PRESS RELEASE

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MINIPIGS HELP TREAT CROHN'S DISEASE

Minipigs can now help treat the complications of Crohn's disease, a serious disease of the digestive tract. The Institute of Animal Physiology and Genetics CAS has succeeded in creating a minipig model with similar complications to those suffered by patients with Crohn's disease. The animals can serve as ideal models for developing and testing new medical treatment procedures.

Recurrent intestinal strictures remain one of the most common complications that patients with Crohn's disease struggle with. *"Approximately 50% of Crohn's disease patients undergo surgical removal of the damaged (often narrowed) portion of the intestine within 10 years of diagnosis, and up to 60% of them develop a pathologic condition at the anastomotic site in the form of bowel wall thickening followed by re-narrowing and bowel obstruction requiring further surgical interventions,"* says Mr. Martin Lukáš, explaining the motivation behind his team's work.

The Liběchov workplace of the Institute of Animal Physiology and Genetics CAS has a long history of being involved in the use of minipigs as suitable models for the study of various human diseases. *"We have created a new and reproducible model of intestinal stricture in a minipig, being a large animal model, with both macroscopically and microscopically confirmed inflammatory changes, mimicking the human Crohn's disease,"* describes Mr. Štefan Juhás from the Institute of Animal Physiology and Genetics CAS.

> *"In our minipigs, we have demonstrated a stable intestinal stricture diameter persisting for more than 6 months, suitable for the development and training of new endoscopic treatment techniques."*

Advanced endoscopic techniques prove to be the most suitable and gentle forms of follow-up therapy for intestinal strictures as complications of Crohn's disease. However, their use requires experience and practice, which is difficult to obtain in human patients. *"In our minipigs, we have demonstrated*

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a stable intestinal stricture parameter persisting for more than 6 months, suitable for the development of new endoscopic treatment techniques or training of new endoscopic specialists in the field of human medicine," says Mr. Martin Lukáš, detailing the unique potential of the minipigs from Liběchov.

Why minipigs of all animals?

The Liběchov miniature pigs are both physiologically and anatomically much closer to humans than the traditionally used small animal models such as mice and rats, on which the new treatment methods are usually tested prior to the actual clinical trials on human patients. Even at this point in time and unlike dogs and non-human primates, minipigs still represent an acceptable economic and ethical option for biomedical research, including the testing of new therapies.

The study was conducted in collaboration with specialists from the ISCARE Clinical and Research Centre for Intestinal Inflammation and surgeons from the General University Hospital and the Central Military Hospital in Prague as well as the Royal Lancaster Hospital in the UK.

Further information:

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Download better-quality **photos** here.

Link to online **publication** here.

Video sequence – link to a short video; longer sequences available upon request

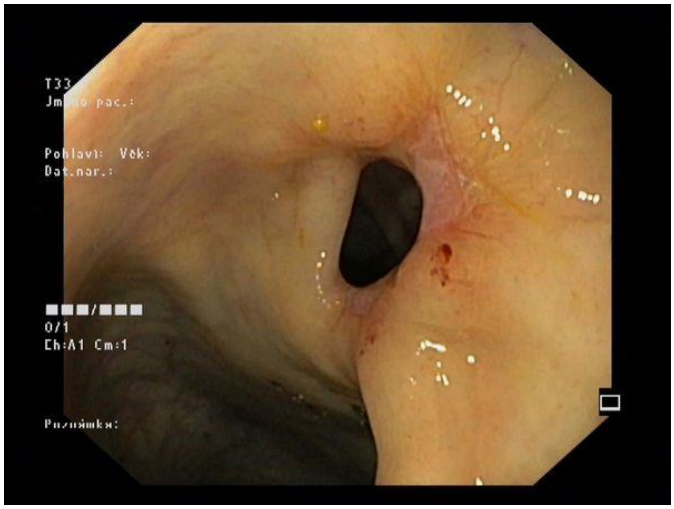
Crohn's disease is a relatively common autoimmune disease affecting 200-250 patients per 100,000 people in the Czech Republic. It manifests as a chronic inflammation affecting any part of the digestive tract from the oesophagus to the rectum. The disease often occurs in young patients between 20-30 years of age and persists for the patient's whole life. Treatment options are limited, mostly serving only to supress the inflammatory manifestations of the disease. The causes and prevention of the disease are not yet fully explained, but its manifestations make it significantly more difficult for patients to lead a full life and can even result in partial or permanent disability. It belongs to the group of diseases of civilization.

Endoscopic techniques involve medical procedures using a flexible tube equipped with a camera that allows for the direct imaging of the hollow internal organs without the need for surgical incisions. The endoscope is inserted through one of the body's natural openings, such as the mouth or anus, and thus, represents an ideal alternative to extensive surgical procedures. The most cutting-edge procedures such as the endoscopic balloon dilatation, endoscopic stricturotomy or the short-term insertion of self-expanding metal stents require the surgeon's high precision and experience to minimise the potential risks of further injury to the gastrointestinal wall during the procedure itself.

Photo gallery

Minipigs represent ideal animal models for the development and testing of new treatment methods.
PHOTO: M. Lukáš

Endoscopic procedure on a minipig.
PHOTO: M. Lukáš



Endoscopic photograph of a stricture on the intestine of a porcine model formed after the application of a mixture narrowing the diameter of the digestive tract and thus, stimulating the complications of Crohn's disease.
PHOTO: M. Lukáš