



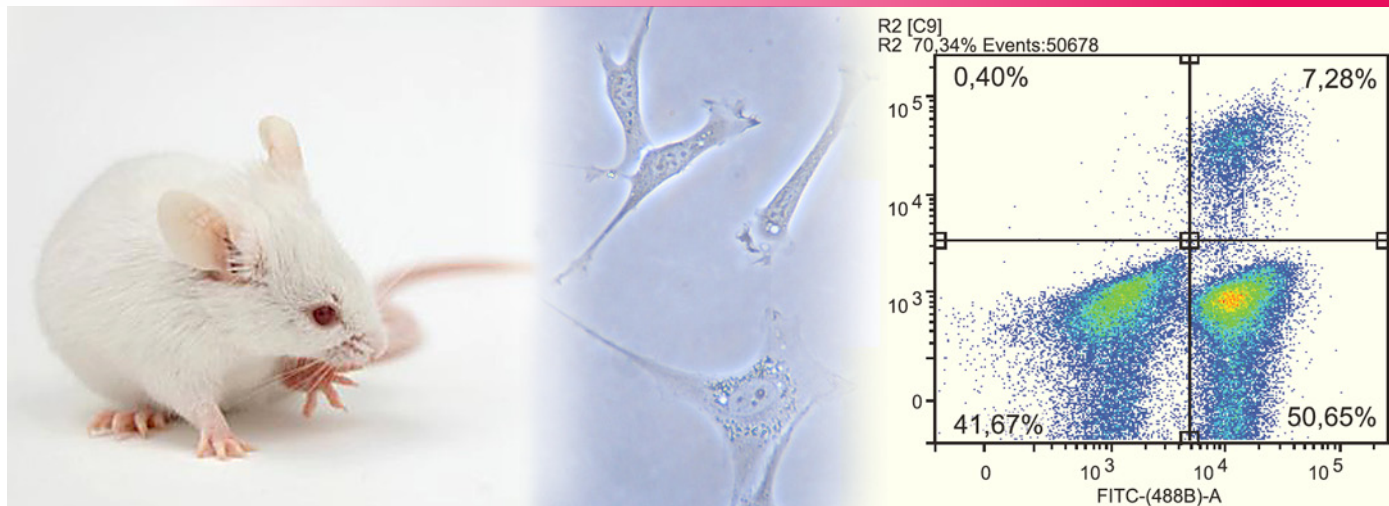
Department of Cell Biology

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LABORATORY OF IMMUNOREGULATION



RESEARCH AREA & EXCELLENCE

The aim of our research is to characterise the molecular and cellular mechanisms of specific immunity which can be consequently applied in targeted immunoregulation for both the experimental work and the clinical practice.

- Skin and corneal transplantation in laboratory animals and *in vivo* immunoregulation
- Study of cooperation among cells of the immune system in tissue cultures
- Regulation of gene expression, characterization of the functions of signalling molecules
- Study of stem cells and their use in regenerative medicine

KNOW-HOW & TECHNOLOGIES

Content of Research

- Study of cellular and molecular mechanisms specific to transplantation immunity
- The specific modulation of immune responses with the aim of applying acquired knowledge in clinical practice
- The use of nanofiber scaffolds as cell or drug carriers in *in vitro* or *in vivo* experimental systems
- Investigation of the therapeutic effect of mesenchymal stem cells in experimental mouse models; study of interaction of mesenchymal stem cells with specific drugs

Main Capabilities

- Cell cultures
- Isolation and differentiation of stem cells
- Functional immunological testing *in vivo* and *in vitro*
- Standard immunology and cell biology assays (FACS, cytokine detection, proliferation assays)

Fields of Research

Stem cell research | Biomedicine | Regenerative medicine | Transplantation immunology | Biotechnology

EXPECTATIONS & OFFERS

Offers

- Expertise within a diverse range of issues related to molecular and cellular immunology
- Experience with animal models and cell transplantation
- Analysis of the impact of specific drugs or new materials on immune system
- Highly qualified, skilful, intelligent and enthusiastic colleagues

Requirements

We are looking for collaboration with academic partners as well as public and private organisations in the fields of regulation of immune response and regenerative medicine.

KEY RESEARCH EQUIPMENT

- Cell and tissue culture laboratory
- Flow cytometry facility (LSRII, MACS sorter etc.)
- Standard equipment for immunology and cell biology assays (ELISA, WST, NO detection, proliferation assays)
- Equipped laboratory for histochemistry and immunohistochemistry
- Microscopic facility
- Equipped laboratory for immunogenetics (cyclers, real-time PCR instruments)

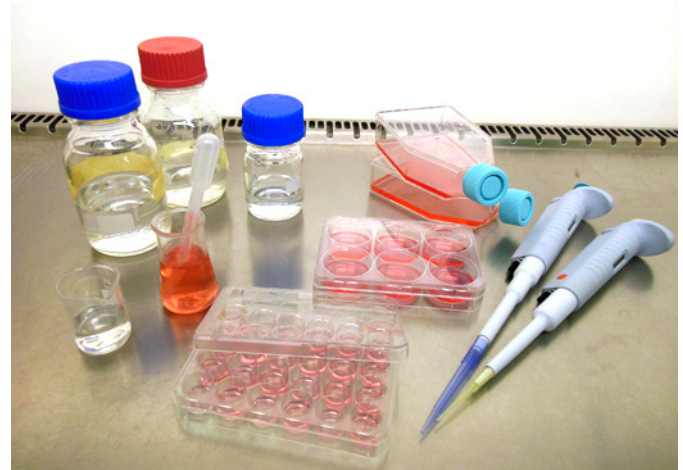
PARTNERSHIPS & COLLABORATIONS

Academic Partners: Cooperation with many academic research groups in the Czech Republic as well as in Europe: Laboratory of the Biology and Pathology of the Eye, Institute of Inherited Metabolic Disorders, First Faculty of Medicine, Charles University in Prague and General University Hospital (Prague, Czech Republic) | Institute for Clinical and Experimental Medicine (Prague, Czech Republic) | Department of Transplantation Immunology, Institute of Experimental Medicine, Czech Academy of Science (Prague, Czech Republic)

Private and Public Sector: European Eye Clinic Lexam

Main Projects

- P304-11-0653 Targeted Differentiation and Transdifferentiation of Limbal and Mesenchymal Stem Cells and Their Therapeutic Use in Preclinical Models (Grant Agency of the Czech Republic)



- 14-12580S Treatment of Severe Ocular Surface Injuries Using Limbal and Mesenchymal Stem Cells (Grant Agency of the Czech Republic, 2014–2016)
- P301-11-1568 Cellular Aspects of Transplantation Tolerance (Grant Agency of the Czech Republic)
- Participation in projects funded by the Charles University Grant Agency

ACHIEVEMENTS

Publications in respected international journals with high impact factors: Journal of Immunology, Journal of Controlled Release, Immunology, Transplantation, Journal of Tissue Engineering and Regenerative Medicine, Stem cells and Development, Cell Transplantation, Investigative Ophthalmology & Visual Science

