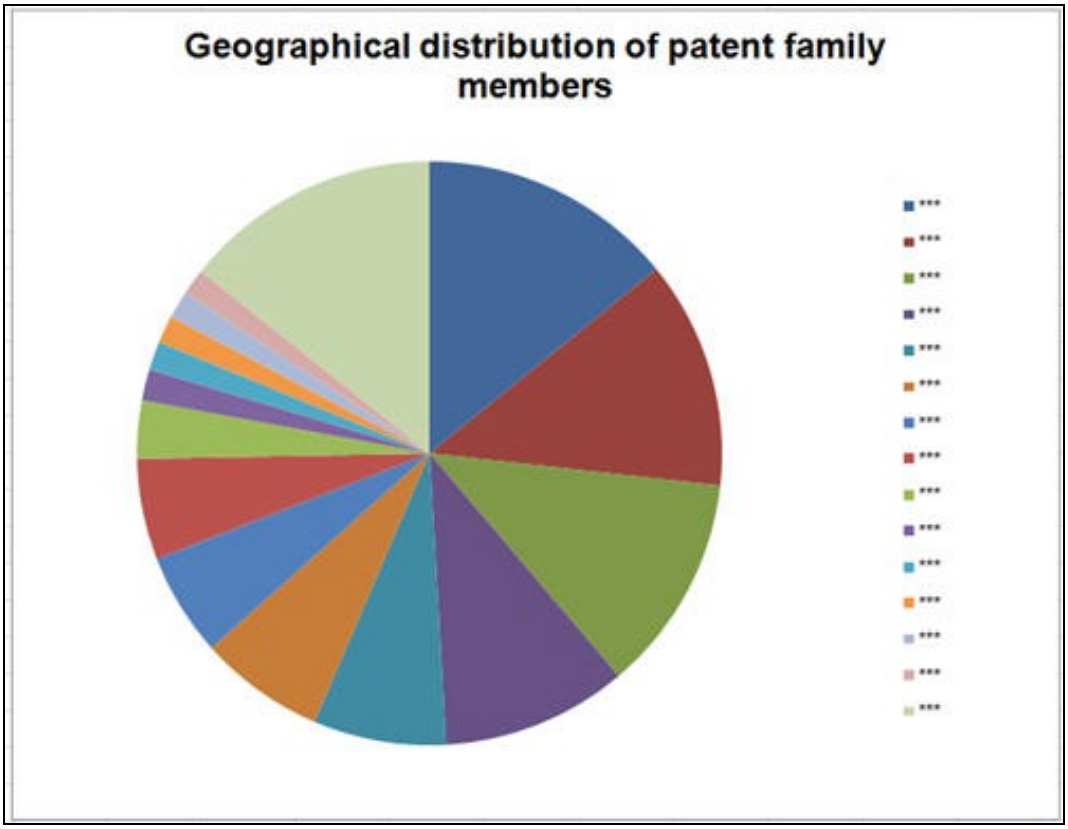
Geographical distribution

- Based on patent number



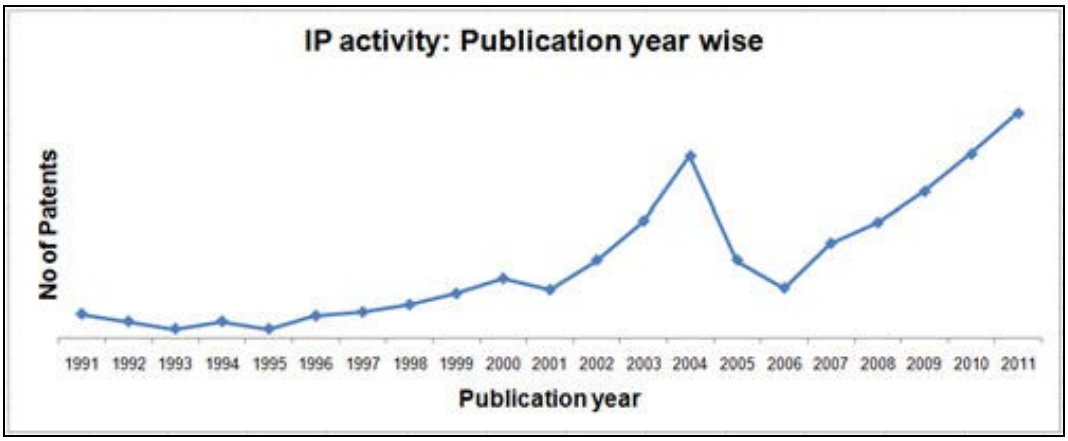
Based on relevant patents

- Including family members

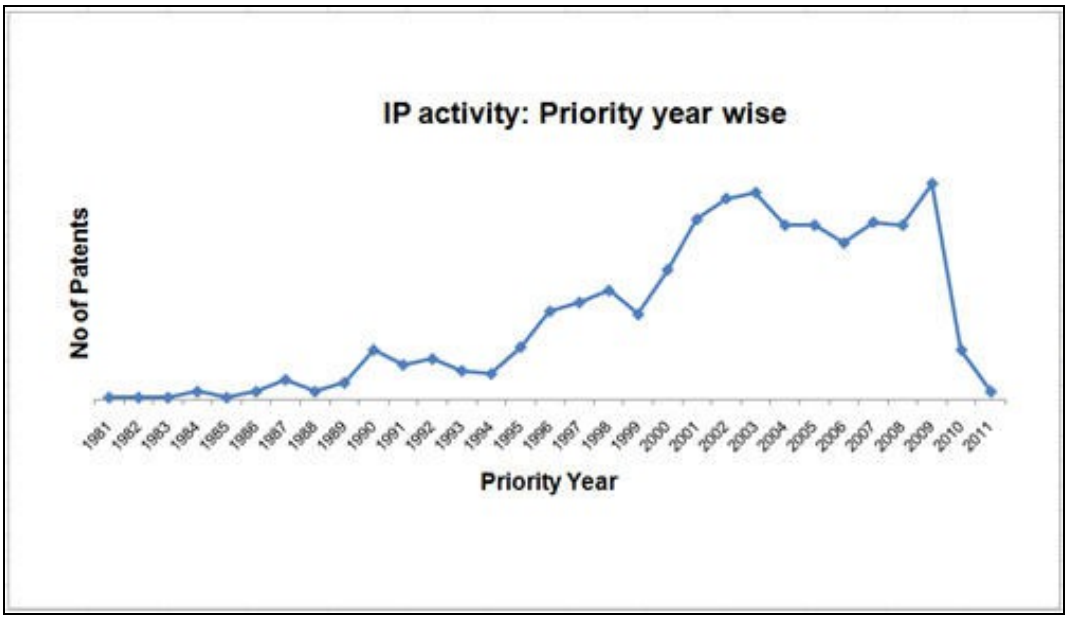


Based on patent family members

IP Activity



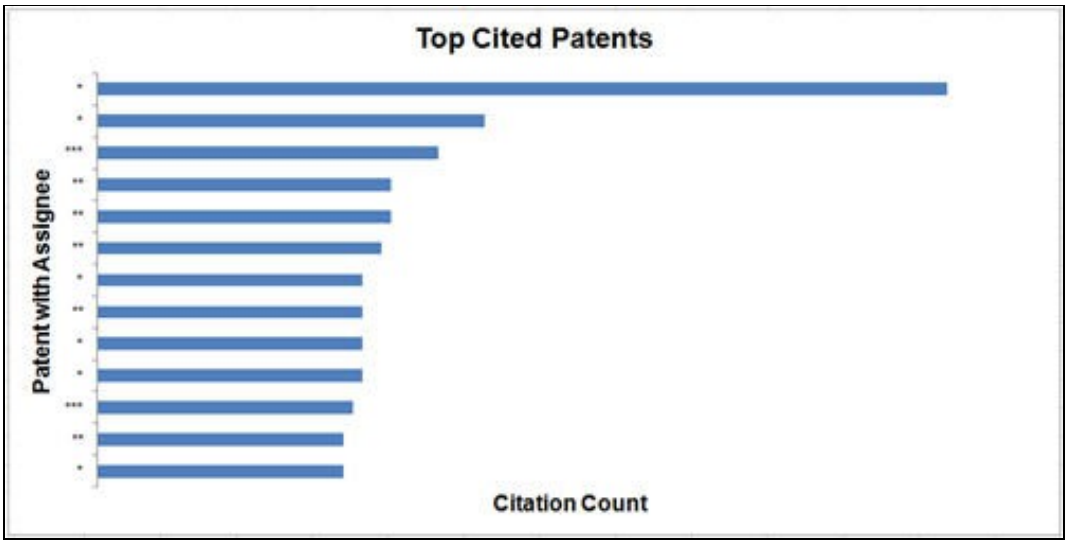
IP activity



IP activity

Top Cited patents

- Patents with the maximum number of forward citations were determined and the graph shows the top 13 patents with corresponding assignees.

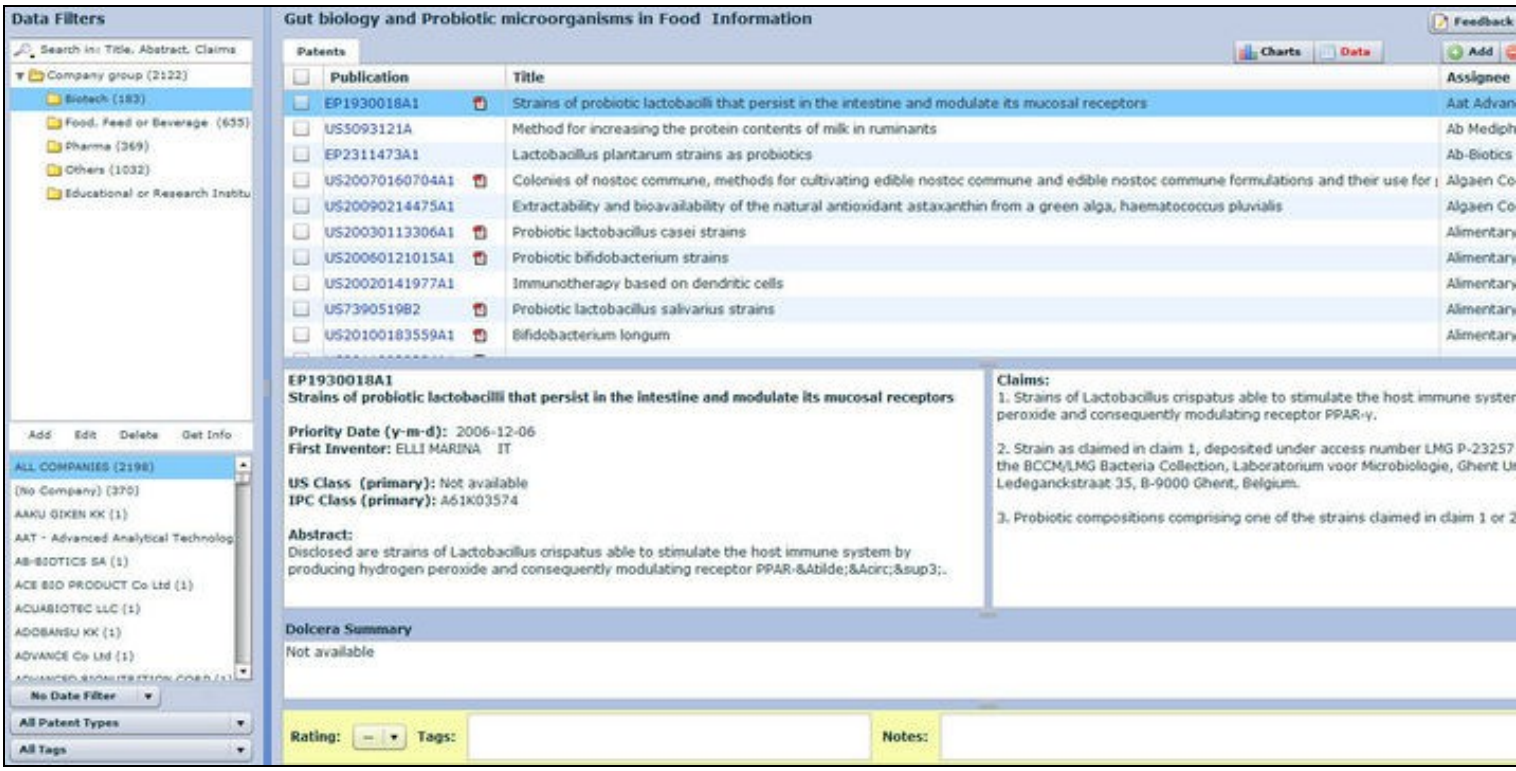


Top cited patents

Dolcera Dashboard

Assignees were categorized based on the type of their products viz. food,feed or beverage, biotech, pharma,other industries, research and educational institutions etc and their patents have been shown in the Dolcera Interactive Dashboard.

A data preview of the dashboard is shown below:



A chart preview of the dashboard is shown below:

Patent to product mapping

- *Some products with respect to this technology area were identified and mapped to the patents from their respective assignees.*

S.No	Patent no	Title	Assignee	Products	Snapshot

1	US20110014248A1	Cosmetic use of microorganism(s) for the treatment of scalp disorders	NESTLE SA	INNEOV HAIR HEALTH DS DANDRUFF	
2	WO2011012655A1	Nutritional composition for breast-fed infants or pets with probiotics and selected nutrients	NESTLE SA	FortiFlora® Canine Nutritional Supplements	
3	US5603930A	Lactobacillus johnsonii CNCM I-1225	NESTLE SA	LC1 yoghurt	

Purchase Information

Contact information for purchasing this report:

- Email: info@dolcera.com
- Phone: +1-650-269-7952, +91-40-2355-3493