

**GOVERNMENT OF INDIA  
SCIENCE AND TECHNOLOGY  
LOK SABHA**

UNSTARRED QUESTION NO:3496  
ANSWERED ON:15.12.2006  
PATENTS FILED BY DEPARTMENT OF BIOTECHNOLOGY  
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**Will the Minister of SCIENCE AND TECHNOLOGY be pleased to state:**

(a) the details of patents filed by the Department of Biotechnology during the last five years, year-wise, country-wise and product-wise; and

(b) the strategies adopted by the Department of Biotechnology to protect its intellectual property rights in the Biotechnology sector ?

**Answer**

MINISTER OF SCIENCE AND TECHNOLOGY AND MINISTER OF EARTH SCIENCES(KAPIL SIBAL)

(a) i)The year-wise details of patents filed by the Department of Biotechnology during the last five years.

INDIA – Total no. 63

December 2001 to November 2002	December 2002 to November 2003	December 2003 to November 2004	December 2004 to November 2005	December 2005 to November 2006
6	11	9	15	22

FOREIGN – Total no. 74

December 2001 to November 2002	December 2002 to November 2003	December 2003 to November 2004	December 2004 to November 2005	December 2005 to November 2006
6	16	10	21	21

6 16 10 21 21

ii) The country-wise details of patents filed by the Department of Biotechnology during the last five years.

Sl. No. Country No. of patents filed

1. Indonesia- 3

2. Korea 3

3. Japan 7

- 4. USA 22
- 5. Singapore 1
- 6. Philippines 3
- 7. European Patent Office 11
- 8. Vietnam 2
- 9. Bangladesh 1
- 10. Srilanka 2
- 11. Thailand 2
- 12. Russia 1
- 13. Britain 1
- 14. China 5
- 15. South Africa 3
- 16. Brazil 1
- 17. Turkey 1
- 18. Malaysia 1
- 19. Aripo 1
- 20. Australia 1
- 21. Germany 1
- 22. Canada 1

iii) The product-wise details of patents filed by the Department of Biotechnology during the last five years.

S.No. Product-wise

1. A Method of DNA Precipitation on to Gold Particles for Transformation of Plant Tissue.
2. Bioreactors for nitrifying water in closed system hatcheries of penacid and non-penalid prawns
3. Chimeric T Helper-B cell peptide vaccine for Japanese encephalitis Virus
4. Indigenous Fermentor (Patent and Design Registration)
5. A process for molecular diagnosis, the sample for of Enteric Fever and/or contaminated food samples
6. A microbial control agent for mosquito vectors of human diseases
- 7 A Process for preparation of Bruguja malayi 9mf Es-22) glyccoprotein
8. A Process for the isolation of flanking sequence and a kit therefor
9. A Process for preparation of Mutant dev R gene carrying M- tuberculosis strain involved in the virulence of M. tuberculosis capable of use in

development of therapeutic modalities

10. Preparation of Immune Goat Colostrum against Rotavirus
11. A Process for the pre- of Gallic acid by co-culture
  
12. A Novel Polyherbal preparation for the prevention of Atherosclerosis and hyperlipidemia
  
13. A salt tolerant L-myo-inositol 1 phosphate synthase and the process of obtaining the same.
  
14. The Process of a Biopesticide formulation against coffee berry borer (CBB)
  
15. A Novel Immunobiosensor apparatus for rapid diagnosis of Foot mouth disease (FMD) in livestock.
  
16. The Characterization of HupB Gene encoding Histone like Protein of Mycobacterial Tuberculosis.
  
17. In vitro Characterization and Therapeutic use of Goat hepatocytes in acute liver failure in model system.
  
18. A New Flexible Mechanically Stable Polymer Support for Solid Phase Peptide Syntheses
  
19. A Novel DNA Marker for Drought Tolerance in Plants
  
20. A Diagnostic Kit for Detecting Pulmonary & Extra Pulmonary Tuberculosis
  
21. An improved process for Oak Tasar/cocoon cooking using pine apple extract
  
22. Use of DAT1, A Novel Synthetic Compound as a Microtubule
23. Dimer of Phenazine -1 - Carboxylic acid and to the process of preparation thereof
24. A Chemotherapeutic composition used in the treatment of cancer
25. PCR-based detection Method for Chlamydia Trachomatis
26. A Process for preparation of extract from the fern chertanthes
27. Method of producing, spilarctia nuclear polyhedrosis virus (SONPV) Pesticides.
28. Process for producing for reusable granular formation of Trichoderma
29. cDNA Encoding a Protein with antiviral and ribosome inactivating activity
30. A process for enhancing flavour in made tea using UV radiation
31. A reactor for Root Organ Culture
32. Antimicrobial/Antibiotic activity of the extract of the plant callistemon rigidus R. Br. And a process for preparation of a standardized anti-infective leaf
  
33. Efficient Inorganic Phosphate Solubiliser

34. A Novel Process to commercial production of bio pesticides
  
35. A process for producing a alkali tolerant  $\alpha$  - galactosidase from novel *preudomonas*-sp. MI strain
  
36. A method (improved process) for production of podophyllotoxin in high producing cell lines of Indian podophyllum, *podophyllum hexandrum* royal
  
37. Vertical Solid State Reactor
  
38. A Method of developing Micro satellite Marker for *Piper Nigrum*
  
39. A Novel gene OSISAP 1 of rice and a method of introducing stress tolerances in plant systems using the gene OSISAP
  
40. PS-A-PEG and DMA-A-PEG Gel Dendr Mer Resins for Solid Phase Organic Synthesis.
  
41. A Microstaellite DNA marker to Identify Disease resistant Population of *Penaeus Monodon* (Giant Black Tiger Shrimp)
  
42. Anti HIV-1 Active bacterial Baculo Virus Recombinant Epap- 1
  
43. Cloning and Expression of Outer membrane protein "C" of *Salmonella typhity* 2 and conjugation of the purified in soluble protein to Vi-polysaccharide for use as a vaccine for typhoid fever.
  
44. Method of Direct Regeneration, Shikonin Induction in Callus and *Agrobacterium rhizogenes*- mediated Genetic Transformation of *Arnebia hispidissima*.
  
45. A New Class of Solvent-like Dendrimer Resins, VIN-GEL, for Combinational Solid Phase Organic Synthesis and VINO-GEL for Liquid Phase Organic Synthesis
  
46. Preservation of Human Hematopoietic Stem/ Progenitor Cells using Mannose Binding Lectins of *lant Orgin*
  
47. Designing of PCR based (Prototype Kits for Diagnosis) of *Chalamydia Trachomatis* and *Neisseria Gonorrhoeae*

48. Gene Expression pattern of viral promoter derived from Rice tungro bacilliform virus in plants.
49. Development of a process for the production of an organic and combination formulation of bio- pesticide containing Trichoderma Harzianum and Pseudomonas Fluorescens.
50. Resistance of Plants to Biotic and Abiotic Stresses by over- expression of Protochlorophylide Oxido Reductase C and its other isofirms
51. Dialysed ageous extract of fenu greek seeds induces hypoglycermic, activity in diabetesâ€â€
52. A Method for diagnois of Tuberclosis by Smear Microscopy Culture and Polymerase Chain Reaction
53. Strip Test for the Qualitative Detection of Antibodies to Peste des petits Ruminants (PPR) Virus
54. Biocontrol of Luminous Bacteria in Shrimp Hatcheries using Bacteriophages
55. Oligonucleotide Probe for Detection and Enumeration of Vibrio Spp in Aquaculture Systems
56. Fusion Protecín and Nucleotide as Brucella Vaccine
57. Mass Multiplication of Pseudomonas Fluorescenes on Cow Dung
58. Antisteoporosis activity of Butea species
59. A process for the production of polyhydroxyalkanoate copolymer
60. The capsaicin synthase enzyme and its gene responsible for pungency factor isolated and characterized from placental tissues of capsicum spp.
61. The process for the production of verbenol using a fusant strain
62. An improved process for the production of the Bicycle (3-1-1) Hept 3RN-2 one using a novel penicillionm sp. Useful as pressing compounds
63. A device useful for the measurement of organic acids and their derivatives
64. Immunomodulatory pharmaceutical composition comprising a combination of three coumarinolignoids and a process for preparation there of

65. A method for measuring gas permeability of any solid permeable material and an equipment therefore
  66. A process for the extraction of Atelopeptide collagen from a collagenous source by a microbial treatment
  67. A process for the preparation of a non-toxinogenic oral vaccine for Cholera
  68. A process for the preparation of a ceramide from placental extract useful as an inducer of melanin in eukaryotic system
  69. PCR based kit for detection of vegetative insecticidal protein (VIP) gene in genetically modified organisms and in natural isolates or *Bacillus thuringiensis*
  70. A process for the preparation of improved polymeric support for purification of proteins
  71. A process for the derivatisation of Macroporous beaded crosslinked copolymers
  72. A standardized immuno modulatory fraction of Plant origin
  73. Synergistic tissue culture media formulation for in vitro regeneration of *Swertia chirata* ham
  74. A process for isolation of a novel oligospirostanoside from *Asparagus racemosus*
  75. A novel process for the production of ecofriendly feed enzyme phytase by solid state fermentation using filamentous fungus *Aspergillus ficuum* (TUBF) (1165) growing on jack fruit seed powder
  76. Novel *Chlamydia trachomatis* specific antibodies, a process for isolation for same, a diagnostic kit for detecting *Chlamydia trachomatis*, a method for producing the kit and a method for detecting *Chlamydia trachomatis* using the kit.
- (b) the strategies adopted by the Department of Biotechnology to protect its intellectual property rights in the Biotechnology sector ?

The Department of Biotechnology encourages protection of Intellectual Property that results as an outcome of its support in projects on Research & Development and creation of infrastructure facilities. Also, the proposals

supported for short-term training courses for

(i) mid-career scientists in biotechnology and

(ii) college teachers involved in undergraduate teaching in life sciences and biotechnology make it mandatory for the recipients of funds to include lecture on Intellectual Property Rights (IPR) as a part of the course content.

The Biotechnology Patent Facilitating Cell (BPFC) of this Department has established a Committee that reviews requests of Indian scientists (from publicly funded institutions such as universities and research institutions) to support patenting of their inventions. Wherever, the Committee finds the request fulfilling the patentability criteria, the BPFC provides administrative and financial support in filing the national and international patent applications. The BPFC also supports workshops, seminars, conferences and regular training courses aimed to create awareness and understanding about the importance of Intellectual Property among scientists and researchers within the country.