
Yeast Colony Group

Offer

We offer our expertise related to molecular and cellular biology of yeast, with an emphasis on investigation and environmental resistance of multicellular populations such as biofilms, populations of natural yeast strains, immobilised populations.

Know-how & Technologies

- The development and differentiation of yeast colonies, a model of simple multicellular organism
- The function and regulation of processes involved in development of specialized colonial cells similar to cells of solid tumors of mammals
- The differentiation in structured biofilm colonies of natural yeast strains
- The regulation of mechanisms involved in resistance of yeast biofilm colonies and biofilms against environmental attack (including drug treatment)
- The development of new approaches to study multicellular structures

We are looking for cooperation with public and private organizations in the field of molecular biology and microbiology related to analyses of multicellular yeast populations.

Main Capabilities

- Genetic, molecular biology and biochemistry techniques, including yeast strain modification (e.g., construction of knock-out strains, genomic fusions with gene tags etc.), DNA, RNA and protein analyses, microarrays, amino acid quantification (HPLC), different cellular staining, flow-cytometry and others
- Special techniques for studies of multicellular populations including two-photon excitation confocal microscopy for *in situ* analyses of population architecture and differentiation, cell micromanipulation and separation and others.

Key Research Equipment

Microscopy and macroscopy specialized for the investigation of multicellular communities, standard equipment for molecular and cellular biology, biochemistry and microbiology.

Partners and Collaborations

Academic Partners

Institute of Microbiology of the CAS (Laboratory of Cell Biology; Prague, CZ) | Oslo University Hospital (Ullevål) (Dept. Medical Genetics; Oslo, Norway) | Institute Jacques Monod CNRS, Paris, France | University of Tennessee, Memphis, USA | COST network "Proteostasis" BM 107

Private and Public Sector

Lenticats (CZ)

Main Projects

- 15-08225s, Metabolic pathways and regulatory mechanisms responsible for vitality and longevity of cells specifically localized within yeast colonies, Grant Agency of the Czech Republic, 2015–2017.
- 7F14083, 3D yeast colony genomics: A model for cancer progression and development of drug resistance in biofilms, Czech-Norwegian Research Programme (CZ09), 2014–2017.
- 13-08605S, Biofilm colonies of wild yeast: Development, defense strategies and regulatory pathways, Grant Agency of the Czech Republic, 2013–2017.
- TA01011461, Immobilized yeasts in biotechnology: development of new applications for manufacturing, Technology Agency of the Czech Republic, 2011–2014.
- 204/08/0718, Role of ammonia signalling in yeast colony differentiation, development, age, survival: Molecular mechanisms and functions, Grant Agency of the Czech Republic, 2008–2012.
- 55005623, Multicellular yeast Communities: Signalling, Differentiation and Long-Term Survival, Howard Hughes Medical Institute International Research Scholar Award, USA, 2006–2011.

- LC06063, Fluorescence microscopy in biological and medical research, Ministry of Education of the Czech Republic, 2006–2011
- LC531, Centre on molecular biology and physiology of yeast communities, Ministry of Education of the Czech Republic, 2005–2011.
- EMBO Young Investigator Award 2001 (YIP141) (EMBO/HHMI Young Investigator 2003–2005). “Studies of signals involved in the development of multicellular structures – yeast colonies”.

Achievements

Czech patent: CZ 305223 „Method of modification of the detection yeast strain“ (2015) and publications in peer-reviewed and high-impact journals such as Nature, J Cell Biol, J Cell Sci, Mol Biol Cell, J Biol Chem, FEMS Microbiol Rev, EMBO Rep, Env Microbiol and Mol Cell. Results are regularly presented as plenary and invited lectures at leading international conferences and in prestigious Universities.

Are you interested in this expertise?

Please contact CPPT UK

Web: www.cppt.cuni.cz/

Mail: transfer@cuni.cz

Phone: +420 224 491 255

Experts and their Department

Prof. RNDr. Zdena Palková, CSc.

Department of Genetics and Microbiology

Web: web.natur.cuni.cz/~zdenap