



Factsheet: Life, Biotech Red

A technology field created by ip-search

1 Definition

The different fields of application for biotechnology are frequently divided by colour codes, as shown below. Red biotech refers to applications of biotechnology in the areas of health, medicine, and diagnostics.

| Color Type | Area of Biotech Activities |
|------------|---|
| Red | Health, Medical, Diagnostics |
| Yellow | Food Biotechnology, Nutrition Science |
| Blue | Aquaculture, Coastal and Marine Biotech |
| Green | Agricultural, Environmental Biotechnology – Biofuels, Biofertilizers, Bioremediation, Geomicrobiology |

References:

<http://www.ejbiotechnology.info/index.php/ejbiotechnology/article/view/1114/1496>

<https://en.wikipedia.org/wiki/Biotechnology>

2 CPC / IPC

According to WIPO, biotechnology is defined by the following IPC classifications:

C07G, C07K, C12M, C12N, C12P, C12Q, C12R, and C12S (all including the hierarchically lower levels)

For the present technology field, the IPC classifications were complemented with the corresponding CPC classifications, i.e. C07G, C07K, C12M, C12N, C12P, C12Q, C12R, and C12Y.

In addition, the update 03_21 includes the CPC/IPC classifications for bioinformatics G16B and G06F19/10 in order to cover biotechnology more comprehensively.

For the definition of red biotech within biotech, the following additional IPC/CPC classification filters were used:

A61B, A61C, A61D, A61K, A61P,

B82Y5, C07K14/47, C07K16, C07K2316, C07K2317, C07K2318, C07K2319,

C12Q1/6881, C12Q6883, C12Q1/15, C12Q1/6881, C12Q1/6883, C12Q2600/106, C12Q2600/112,

C12Q2600/118, C12Q2600/136, C12Q2600/156,

G01N33/48, G01N33/15, G01N2500, G01N2800,

G06F19/10, G06F19/30, G16B15/30

Y02A50/30 (added for update 03_21)



Patent classifications defining Biotechnology

Cooperative Patent Classification (CPC), International Patent Classification (IPC), and Japanese File Index (FI)

| CPC/IPC/FI Symbols | Description |
|--------------------|--|
| C | CHEMISTRY; METALLURGY |
| <u>C07G</u> | COMPOUNDS OF UNKNOWN CONSTITUTION |
| <u>C07K</u> | PEPTIDES (peptides in foodstuffs A23J; obtaining protein compositions for foodstuffs, working-up proteins for foodstuffs A23J; preparations for medicinal purposes A61K; peptides containing beta-lactam rings C07D; cyclic dipeptides not having in their molecule any other peptide link than those which form their ring, e.g. piperazine-2,5-diones, C07D; ergot alkaloids of the cyclic peptide type C07D519/02; macromolecular compounds having statistically distributed amino acid units in their molecules, i.e. when the preparation does not provide for a specific; but for a random sequence of the amino acid units, homopolyamides and block copolyamides derived from amino acids C08G69/00; macromolecular products derived from proteins C08H1/00; preparation of glue or gelatine C09H; single cell proteins, enzymes C12N; genetic engineering processes for obtaining peptides C12N15/00; compositions for measuring or testing processes involving enzymes C12Q; investigation or analysis of biological material G01N33/00) |
| <u>C12M</u> | APPARATUS FOR ENZYMOLOGY OR MICROBIOLOGY; {APPARATUS FOR CULTURING MICROORGANISMS FOR PRODUCING BIOMASS, FOR GROWING CELLS OR FOR OBTAINING FERMENTATION OR METABOLIC PRODUCTS, i.e. BIOREACTORS OR FERMENTERS} |
| <u>C12N</u> | MICROORGANISMS OR ENZYMES; COMPOSITIONS THEREOF; PROPAGATING, PRESERVING, OR MAINTAINING MICROORGANISMS; MUTATION OR GENETIC ENGINEERING; CULTURE MEDIA (microbiological testing media C12Q1/00) |
| <u>C12R</u> | PROCESSES USING MICROORGANISMS |
| <u>C12Y</u> | ENZYMES |
| <u>G16B</u> | BIOINFORMATICS, i.e. INFORMATION AND COMMUNICATION TECHNOLOGY [ICT] SPECIALLY ADAPTED FOR GENETIC OR PROTEIN-RELATED DATA PROCESSING IN COMPUTATIONAL MOLECULAR BIOLOGY |

The complete description of the CPC classes with IPC- and FI-concordances can be found in the Internet at <https://www.wipo.int/classifications/ipc/ipcpub/?notion=scheme&fipcpc=yes>.



Patent classifications used to filter out Red Biotechnology

2.1.1 Cooperative Patent Classification (CPC), International Patent Classification (IPC), and Japanese File Index (FI)

| CPC/IPC/FI Symbols | Description |
|---------------------------|---|
| A | HUMAN NECESSITIES |
| <u>A61B</u> | DIAGNOSIS; SURGERY; IDENTIFICATION (analysing biological material G01N, e.g. G01N33/48; obtaining records using waves other than optical waves, in general G03B42/00) |
| <u>A61C</u> | DENTISTRY; APPARATUS OR METHODS FOR ORAL OR DENTAL HYGIENE (non-driven toothbrushes A46B; {tongue scrapers A61B17/24;} preparations for dentistry A61K6/00; preparations for cleaning the teeth or mouth A61K8/00, A61Q11/00) |
| <u>A61D</u> | VETERINARY INSTRUMENTS, IMPLEMENTS, TOOLS, OR METHODS |
| <u>A61K</u> | PREPARATIONS FOR MEDICAL, DENTAL, OR TOILET PURPOSES (devices or methods specially adapted for bringing pharmaceutical products into particular physical or administering forms A61J3/00; chemical aspects of, or use of materials for deodorisation of air, for disinfection or sterilisation, or for bandages, dressings, absorbent pads or surgical articles A61L; soap compositions C11D) |
| A | HUMAN NECESSITIES |
| B | PERFORMING OPERATIONS; TRANSPORTING |
| B82 | NANOTECHNOLOGY |
| B82Y | SPECIFIC USES OR APPLICATIONS OF NANOSTRUCTURES; MEASUREMENT OR ANALYSIS OF NANOSTRUCTURES; MANUFACTURE OR TREATMENT OF NANOSTRUCTURES |
| <u>B82Y5/00</u> | Nanobiotechnology or nanomedicine, e.g. protein engineering or drug delivery |
| C | CHEMISTRY; METALLURGY |
| C07 | ORGANIC CHEMISTRY |
| C07K | PEPTIDES (peptides in foodstuffs A23; obtaining protein compositions for foodstuffs, working-up proteins for foodstuffs A23J; preparations for medicinal purposes A61K; peptides containing beta-lactam rings C07D; cyclic dipeptides not having in their molecule any other peptide link than those which form their ring, e.g. piperazine-2,5-diones, C07D; ergot alkaloids of the cyclic peptide type C07D519/02; macromolecular compounds having statistically distributed amino acid units in their molecules, i.e. when the preparation does not provide for a specific; but for a random sequence of the amino acid units, homopolyamides and block copolyamides derived from amino acids C08G69/00; macromolecular products derived from proteins C08H1/00; preparation of glue or gelatine C09H; single cell proteins, enzymes C12N; genetic engineering processes for obtaining peptides C12N15/00; compositions for measuring or testing processes involving enzymes C12Q; investigation or analysis of biological material G01N33/00) |
| C07K14/00 | Peptides having more than 20 amino acids; Gastrins; Somatostatins; Melanotropins; Derivatives thereof |
| C07K14/435 | . from animals; from humans |
| C07K14/46 | .. from vertebrates |
| <u>C07K14/47</u> | ... from mammals |
| <u>C07K16/00</u> | Immunoglobulins [IGs], e.g. monoclonal or polyclonal antibodies {(antibodies with enzymatic activity, e.g. abzymes C12N9/0002)} |
| <u>C07K2317/00</u> | Immunoglobulins specific features |
| <u>C07K2318/00</u> | Antibody mimetics or scaffolds |
| <u>C07K2319/00</u> | Fusion polypeptide |



| CPC/IPC/FI Symbols | Description |
|---------------------|--|
| C12 | BIOCHEMISTRY; BEER; SPIRITS; WINE; VINEGAR; MICROBIOLOGY; ENZYMOLOGY; MUTATION OR GENETIC ENGINEERING |
| C12Q | MEASURING OR TESTING PROCESSES INVOLVING ENZYMES, NUCLEIC ACIDS OR MICROORGANISMS (immunoassay G01N33/53); COMPOSITIONS OR TEST PAPERS THEREFOR; PROCESSES OF PREPARING SUCH COMPOSITIONS; CONDITION-RESPONSIVE CONTROL IN MICROBIOLOGICAL OR ENZYMOLOGICAL PROCESSES |
| C12Q1/00 | Measuring or testing processes involving enzymes, nucleic acids or microorganisms (measuring or testing apparatus with condition measuring or sensing means, e.g. colony counters, C12M1/34); Compositions therefor; Processes of preparing such compositions |
| C12Q1/68 | . involving nucleic acids |
| C12Q1/6876 | .. Nucleic acid products used in the analysis of nucleic acids, e.g. primers or probes |
| <u>C12Q1/6881</u> | ... for tissue or cell typing, e.g. human leukocyte antigen [HLA] probes |
| <u>C12Q1/6883</u> | ... for diseases caused by alterations of genetic material |
| C12Q2600/00 | Oligonucleotides characterized by their use |
| <u>C12Q2600/106</u> | . Pharmacogenomics, i.e. genetic variability in individual responses to drugs and drug metabolism |
| <u>C12Q2600/112</u> | . Disease subtyping, staging or classification |
| <u>C12Q2600/118</u> | . Prognosis of disease development |
| <u>C12Q2600/136</u> | . Screening for pharmacological compounds |
| <u>C12Q2600/156</u> | . Polymorphic or mutational markers |
| G | PHYSICS |
| G01 | MEASURING; TESTING |
| G01N | INVESTIGATING OR ANALYSING MATERIALS BY DETERMINING THEIR CHEMICAL OR PHYSICAL PROPERTIES (measuring or testing processes other than immunoassay, involving enzymes or microorganisms C12M, C12Q) |
| G01N33/00 | Investigating or analysing materials by specific methods not covered by groups G01N1/00 - G01N31/00 |
| <u>G01N33/15</u> | . Medicinal preparations {; Physical properties thereof, e.g. dissolubility (drug screening with animal cells G01N33/5008)} |
| <u>G01N33/48</u> | . Biological material, e.g. blood, urine (G01N33/02, G01N33/26, G01N33/44, G01N33/46 take precedence); Haemocytometers (counting blood corpuscles distributed over a surface by scanning the surface G06M11/02) |
| <u>G01N2500/00</u> | Screening for compounds of potential therapeutic value |
| <u>G01N2800/00</u> | Detection or diagnosis of diseases |
| G06 | COMPUTING; CALCULATING; COUNTING |
| G06F | ELECTRIC DIGITAL DATA PROCESSING (computer systems based on specific computational models G06N) |
| G06F19/00 | Digital computing or data processing equipment or methods, specially adapted for specific applications (specially adapted for specific functions G06F17/00; data processing systems or methods specially adapted for administrative, commercial, financial, managerial, supervisory or forecasting purposes G06Q; healthcare informatics G16H) |
| <u>G06F19/30</u> | . {Medical informatics, i.e. computer-based analysis or dissemination of patient or disease data (measuring for diagnostic purposes A61B5/00; recognising patterns in biomedical signals G06K9/00496; data processing systems or methods specially adapted for administrative or managerial aspects of healthcare or welfare G06Q50/22)} |
| G16 | INFORMATION AND COMMUNICATION TECHNOLOGY [ICT] SPECIALLY ADAPTED FOR SPECIFIC APPLICATION FIELDS |
| G16B | BIOINFORMATICS, i.e. INFORMATION AND COMMUNICATION TECHNOLOGY [ICT] SPECIALLY ADAPTED FOR GENETIC OR PROTEIN-RELATED DATA PROCESSING IN COMPUTATIONAL MOLECULAR BIOLOGY |
| G16B15/00 | ICT specially adapted for analysing two-dimensional or three-dimensional molecular structures, e.g. structural or functional relations or structure alignment |
| <u>G16B15/30</u> | . Drug targeting using structural data; Docking or binding prediction |



| CPC/IPC/FI Symbols | Description |
|-------------------------|---|
| Y | GENERAL TAGGING OF NEW TECHNOLOGICAL DEVELOPMENTS; GENERAL TAGGING OF CROSS-SECTIONAL TECHNOLOGIES SPANNING OVER SEVERAL SECTIONS OF THE IPC; TECHNICAL SUBJECTS COVERED BY FORMER USPC CROSS-REFERENCE ART COLLECTIONS [XRACs] AND DIGESTS |
| Y02 | TECHNOLOGIES OR APPLICATIONS FOR MITIGATION OR ADAPTATION AGAINST CLIMATE CHANGE |
| Y02A | TECHNOLOGIES FOR ADAPTATION TO CLIMATE CHANGE |
| Y02A50/00 | in human health protection, e.g. against extreme weather |
| <u>Y02A50/30</u> | . Against vector-borne diseases, e.g. mosquito-borne, fly-borne, tick-borne or waterborne diseases whose impact is exacerbated by climate change |

The complete description of the CPC classes with IPC- and FI-concordances can be found in the Internet at <https://www.wipo.int/classifications/ipc/ipcpub/?notion=scheme&fipcpc=yes>.



3 Keywords

No additional keywords are used for the tag definition.

Confidence Interval for Precision

Precision is expressed in percent of relevant counts. The 95 % confidence interval for the precision of a technology field is assessed on a set of 100 randomly selected patent families based on a binomial distribution. In the sighting 92 of 100 randomly selected documents appeared relevant:

Precision Confidence Interval: 74 - 89 %

Patent families found not relevant in the sighting process to determine the precision were eliminated from the collection.



4 History

| Version | latest update | No. of patent families (incl. inactives) | remarks |
|---------|---------------|---|--|
| _05_19 | 22.05.2019 | 324'887 149'034 active | Update, refined classifications |
| _09_19 | 28.08.2019 | 335'951 152'716 active | no change |
| _12_19 | 28.11.2019 | 329'850 149'292 active | Update, refined classifications and exclusions |
| _03_20 | 09.03.2020 | 342'624 156'666 active | Update, no change |
| _09_20 | 17.08.2020 | 357'423 157'181 active | Update, refined classifications and exclusions |
| _03_21 | 09.03.2021 | 377'655 167'468 active | Update, refined classifications and exclusions |
| _09_21 | 17.08.2021 | 393'272 173'648 active | Update, no change |

5 Contact

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