RESEARCH GROUP

Tissue Engineering (TEG)

PRINCIPAL INVESTIGATOR

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EDUCATION
1985: MUDr./MD in Pediatric Medicine, Brno, Czech Republic

TRAINING
2014: Visiting Scientist, Xenotransplantation, Mayo Clinic, Rochester, MN, USA

KEY INTERESTS

Valvular Heart Disease • Tissue Valve • Experiment on Pigs with Extracorporeal • Anti-Gal Antibody • Mechanical Valve • Alfa Gal Knock Out Pigs • GMO Pigs • GTKO Pigs • Circulation • Bioprosthetic Heart Valve • Right Ventricular Outflow Tract

RESEARCH FOCUS

The Tissue Engineering Research Group is a highly unique research group which is designed to lay the intellectual and scientific foundation for the development of a new generation of Bioprosthetic Heart Valve based on genetically modified pig tissue. The GTKO, as an anti-Gal antibody producing recipient, and the Gal-positive Right Ventricular Outflow Tract implant is an immunologically unique model of the current clinical system which eliminates all potential confounding xenogeneic sources of inflammation, focusing exclusively on the role of anti-Gal antibody. This research will lead to the development of a new generation of GTKO BHV’s which would expand the available clinical treatments for younger patients with heart valve disease and would likely improve durability in older patients.

RESEARCH OBJECTIVES

1. To confirm the hypothesis of reduction degenerative processes using new genetically modified tissues.
1. Combined transplantation.
1. Monitoring antibody titer against the antigen GAL in cardiac patients after aortic valve replacement and myocardial revascularization.
TOP PUBLICATIONS


BEST RESULTS

- The TEG research group has delivered a unique technology of genetically modified pigs in the Czech Republic in cooperation with University College London. The TEG has also managed suitable housing, breeding and reproduction of genetically modified pigs.
- The TEG has created an animal model of experiment with pig while using the extracorporeal circulation.

TECHNOLOGICAL EQUIPMENT

- Equipment for complete cardiac surgery for animal experiments:
  - Extracorporeal circulation
  - Respirator
  - Electrocoagulation device
  - Infusion pumps
  - Suction pumps
  - Heat exchanger
  - Device for a complete examination of acid-base balance (ASTRUP)
  - Portable ECHO device including the possibility of transesophageal echocardiography

OFFERED SERVICES AND EXPERTISE

- Wide range of animal experiments on large animals (mainly pigs): The TEG offers the possibility of any animal experiment on large animals, including the use of ECC.
- Preclinical testing of medical devices, technologies and methods in the context of animal experiments: Within the cardiac and transplant issues the TEG offers preclinical testing when examination of samples of donors and recipients (explanted heart and transplanted heart).

MAIN PARTNERS AND COLLABORATING INSTITUTIONS

- University College London, London, UK
- Institute of Animal Physiology and Genetics, Liběchov, Czech Republic
- University of Veterinary and Pharmaceutical Sciences Brno, Brno, Czech Republic