



Katedry genetiky a biochémie PriF UK
a občianske združenie *NATURA*

Vás pozývajú na 129. prednášku v rámci Kuželových seminárov:

prof. Jiří Neužil

Griffith University, Southport, Australia
& Biotechnologický ústav AV ČR

MITOCHONDRIA ON THE MOVE: FROM HORIZONTAL MITOCHONDRIAL TRANSFER TO LIVER REGENERATION

ktorá sa uskutoční **17. mája 2024** (piatok) o **13:30**
v miestnosti CH1-222 Prírodovedeckej fakulty UK

<http://www.naturaoz.org/seminare.html>
<http://www.naturaoz.org/KuzeloveSeminare.html>

Prof. Jiří Neuzil

Graduated from the Prague Institute of Chemical Technology in Prague

PhD from the Institute of Microbiology, Academy of Sciences of the Czech Republic, Prague

1991-1998, post-doctoral and senior post-doctoral fellow in the Heart Research Institute in Sydney, NSW, Australia

1998, Group Leader in the German Institute of Human Nutrition, Potsdam, Germany

1998-2001, Group Leader in the Institute for Prevention of Cardiovascular Diseases, University of Munich, Germany

2001-2002, Visiting Researcher at the Department of Pathology, University of Linköping, Sweden

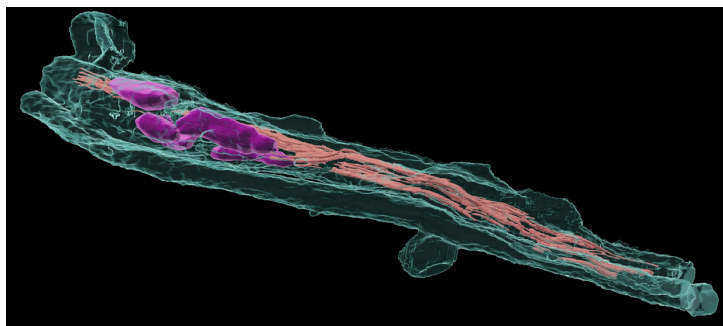
2002-2005, Senior Lecturer at the School of Medical Science, Griffith University, Southport, Qld, Australia

2005-2008, Associate Professor at the School of Medical Science, Griffith University, Southport, Qld, Australia

2008-present, Professor of Molecular Medicine at the School of Medical Science, Griffith University, Southport, Qld, Australia; now part-time position

2005-present, Group Leader, Institute of Biotechnology, Academy of Sciences of the Czech Republic, Prague, Czech Republic

Synopsis of the lecture: Horizontal mitochondrial transfer (HMT) is an emerging paradigm in cell biology. It was shown for the first time *in vivo* using mouse model of cancer with compromised mitochondrial respiration. Further research showed that cancer cells need respiration in order to support *de novo* pyrimidine synthesis. Applying these discoveries form research on HMT, we then tested whether



de novo synthesis is needed for liver regeneration as a model of highly robust proliferation. Our research shows that this is, indeed, the case, and that under the scenario of partial hepatectomy, the rapid regrowth of liver tissue, dependent on de novo pyrimidine synthesis, is supported by ammonia that is normally detoxified in the liver.

Selected publications:

1. Sharma P, ..., **Neuzil J**,* Cecchini G,* Iverson T* (2024) Disordered-to-ordered transitions in assembly factors allow the complex II catalytic subunit to switch binding partners. *Nature Communications* 15, 473; *joint senior authors.
2. Bielicikova Z, ..., **Neuzil J** (2023) Mitochondrially targeted tamoxifen in patients with metastatic solid tumours: an open-label, phase I/II single-centre trial. *eClinMed* 57, 101873.
3. Vacurova E, ..., **Neuzil J** (2022) Mitochondrially targeted tamoxifen alleviates markers obesity and type 2 diabetes mellitus in mice. *Nature Communications* 13, 1866.
4. Bajzikova M, ... , **Neuzil J** (2019) Reactivation of dihydroorotate dehydrogenase by respiration restores tumor growth of mitochondrial DNA-depleted cancer cells. *Cell Metabolism* 29, 399-416.
5. Bezawork-Geleta A, ..., **Neuzil J** (2018) Alternative assembly of respiratory complex II connects energy stress to metabolic checkpoints. *Nature Communications* 9, 2221.
6. Tan AS, ... **Neuzil J***, Berridge MV* (2015) Mitochondrial genome acquisition restores respiratory function and tumorigenic potential in cancer cells without mitochondrial DNA. *Cell Metabolism* 21, 81-94; *joint senior authors.