

Life Sciences in Slovakia

Background information

Biomedicine & biotechnology are one of the three priorities of the R&D strategy of the Slovak Republic within the Operational Programme Research and Innovation for period 2014 - 2020.

Biomedicine and biotechnology focus on new diagnostic and therapeutic approaches for cancer, heart disease, blood vessels and brain, endocrine and metabolic disorders, infectious diseases and allergies, pharmacological and industrial biotechnologies.

Almost 2,000 researchers work in the segment and they publish more than one fourth of all Slovak publications in international scientific journals.

The results are used in the field of the diagnostic, prevention and therapy of diseases in cooperation with three medical faculties.

The research is highly systematic and concentrated which allows it to be connected to global trends in the development of human knowledge. The perspectives gained from research undertaken at the Slovak Academy of Sciences (SAS) are based on evidence and are qualitatively comparable to research undertaken abroad.

Life Science Structure Infrastructure

Organisational structure of the Life Sciences field in Slovakia is very asymmetrical: up to 75% of organisations is concentrated to Bratislava, 20% in Košice and Nitra, the remaining 5% in the rest of the country.

The most of the Life sciences and biotechnology capacity is held in the research institute **Slovak Academy of Sciences (SAS)**, less at the universities and agricultural research institutions, but only a very small part in private business.

1. SCIENTIFIC AND RESEARCH INSTITUTES

Slovak Academy of Sciences (SAS)

Slovak Academy of Sciences (SAS) is a public research institution established in 1942, which undertakes autonomous non-university scientific research in Slovakia that is primarily funded from public finances.

The SAS consists of 69 organizations. The academy publishes 57 scientific and professional journals and 8 yearbooks. There are 51 scientific and scholarly associations, societies and unions affiliated with the SAS.

1,938 scientists and 1,068 PhD students working in areas from linguistics to experimental physics and from neurobiology to advanced materials. There are two major research cities of the SAS — Bratislava (1,590 scientists) and Košice (214 scientists).

Inventions registered in 2014 in **patent proceedings** — in Slovakia 13, internationally (PCT) 8. Patents granted in 2013 for **inventions registered** in previous years — in Slovakia 5, abroad 2.

SAS institutes under the section life, chemical, medical, & environmental sciences:

Medical sciences:

Biomedical Research Centre*,
Centre of Biosciences (Institute of Molecular Physiology and Genetics), Institute for Heart Research, Institute of Experimental Pharmacology & Toxicology, Institute of Neurobiology, Institute of Neuro-immunology, Institute of Normal and Pathological Physiology

***Biomedical research center:**

Institute of Experimental Endocrinology, Cancer Research Institute, Institute of Virology, Institute of Clinical and Translational Research

Web: <http://www.biomedcentrum.sav.sk/?lang=en>

Biological and chemical sciences: Institute of Chemistry, Institute of Inorganic Chemistry, Institute of Molecular Biology, Institute of Zoology, Polymer Institute

Agricultural and veterinary sciences: Centre of Biosciences (Institute of Animal Biochemistry and Genetics), Institute of Animal Physiology, Institute of Forest Ecology, Institute of Landscape Ecology, Institute of Parasitology, Plant Science and Biodiversity Centre.

2. UNIVERSITIES:

Comenius University in Bratislava: Faculty of Natural Sciences, Faculty of Medicine, Jessenius Faculty of Medicine in Martin, Faculty of Pharmacy

Slovak University of Technology in Bratislava: Faculty of Chemical and Food Technology

Šafárik University in Košice: Faculty on Natural Sciences, Faculty of Medicine

University of Agriculture in Nitra

University of Constantine Philosopher in Nitra

University of St. Cyril and Methodius in Trnava

3. PRIVATE SECTOR:

Start-ups:

MultiplexDX, s.r.o.

MultiplexDX is one of the most innovative biotech corporations, created to bring revolutionary technologies to the market of personalized molecular diagnostics. The company has representation in both U.S. and European markets. The U.S. site is located in close proximity to the National Institutes of Health as well as the Food and Drug Administration. The collaborators of MultiplexDX are from the world's most prestigious scientific organizations including the National Cancer Institute, Rockefeller University, Albert Einstein University, Vanderbilt University, Cornell University, Queens University (Canada), Hebrew University of Jerusalem (Israel), and the Max Delbrück Center for Molecular Medicine (Germany).

Winner of Startup award 2016, laureate of CES Awards Slovakia 2018, Biotech Standard of Excellence Webaward 2018, Young innovative entrepreneur 2018, Biotech Standard of Excellence Webaward 2018.

CEO: Mr Pavol Čekan, CBO: Mr Vladimír Wolf, COO: Peter Kilián
Web: <https://www.multiplexdx.com/>

Glycanostics, s.r.o.

Glycanostics is an innovative start-up company established in 2017 to bring its revolutionary cancer diagnostics products to the US and EU markets. The company was founded by two remarkable scientists Ing. Ján Tkáč, DSc and Tomas Bertok, PhD who got international recognition for their scientific works, prestigious grants and awards winners such as **Scientists of the year (Slovakia), European Research Council (ERC) Consolidator grant, Marie Skłodowska-Curie actions ITN, Qatar National Research Fund.**

Glycanostics product portfolio includes prostate cancer kit and home test. The cancer kit is in the pre-clinical validation stage, so far showing 95+% accuracy (100% assay sensitivity and 94% assay specificity), which is much more accurate than the most commonly used PSA test (83% assay sensitivity and 39% assay specificity).

Address: Dúbravská cesta 9, 845 38 Bratislava, Slovakia
Email: info@glycanostics.com
GSM: +421 915 313 964
Web: <https://www.glycanostics.com/>

Well-established companies:

HighChem s.r.o., Slovakia

Founded in 1998 by Robert Mistrik, HighChem is based in Bratislava, Slovakia and relies on its team of fourteen talented scientists and software engineers - seven of whom have a PhD degree. HighChem is partnering with Thermo Fisher Scientific (TMO), the global provider of analytical instruments, laboratory equipment, consumables and reagents.

HighChem is an industry pioneer in the field of **mass spectrometry software, database and cloud solutions.** Mastering the **fragmentation prediction** on an advanced level, HighChem Mass Frontier™ is the undisputed worldwide leading **software for the interpretation, management and processing of mass spectral and chromatographic data.** The recently launched mzCloud library and database server provides advanced searches against the most comprehensive library of high resolution tandem mass spectra of small molecules.

Web: <http://www.highchem.com/>

Biotika, a.s. Slovenská Ľupča is one of the most important manufacturers working in the sphere of biotechnology and pharmaceutical industry. Biotika was founded in 1953 as a new manufacturer of Penicillin on the territory of former Czechoslovakia with the aim to meet domestic demand.

At the beginning of the 60's the biotechnological production was extended by Oxytetracycline production and later by the production of Chlortetracycline and Dextrans for the pharmaceutical application.

In 1971 L-Lysine production by biotechnological process was launched and thereby Biotika became the third manufacturer of this essential amino acid in the world.

Web: <http://www.biotika.sk/en>

Evonik Fermas s.r.o. was established in December 1992. The shareholders of Fermas were the German company Degussa AG (today Evonik) in Frankfurt on the Main (51%) and the Slovak Biotika a.s. (49%). From 1998 Fermas is a 100% subsidiary company of German group Evonik, L-Threonin producer. Commercial production of proprietary (Evonik) or customer products (custom manufacturing) for various markets: aminoacids, aminoacid derivatives, biosurfactants, oligosaccharides, fatty acids, etc.

Web: http://www.fermas.sk/en_index.html

Imuna Pharm Holding

Established in 1953, as one of the oldest and largest pharmaceutical company today active in the field of immunopreparations, blood substitutes, allergen preparation, cell implant production, carbo, dietetic and nutritional supplements as well as medical devices (dialysis concentrates, irrigation solutions)

Web: <http://imuna.sk/en/>

Hameln rds a.s.

In 2006, Hameln Pharma rds acquired Slovakian company VUL Modra. The acquisition enabled hameln pharma rds to expand its range of services by adding toxicological/clinical studies and extensive laboratory services to the mix, alongside its existing product development work, approval service and trading activities. Today, hameln rds focuses on different steps during development and production of pharmaceutical products, covering analytical and galenical development of pharmaceuticals, Quality Control Services (stabilities and batch release) and development and GMP manufacturing of APIs as well as support to the clients also with preclinical and toxicological testing.

Web: <http://www.hameln-rds.sk/>

AZOTER Trading s.r.o.

is a small plant running fermentation enterprise, which was originally built in 1990 within the state supporting program for biotechnologies in former Czechoslovakia. It was oriented on the production of enzymes utilized in the food industry. In 2002 it changed again the owner and is now held by Azoter Company s.r.o. with main product – Azoter fertilizer.

Web: <http://www.azoter.sk/en>

MEDIREX GROUP

Medirex, a. s., a member of the **MEDIREX** Group, represents a complex of diagnostic laboratories in the fields of clinical biochemistry, haematology, clinical immunology, toxicology, medical genetics, bacteriology, mycology, parasitology, serology, virology, molecular biology and microbiology of the environment.

Web: <https://www.laboratornadiagnostika.sk/en/about-us/medirex>

Smaller Companies

Genexpress s.r.o. – private centre focused on prenatal DNA diagnostics of human monogenic hereditary diseases.

Web: <http://genexpress.sk/>

Slovgen s.r.o. – diagnostic laboratory providing DNA diagnostics and identification based on DNA of animals

Web: <http://www.slovgen.sk/>

DNAtest, s.r.o. – provides DNA analysis and tests based on DNA analysis in human diagnostics.

Web: <https://www.dnatest.sk/>

Geneton s.r.o. – DNA analysis of samples through the most modern devices on the market

Web: <http://www.geneton.sk/en/>

BioScience, s.r.o. – biotech research and development in the field of diagnostics of infectious diseases targeting immunocompromised patients, including organ transplant recipients and patients on dialysis

Web: <https://bioscience.sk/en/about-us/>

Glaston, s.r.o. – stem cells research - cooperation with Faculty of Pharmacy of Comenius Univ

Web: <https://glaston.webnode.sk/o-nas/>

DB Biotech, s.r.o., Košice - the design and production of high quality rabbit clonal antibodies developed by a novel „in vitro cloning technology“

Web: <http://www.dbbiotech.com/home.html>

Companies specialized in veterinary field:

Pharmagal s.r.o.

Web: <http://www.pharmagal.sk/>

Bioveta SK s.r.o.

Web: <https://www.bioveta.eu/>

Mevak a.s.

Web: <https://mevak.sk/index.php?id=1&L=1>

4. ASSOCIATIONS

Cassovia Life Sciences (CLS)

CLS is a not-for-profit association of scientific and research institutes, innovative industry participants, SME-s related to medical and life-sciences research and innovation.

CLS functions as a central connecting point for multiple research facilities in the proximal region of Kosice and within the cross-border region of Slovakia, Hungary and Ukraine.

CLS builds international stakeholder network, promotes the competencies and capacities of its members, organizes conferences, seminars, workshops and disseminate achievements of its members internationally.

Web: <http://cassovialifesciences.eu/>

Sources:

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