



**Biotech&Biomed Research Center of the Czech
Academy of Sciences and Charles University at Vestec**

Regional development and competitiveness
through promotion of cutting-edge biotechnology and
biomedical R&D in Czech Republic

European Regional Development Fund
Operational Program R&D for Innovation

2007 - 2013

BIOCEV: a new Czech Biotech-Biomed R&D Center

- Academy of Sciences Development program – joining forces with
 - **EU Operational Program Research and Development for Innovation (2007 – 2012)**
Subprogram ‘Capacities’ : priority axis 1.2
 - Centers of Excellence for the European Research Area
 - ‘major projects’ > 50 M€
 - infrastructure for R&D – ‘bricks’ and ‘heavy instrumentation’
- **Joining forces to bridge the gap between scientific excellence, R&D for innovation in biotech/biomed applications and regional development**

BIOCEV consortium:

6 public research institutes of the Academy of Sciences of CR

- Institute of Biotechnology (to be established by January 1, 2008)
- Institute of Experimental Medicine
- Institute of Macromolecular Chemistry
- Institute of Microbiology
- Institute of Molecular Genetics
- Institute of Physiology

Charles University

- Faculty of Science
- 1st Medical School

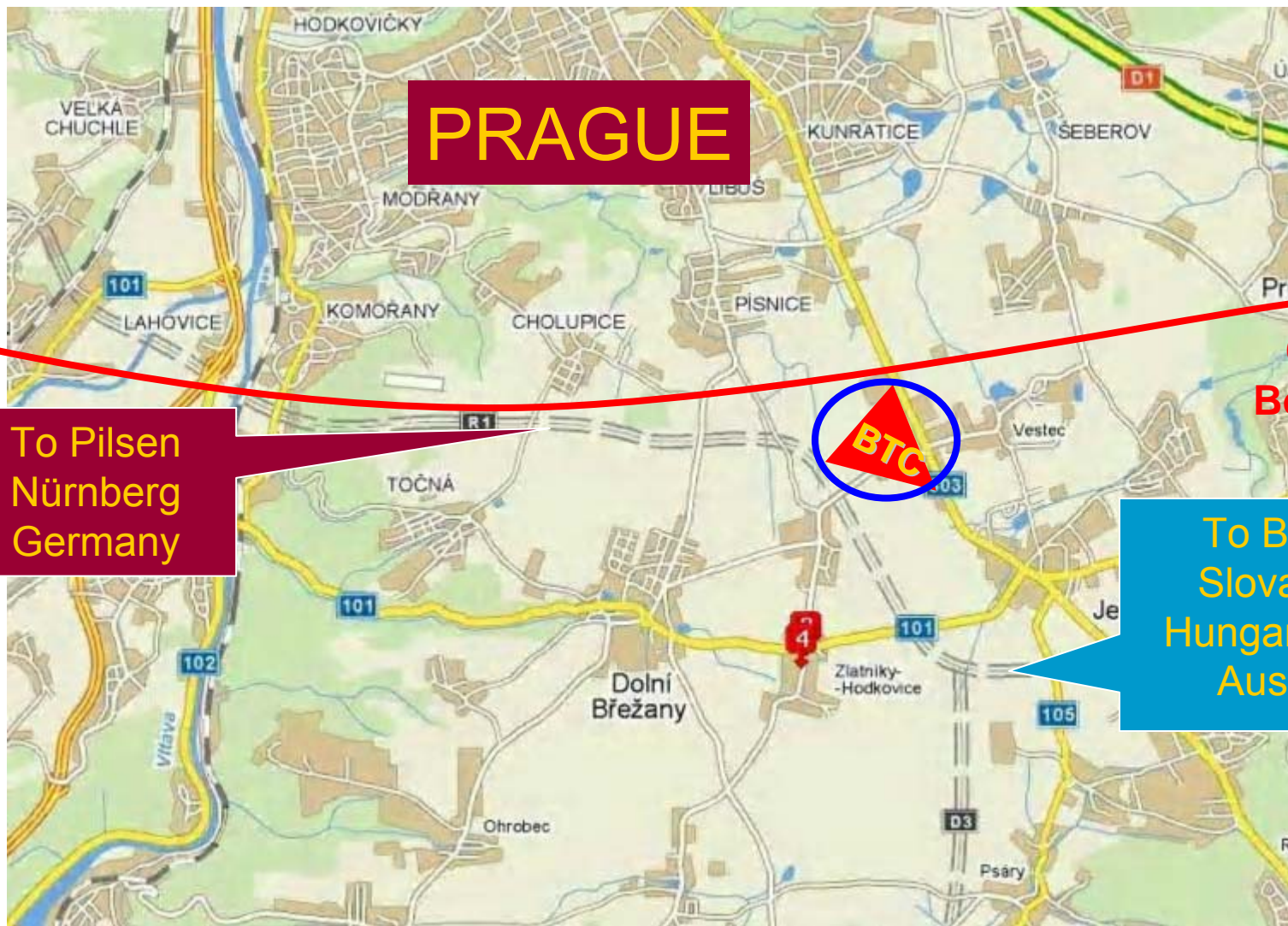
Building-up jointly a

- Center of Molecular Biotechnologies
- Center of Regenerative Medicine
- Technology Transfer Center and Biotech Company Cluster

Integrating BIOCEV into ERA - ESFRI

- **Major projected strategic infrastructures**
 - **ESFRI – Integrated Structural Biology Infrastructure**
 - Compact Light Source with laser undulator yielding three 35 keV X-ray beamlines
 - 700 MHz NMR with cryoprobe for protein structure
 - **ESFRI – INFRAFRONTIERS Infrastructure**
 - Mouse clinic - Center of knock-in/knock-out mouse phenotyping
- **Cutting-edge Core facilities of BIOCEV**
 - optical and electron microscopy imaging
 - Biological top-down mass spectrometry FT-MS ion cyclotron (15T)
 - Animal transgenesis unit
 - Expression cell culture technologies facilities
 - Downstream processing and protein extraction/purification
 - IT and data management/storage
 - Biobanking and cryopreservation

Regional development in a NUTS II region - Central Bohemia south to Prague



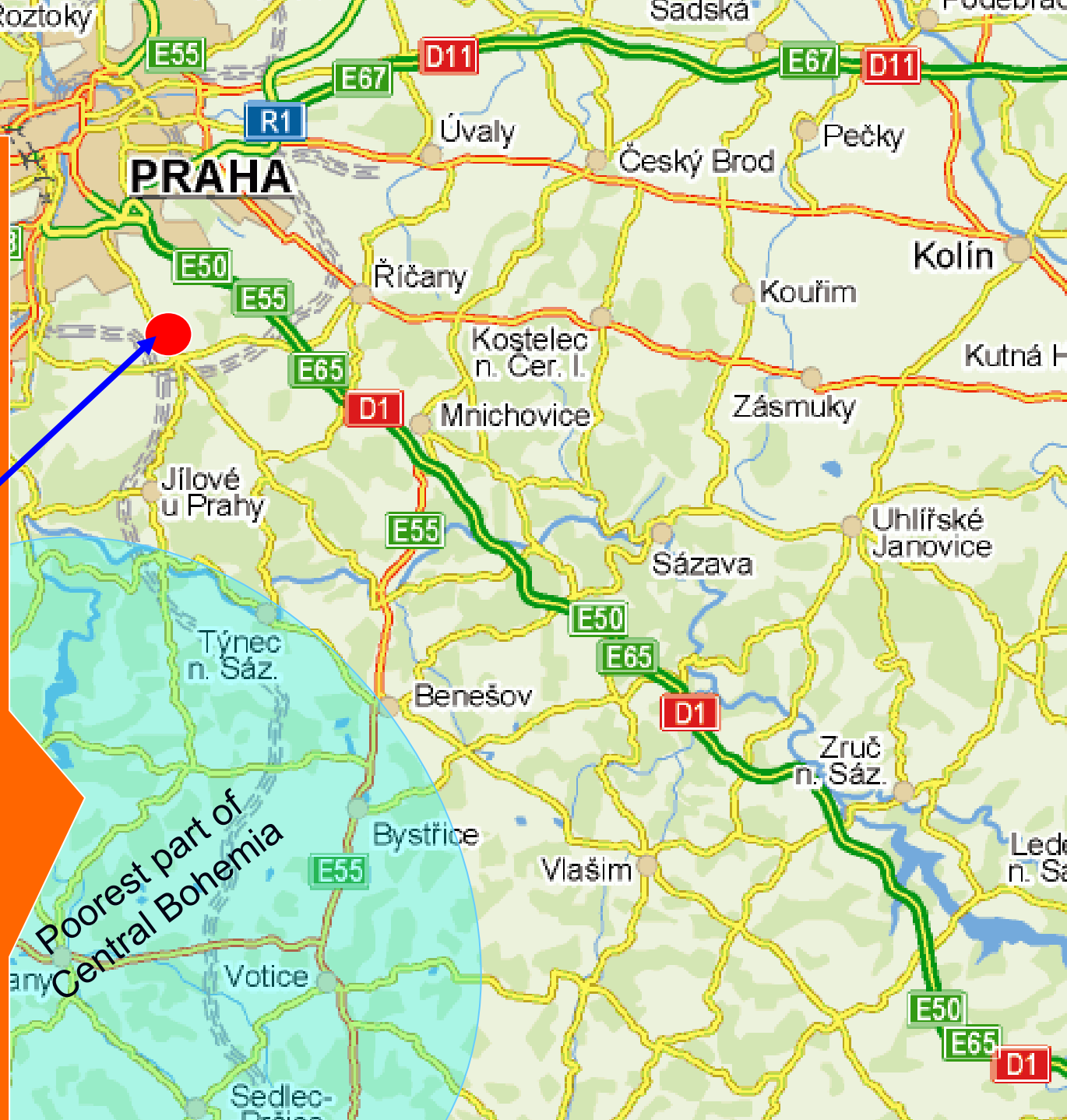
Prague

Central
Bohemia

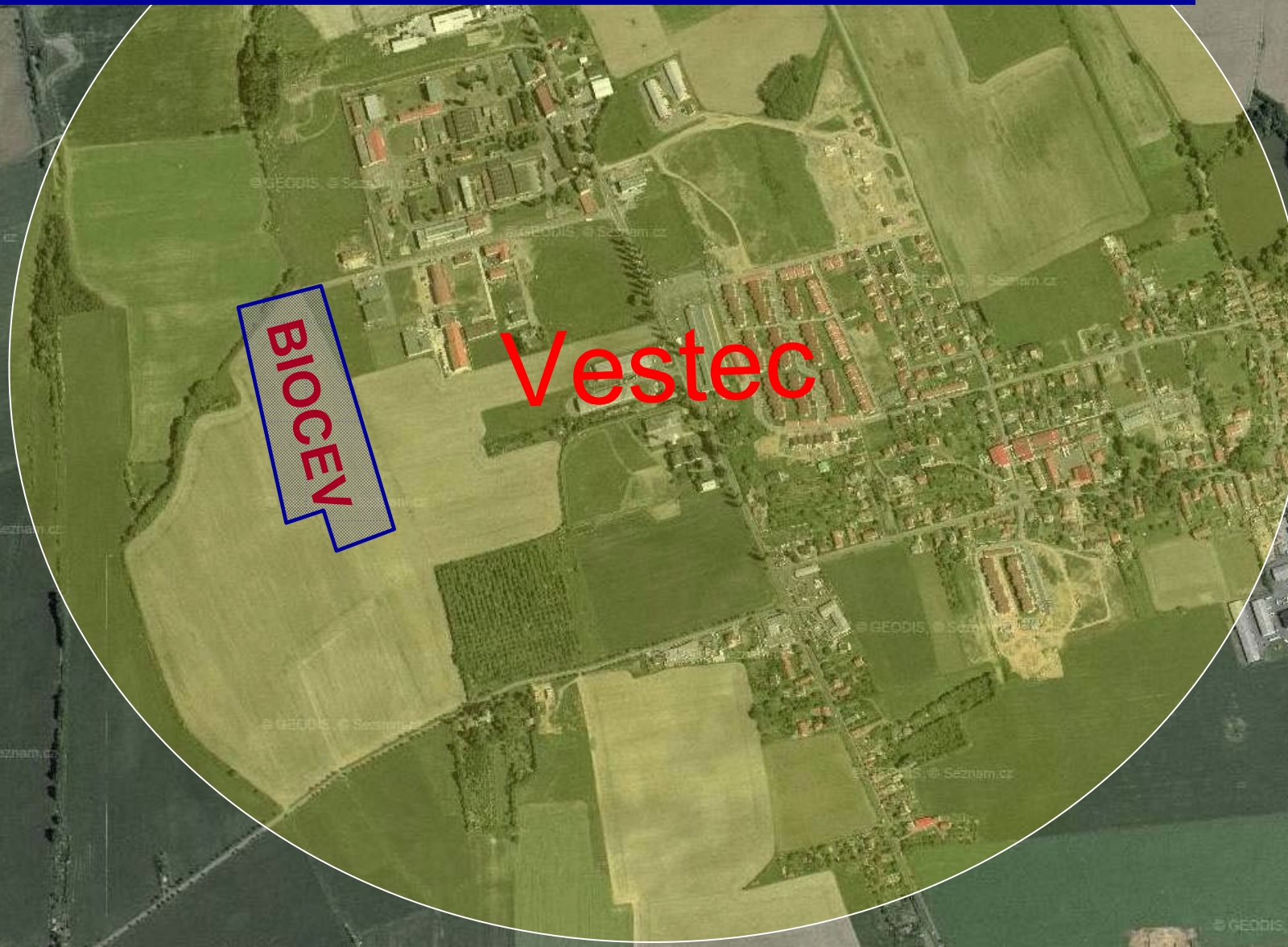
To Pilsen
Nürnberg
Germany

To Brno,
Slovakia,
Hungary and
Austria

Highway to Ceske Budejovice across the most underdeveloped region of central Bohemia (NUTS II at 35 km distance from the location of BIOCEV) =>>> will allow regional development due to research and biotech cluster site accessibility =>>> creating R&D job opportunities + generating economic growth and competitiveness in R&D in an underdeveloped region in compliance with ERDF policy



**BIOCEV: The new Czech Biotech-Biomed
R&D Center and biotech company hub**



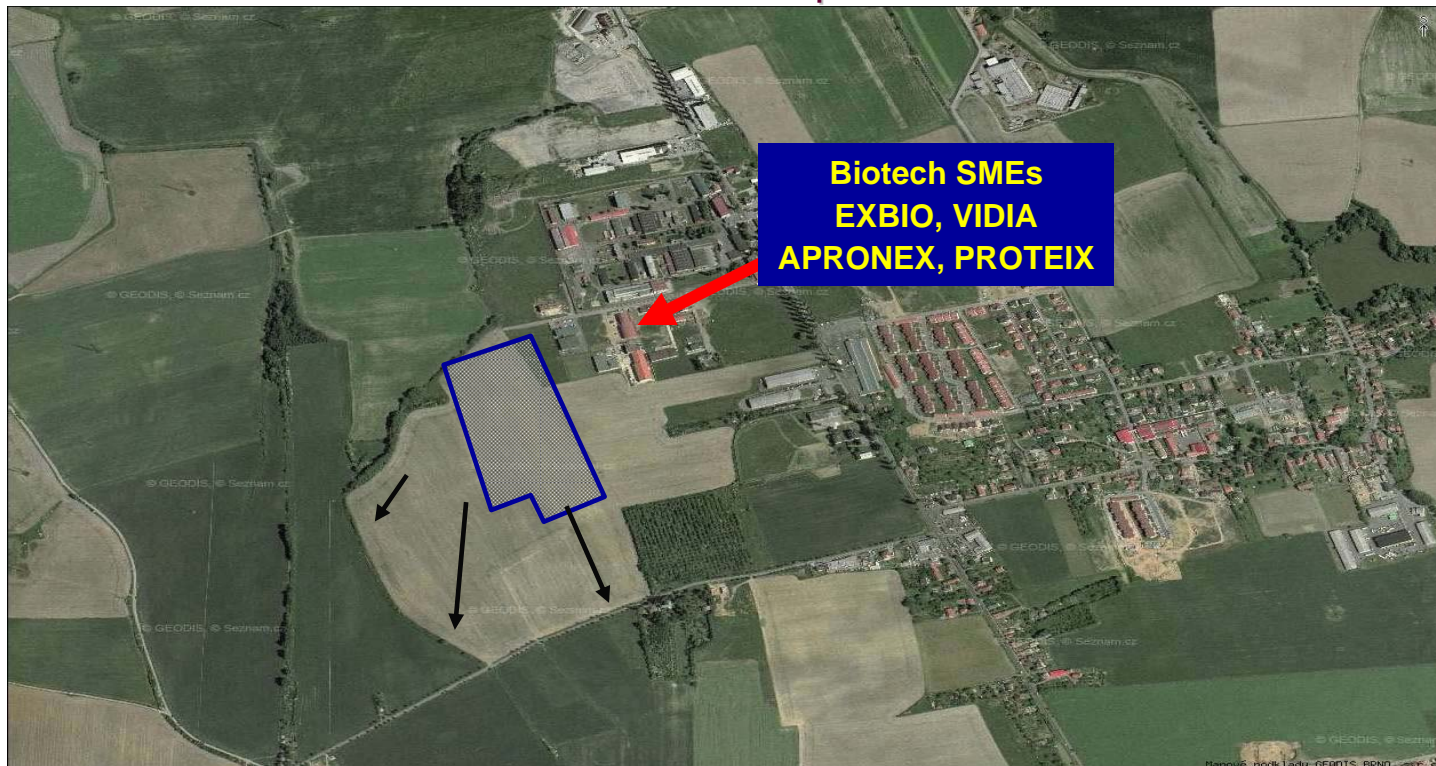
BIOCEV

Vestec

BIOCEV – Why in Vestec?



- ✓ 55 000 m² of constructible land purchased by Academy of Sciences
- ✓ Vicinity to largest top biomedical research site of the country at Prague-Krč
- ✓ 4 biotech companies operating in vicinity (EXBIO, Vidia, Proteix, Apronex)
- ✓ Lot of space for growth of a biotech company cluster
- ✓ Excellent transportation accessibility from underdeveloped regions of central Bohemia for commuting to work at BIOCEV
- ✓ Building up regional development and competitiveness by integrating BIOCEV as a Center of excellence into the European research area



20 000 m² of new R&D facilities

450 researchers

150 students and postdocs

infrastructure costs ~80 M€

operational costs ~18-20 M€/year

2012 – the true START!

Building-up a Czech Biotech cluster: Prospective industrial cooperation partners

- Bioveta a.s. recombinant antigens for veterinary vaccines
- Dyntec s.r.o. recombinant antigens for veterinary vaccines
- Sevapharma, a.s. recombinant antigens for human vaccines and diagnostics
- Biopharm a.s. Transgenic chicken for protein production into hen eggs
- Vidia s.r.o. recombinant antigens for clinical diagnostics, immunosensors
- BVT Technologies, a.s. nanoimmunosenor microfluidic chips
- EXBIO a.s. Recombinant diagnostic and therapeutic antibodies
- Helvetia Pharma a.s. Recombinant diagnostic and therapeutic antibodies
- Proteix s.r.o. Custom production of recombinant antigens and proteins
- Apronex s.r.o. Custom production of recombinant antigens and proteins
- Zentiva a.s. Targeted polymer-bound drugs
- Agilent Technologies microcapillary separations – lab-on-chip
- Elmarco s.r.o. Nano-textiles for tissue engineering

- Wilens, s.r.o., Celmed (Praha) polymers and hydrogels for contact lenses
- ELLA CS, ERILENS
- Wichterle&vacík,s.r.o.,

- **Major international cooperations**
- Novartis Vaccines Srl. recombinant antigens for human vaccines
- BT Pharma S.a.r.l. recombinant antigen carriers therapeutic vaccines
- Novozymes A/S industrial enzymes

BIOCEV Roadmap

- **2006 - July**
 - Academy of Sciences purchased 5,5 ha of land for the new biotech R&D center at Vestec
- **2007 - January**
 - Start of research concept funding to build-up a new Biotechnology Institute of the Academy of Sciences of the Czech Republic
 - BIOCEV project conception initiated
- **2007 - December**
 - BIOCEV consortium contract signed by partners, BIOCEV z.s.p.o. registered
- **2008 - August**
 - BIOCEV project officially presented to the Czech Ministry of Education, Youth and Sports jointly by the Academy of Sciences and Charles University
- **2009 - July**
 - BIOCEV project presented to EC for approval of funding
- **2010 – February**
 - BIOCEV Project approved - contract signature
- **2009 – October**
 - Start of construction
- **2010 – December**
 - INTERNATIONAL call for applications for key group leader and personnel positions
- **2012 – October**
 - opening of the new biotech/biomed R&D center for ~450 people employees/postdocs and 150 students (expecting 50% group leaders being foreigners)

Center of Molecular Biotechnologies

- Emphasis on:
 - protein research and engineering
- Structural Biology
 - Openings for discovering new interesting molecules for therapy and diagnostics
 - Processes for producing recombinant therapeutic and diagnostic proteins of extremely high added value
 - qRT/PCR for clinical and research applications
 - Licensing to biotech companies
 - Start-up and spin-off biotechs
- Transgenic cells, animals and plants
- Genetic manipulation of producing cells
- Culture techniques for bacteria and yeasts
- Advanced cell culture techniques
- Advanced biomacromolecule (protein) separation and purification
- Cutting-edge biomacromolecule analysis and characterization methods
- Structural biology and protein engineering
- Bioinformatics and modeling
- Nanobiotechnologies – molecular motors
- Biosensors

Center of Regenerative Medicine

- Tissue engineering and therapies
- Cellular therapies using stem cells
- Immunobiology of stem cells
- Application of stem cells in:
 - neurology, cardiology, diabetology and hepatology
 - ophthalmology, stomatology a otolaryngology
- Stem cell use on scaffolds for bone and cartilage reconstruction
- Biomaterials
- Nanotechnologies for cell and tissue imaging
- Nanotechnologies for therapy and diagnostics

BIOCEV seeding groups 2007-2010

- **2007: Biotechnology dept. of IMG/Sebo**
 1. P. Bartůněk - Chemical genetics
 2. M. Kubista - Single cell expression profiling
 3. J. Neužil - Molecular and recombinant therapeutics
 4. J. Pěkníková - Diagnostics for reproductive medicine
 5. R. Sedláček - Transgenic Animals
 6. Š. Růžičková - Diagnostics of autoimmune diseases
 7. P. Šebo - Recombinant binding proteins (ligands)
- **2008:**
 - G. Pavlinkova - gene expression regulation in diabetic embryopathy
 - New recruitments
- **2010 / 2011 Evaluation/new recruitments**
- **2012 Recruitment of new group leaders**

Contact:

sebo@biomed.cas.cz

Peter Sebo, PhD.
BIOCEV coordinator

Institute of Molecular Genetics AS CR, v.v.i.
Academy of Sciences of the Czech Republic
Videnska 1083
142 20 Prague 4
Czech Republic

GSM: (+420) 603 284 707
office: (+420) 241 062 762

<http://www.img.cas.cz>

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