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# Laboratory of Cancer Treatment and Tissue Regeneration

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## Offer

- Preparation of experimental large animals models including surgical and anesthesiological parts
- Follow-up of animals by imaging, biochemical and immunological methods

## Expertise

- Long-term aims
- Regeneration of liver parenchyma and liver surgery
- Portal micro- and macrocirculation
- Reconstruction of portal system
- Surgical and oncological treatment of malignancies
- Immune system behaviour during progression of tumour disease

## Research Area & Excellence

Our laboratory is concerned on study of regeneration of parenchymal organs in a relation to supposed extensive surgical procedures. Our goal is to experimentally verify all possibilities that can be used for the treatment of patients with cancers, especially liver malignancies. We are checking the significance of stimulated regeneration of the future liver remnant damaged for example by oncologic experimental treatment in large animals (established are experimental model of steatohepatitis associated with chemotherapy, model of toxic alcoholic liver disease, model of biliary cirrhosis etc.)

We also develop special software models and advanced imaging analysis to predict regeneration capacity of the liver parenchyma and diagnose focal and diffuse liver diseases.

There is also included imaging of a portal system microcirculation as well. Finally we use our findings to spread our clinical treatment possibilities. We closely cooperate with the Labs of Pharmacogenomics, Tumor Biology and Quantitative Histology and we try to transfer their research results to our clinical requirements and applications.

Our team is fully instrumentally equipped to perform experiments in large animals. We also have skilled team of experts (including surgeons, anaesthesiologists, radiologists, biomechanics or experts of theoretical and laboratory fields) available to

perform broad spectrum of surgical procedures.

This team participates every year in preparing of the Summer School of Experimental Surgery annually held by our medical school.

## Members

- Assoc. Prof. Václav Liška, M.D., Ph.D. – Research Group Leader
- Kristýna Bajcurová, M.D.
- Jan Brůha, M.D.
- Ondřej Brzoň, B.Sc.
- Lada Eberlová, M.D., Ph.D.
- Ondřej Fiala, M.D., Ph.D.
- Assoc. Prof. Luboš Holubec, M.D., MBA, Ph.D.
- Petr Hošek, Ph.D., M.Sc.
- Miroslav Jiřík, M.Sc.
- Marie Karlíková, Ph.D., M.Sc.
- Eva Korčáková, M.D.
- Prof. Boris Kreuzberg, M.D., Ph.D.
- Patrik Mik, M.Sc.
- Hynek Mírka, M.D., Ph.D.
- Vladislava Mlejnková Dvořáková, M.Sc.
- Richard Pálek, M.D.
- Jáchym Rosendorf, M.D.
- Martin Skála, M.D.

- Miroslava Svobodová, Ph.D., MSc.
- Prof. Vladislav Třeška, M.D., Ph.D.
- Ondřej Vyčítal, M.D., Ph.D.

## Selected Publications

- Svoboda M., Slyšková J., Schneiderová M., Makovický P., Bielik L., Levý M., Lipská L., Hemmelová B., Kala Z., Protivanková M., Vyčítal O., Liška V., Schwarzová L., Vodičková L., Vodička P.: *HOTAIR long non-coding RNA is a negative prognostic factor not only in primary tumors, but also in the blood of colorectal cancer patients*. *Carcinogenesis*, 2014, 35: 1510–1515
- Flanagan L., Schmid J., Ebert M., Souček P., Kunická T., Liška V., Brůha J., Neary P., Dezeeuw N., Tommasino M., Jenab M., Prehn J.H., Hughes D.J.: *Fusobacterium nucleatum associates with stages of colorectal neoplasia development, colorectal cancer and disease outcome*. *Eur J Clin Microbiol Infect Dis.*, 2014, 33: 1381–1390
- Slyšková J., Cordero F., Pardini B., Kořenková V., Vymetálková V., Bielik L., Vodičková L., Pitule P., Liška V., Matějka V., Levý M., Buchler T., Kubišta M., Naccarati A., Vodička P.: *Post-treatment recovery of suboptimal DNA repair capacity and gene expression levels in colorectal cancer patients*. *Mol. Carcinog.*, 2014, electronic publication
- Třeška V., Liška V., Fichtl J., Lysák D., Mírka H., Brůha J., Duras P., Třešková I., Náhlík J., Šimánek V., Topolčan O.: *Portal vein embolization with application of haematopoietic stem cells in patients with primarily or non-resectable colorectal liver metastases*. *Anticancer Res.*, 2014, 34: 7279–7285
- Slyšková J., Korenková V., Collins A.R., Procházka P., Vodičková L., Švec J., Lipská L., Levý M., Schneiderová M., Liška V., Holubec L., Kumar R., Souček P., Naccarati, Vodička P.: *Functional, genetic and epigenetic aspects of base and nucleotide excision repair in colorectal carcinoma*. *Clin Cancer Res.*, 2012, 18: 5878–5887
- Liška V., Třeška V., Mírka H., Beneš J., Vyčítal O., Brůha J., Pitule P., Skalický T., Sutnar A., Chlumská A., Racek J., Trefil L., Fínek J., Holubec L.: *Immediately Preoperative use of Biological Therapy Does not Influence Liver Regeneration after Large Resection - Porcine Experimental Model with Monoclonal Antibody against Epidermal Growth Factor*. *In Vivo*, 2012, 26: 683–691
- Kochová P., Kuncová J., Švíglerová J., Cimrman R., Miklíková M., Liška V., and Tonar Z.: *The contribution of vascular smooth muscle, elastin and collagen on the passive mechanics of porcine carotid arteries*. *Physiol. Meas.*, 2012, 33: 1335–1351

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## Experts and their department

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