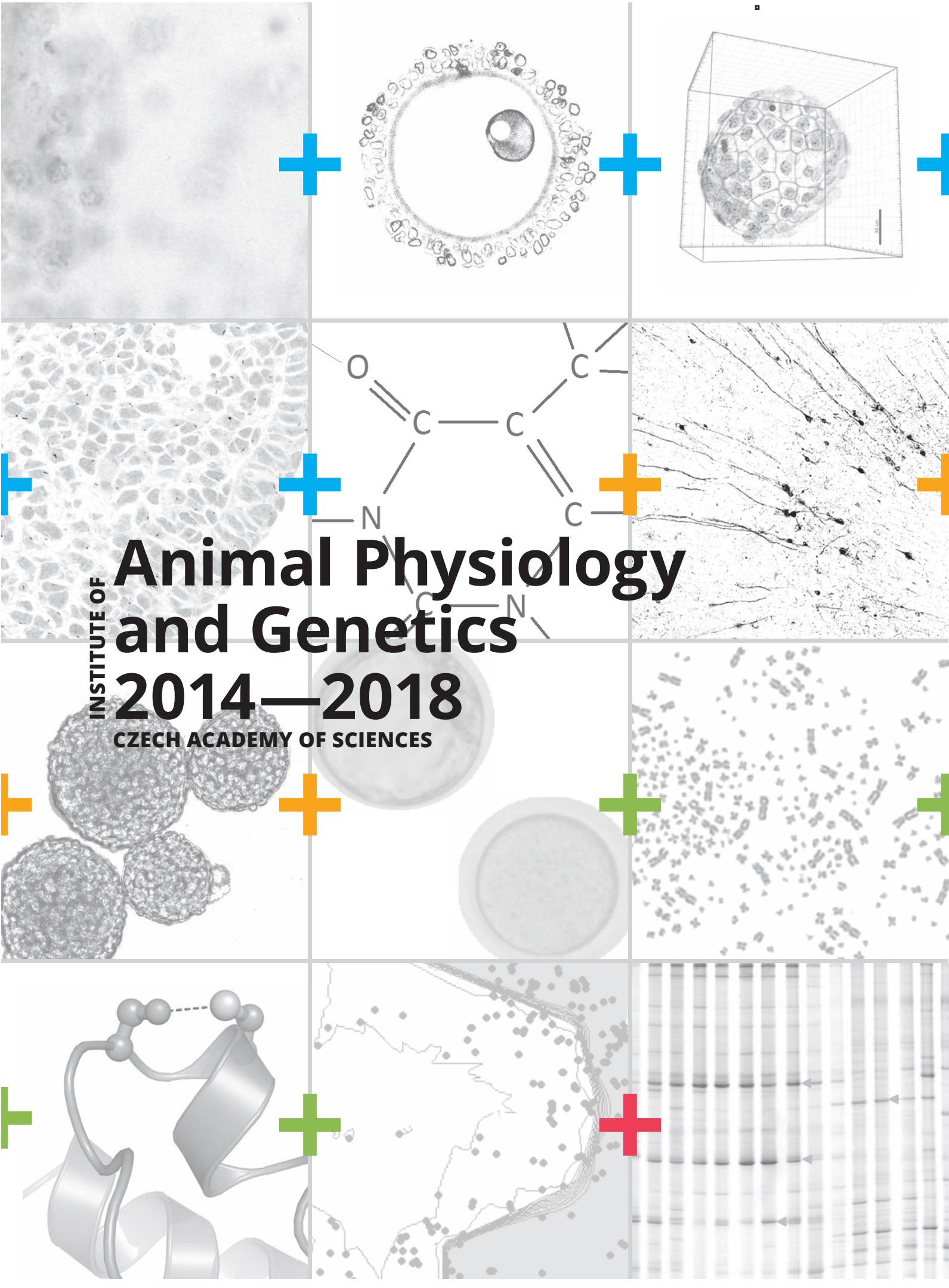


INSTITUTE OF

Animal Physiology and Genetics 2014—2018

CZECH ACADEMY OF SCIENCES

IAPG

Content

Preface

Dear reader,

You are opening the five-year report on the IAPG activities during the period between the years 2014 and 2018. Although the Institute publishes each year annual reports and there has also been published the Bienium report in the past (covering the years 2011–2012), this is the first report covering such relatively long period of the Institute's development and providing information on scientific achievements of Institute's staff, as well as on important events occurring during this period.

I believe that information contained in this report would be interesting not only for the scientific co-workers and colleagues from other institutes and universities, but also for general public. Especially, we also aim to attract attention of young people with the hope to raise their interest in science in general, and potentially also in scientific research in our Institute.

Founded in 1963 the Institute originally oriented to farm animals, has since developed to a scientific institution utilizing the most up-to-date methods for the research of important aspects of animal physiology and genetics. At present, there are two main areas of basic research covering reproductive and developmental biology on one side and the study of biodiversity and ecology on the other side. Apart from that the Institute has also a big potential in oriented research directed to biomedical applications. This includes mainly using the pigs as animal models for the study of important neurodegenerative diseases in three laboratories of the recently established PIGMOD Centre. For this purpose the Institute is suitably situated in the countryside, but still within reach of Prague.

The period covered by this report has been also a period of a number of changes in Institute's structure – 2 laboratories were dissolved, other 4 new laboratories were established, out of 12 now existing laboratories 8 of them have new group leaders. During this period the scientists of our Institute have been relatively successful in raising funds from grant applications both on national level and from European structural funds and worldwide. Recently, we have been able to obtain two big projects from EU funds – one from Operational Programme OP VaVPI, which enabled the establishment of the PIGMOD Centre, and second from Operational Programme OP VVV, which enabled close collaboration of 6 Institute laboratories in the project of "Excellence in molecular aspects of the early development of vertebrates", and which is planned to finish in next decade. Apart from that the scientists from our Institute have been also able to obtain funds from national and international private sources in appreciable amounts.

Altogether, all these above-mentioned funds now represent more than half of the Institute's yearly budget and enabled a significant upgrade of the Institute's infrastructure (both buildings and scientific devices) on one side, and remarkable development of human resources on the other side (new postdocs and students, as well as skillful technical assistance). Our Institute has become much more international and the number of nationalities of people working on the positions of postdocs, students or senior scientists is something between 20 and 30.

The above-mentioned sources also enabled the significant improvement of the scientific achievements and the number of scientific publications, but also their quality has remarkably improved during the past few years.

I am convinced that the Institute of Animal Physiology and Genetics is now in the very good shape – it has all the necessary infrastructure, as well as excellent and enthusiastic scientists on the positions of group leaders and as such has all the prerequisites for its further development and for producing groundbreaking results and excellent scientific publications in near future on the global scale.

Michal Kubelka
Director of IAPG

ČSAV - Laboratoř fyziologie a genetiky hospodářských zvířat, Liběchov

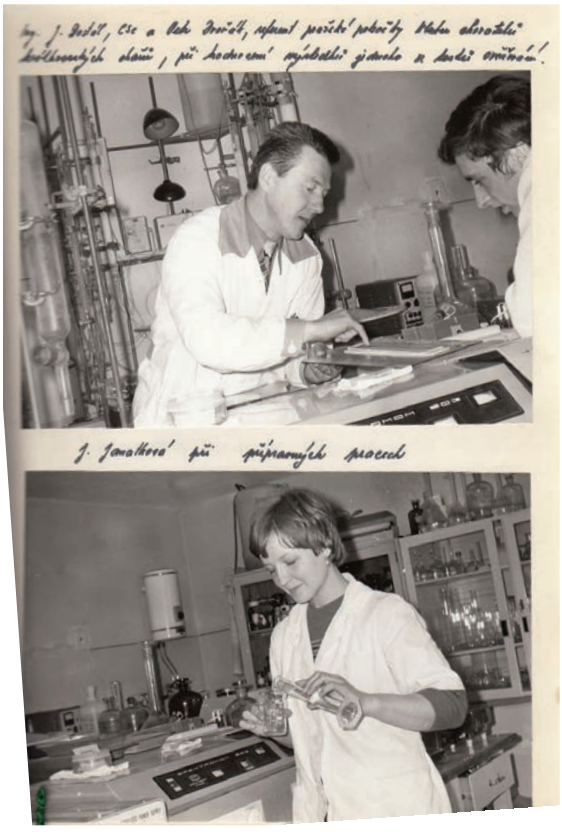
HISTORY OF THE INSTITUTE

Upon the decision act by the late Czechoslovak Academy of Agricultural Sciences (CAAS), the laboratories in Libechov, under the name Laboratory of Reproduction Biology of Farm Animals that time, started their activities November 1, 1954.

The relatively small Libechov laboratory has gradually achieved recognized reputation among other institutions of CAAS. At the same time, many scientific contacts resulting in many cooperations in area of the reproductive biology and immunology have been established with some institutions of the Czechoslovak Academy of Sciences (CZAS).

In very important year 1962, CZAS has included into its organization three small, but the most scientifically productive research bodies, namely Laboratory of Reproduction Biology, Libechov, Department of Animal Physiology of IAP, Uhrineves, and Laboratory of radiobiology, Prague. Since January 1, 1963, CZAS has established the Laboratory of Animal Physiology and Genetics with two research departments – Department of Physiology, Uhrineves and Department of Genetics, Libechov. Later in 1969, Department of Genetics has been organized as a single, independent research body — Laboratory of Animal Genetics headed by Dr. J. Matousek and Laboratory of Animal Physiology headed by Dr. J. Bílek.

The political reasons after Russian invasion in 1968 have led to the new unification of both departments in 1972 under the name the Institute of Physiology and Genetics of Farm Animals of CZAS. February 1, 1973 was the name changed to the Institute of Physiology and Genetics of Farm Animals. The present name – the Institute of Animal Physiology and Genetics (IAPG) — was adopted since January 1, 1993 as a reflection of the first common Laboratory of Animal Physiology and Genetics.

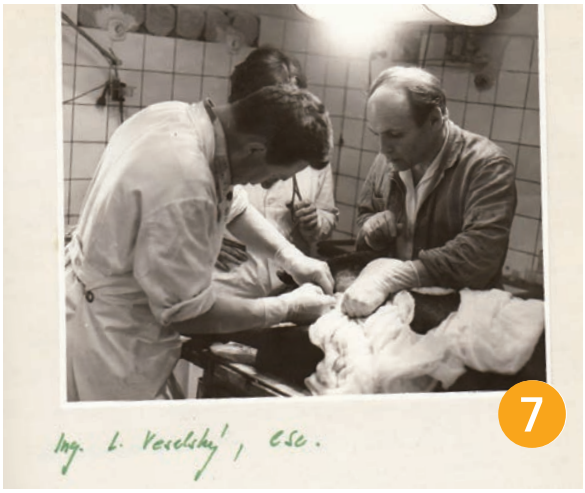


HISTORY OF RESEARCH

The first research topics, nearly entirely focused on applied agricultural research, have been gradually changing into more basic research directions.

After period of breeding research, the female germinal cell, its fertilization, the preimplantation development of mammalian embryo, conditions of experiments with oocytes in vitro, gene expressions in early development many other related problems have been focused and studied.

This school of mammalian reproductive biology is still active and is successfully developing, bringing many basic data of present-day mammalian cloning research and regulation of cell cycle. There were running studies of hormone regulation of milk production, ruminants nutrition and gut microbiology.

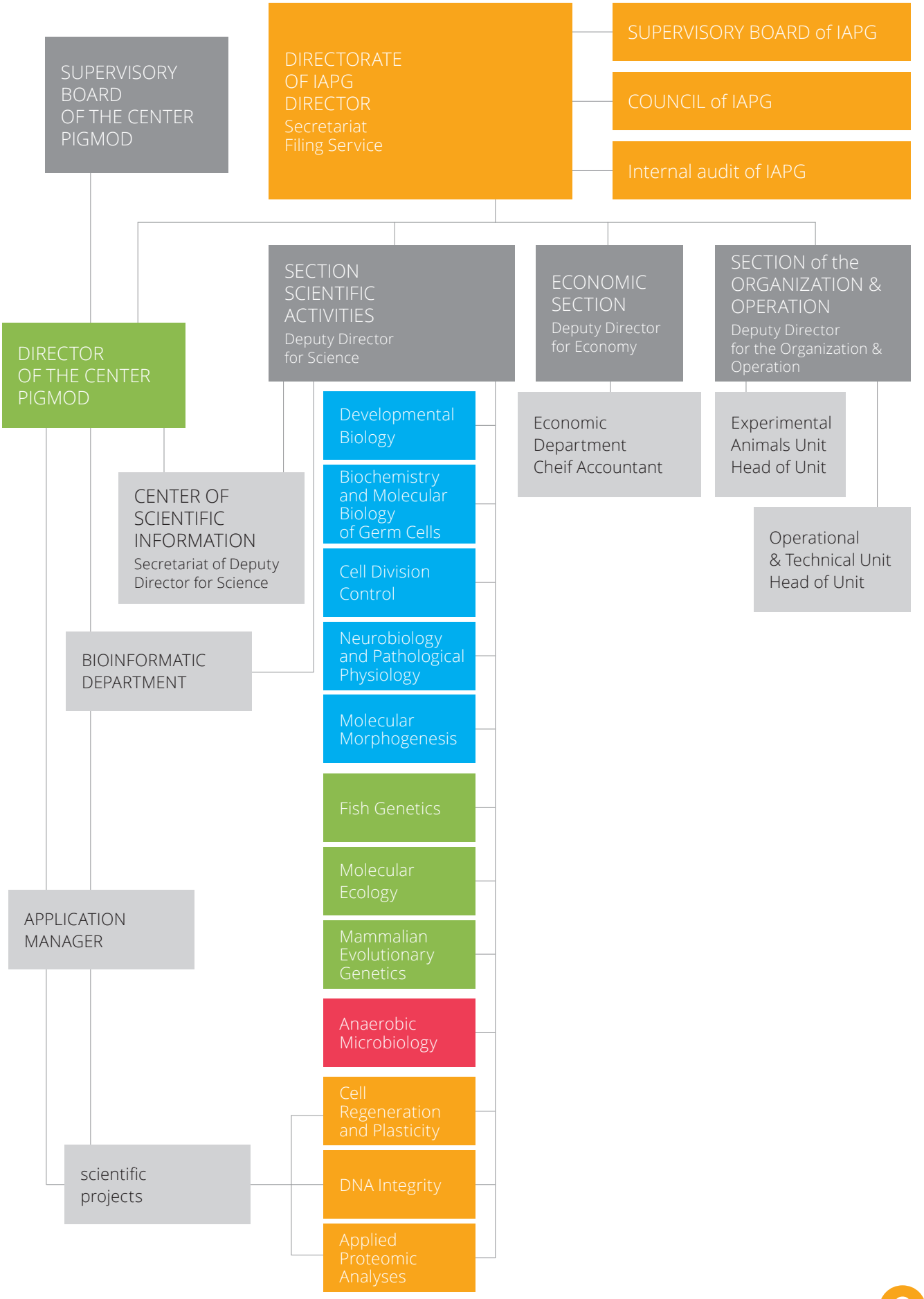


IAPG

Management of Institute

Ing. Michal Kubelka, CSc.—director
Ing. Jan Kopečný, DrSc.—deputy director for science
Ing. Zdeňka Kynychová—deputy director for economy
Ing. Štěpán Hladký—deputy director for organization and operation

Organization Scheme



IAPG

Councils Boards

Council of IAPG (Until 31st of January, 2017)

Internal members

prof. Ing. Petr Ráb, DrSc., dr. h. c.—chairman
RNDr. Petr Šolc, Ph.D.—deputy chairman
Ing. Jan Kopečný, DrSc.
RNDr. Petr Kotlík, Ph.D.
Ing. Michal Kubelka, CSc.
Prof. RNDr. Miloš Macholán, CSc.
MVDr. Jiří Šimůnek, CSc.

External members

doc. Ing. Pavel Kozák, Ph.D.
JUDr. Jiří Malý
doc. RNDr. Jana Pěknicová, CSc.
Prof. Ing. Vojtěch Rada, CSc.

Council of IAPG (From 1st of February, 2017)

Internal members

prof. Ing. Petr Ráb, DrSc., dr. h. c.—chairman
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doc. RNDr. Marcela Buchtová, Ph.D.
Ing. Zdeňka Ellederová, Ph.D.
Ing. Jan Kopečný, DrSc.
Ing. Michal Kubelka, CSc.
Ing. Andrej Šušor, Ph.D.

External members

doc. MVDr. Aleš Hampl, CSc.
RNDr. Jiří Hejnar, CSc.
Ing. Jiří Hašek, CSc.
doc. RNDr. Vladimír Krylov, Ph.D.

Supervisory Board (Until 30th of April, 2017)

RNDr. Miroslav Flieger, CSc.—chairman
RNDr. Radek Procházka, CSc.
prof. Ing. Věra Skřivanová, CSc.
doc. RNDr. Eva Zažímalová, CSc.
Ing. Martin Lhoták

Supervisory Board (From 1st of May, 2017)

prof. RNDr. Jan Zima, DrSc.—chairman
Ing. Jakub Mrázek, Ph.D.
JUDr. Jiří Malý
Ing. Petr Bobák, CSc.
prof. Mgr. Ing. Markéta Sedmíková, Ph.D.

Supervisory Board of Center PIGMOD

Ing. Jan Kopečný, DrSc.—chairman
prof. RNDr. Vladimír Holáň, DrSc.
doc. MUDr. Milan Macek sr.
RNDr. Jiří Šinkora, Ph.D.
Ing. Pavel Trefil, DrSc.

IAPG

Laboratories

Developmental Biology

Team of Developmental Biology focuses on the animal development from gametogenesis, through oocyte fertilization up to late stages of fetuses and birth of a new organism

- To understand the processes underlying developmental defects on DNA or RNA level, chromosomal aberrations, and disruption of oocyte maturation or developmental abnormalities in fetus
- Discover new approaches contributing to the reduction of congenital defects occurence and the disease prevention
- Investigate novel diagnostic possibilities to detect affected fetuses at early stages of development

PIGMOD

Centre PIGMOD employes minipig as a model organism, which is physiologically and genetically related to human

- To examine causes of nervous system disorders (Huntington´s disease, amyotropic lateral sclerosis, spinal cord injury and macular degeneration)
- To uncover molecular signalling underlying malignant melanoma initiation
- To study DNA quality disorders including chromosomal damage in oocytes and its effect on infertility and processes of DNA repair during neurodegeneration

Evolutionary Biology

Team of Evolutionary Biology uses fish, amphibians and small vertebrates as a model species

- To investigate the ecological and evolutionary relationships between different groups of free-living animals
- To uncover genetic variation of populations of free-living vertebrates, speciation, history of their dispersion, reproductive and ecological strategies including interaction with the environment and adaptation to climate change
- Their results contribute to improvement of species conservation, environment and biodiversity protection

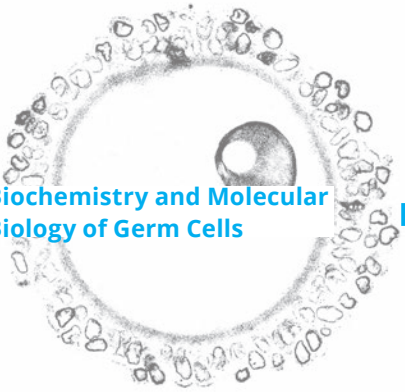
Anaerobic Microbiology

Team of Anaerobic Microbiology isolates and describes microbial species from the digestive track of humans and animals, probiotic bacteria and technologically significant xylanolytic microorganisms

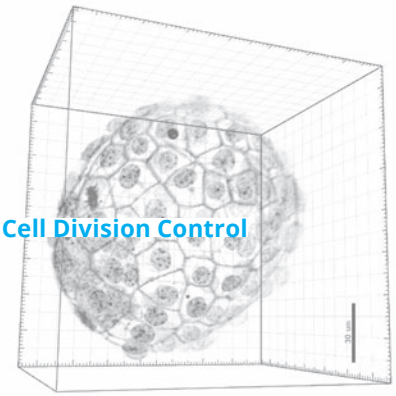
- To understand microbial diversity in relation to the nutrition and health status of the host
- To investigate diseases of the digestive tract of humans (celiac disease, IBD, cancer), “gut brains axis“ (metabolic syndrome in schizophrenia, autism, Alzheimer´s disease) and also the production of methane (rumen fermentation, biogas production)
- To examine the role of gastrointestinal tract microbiota in serious human diseases (celiac disease, Crohn´s disease) and also to search for possible treatment (microbiota transplantation)

Developmental Biology

Biochemistry and Molecular Biology of Germ Cells



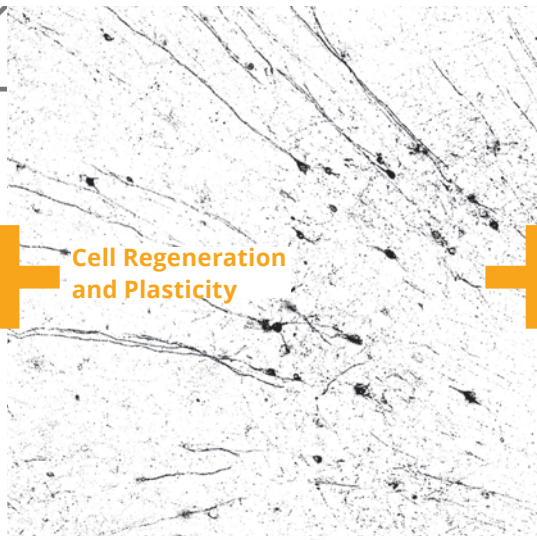
Cell Division Control



Molecular Morphogenesis

Neurobiology and Pathological Physiology

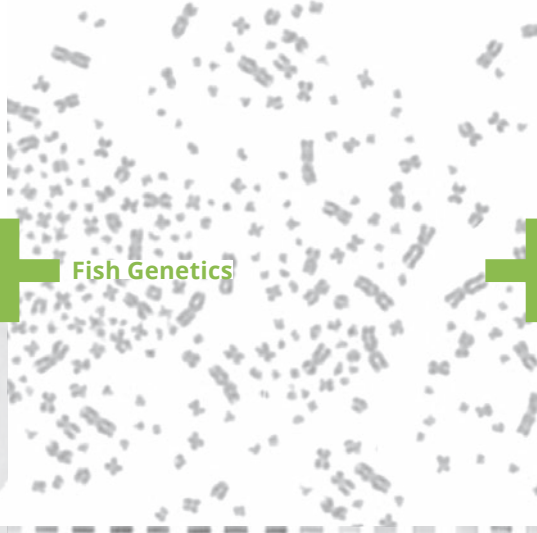
Cell Regeneration and Plasticity



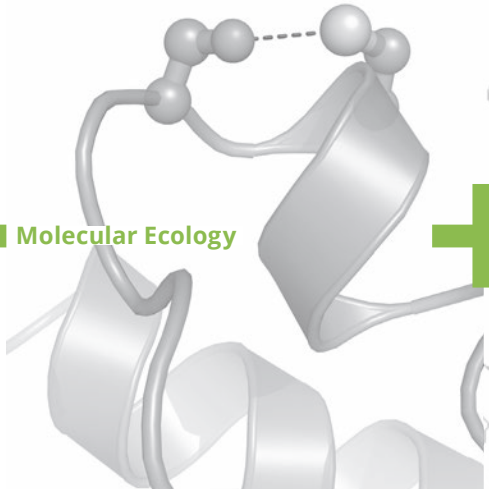
Applied Proteomic Analyses

DNA Integrity

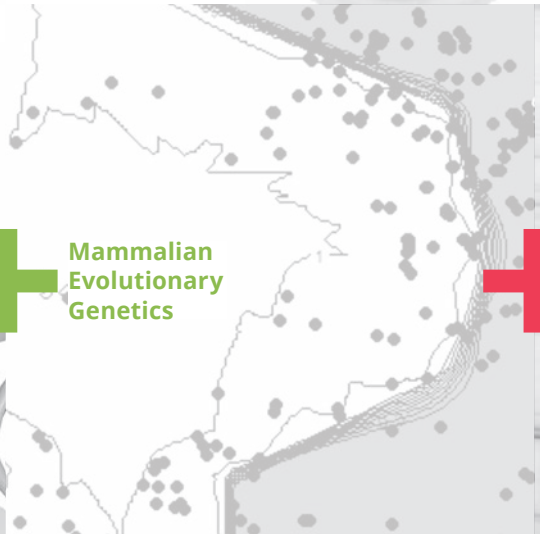
Fish Genetics



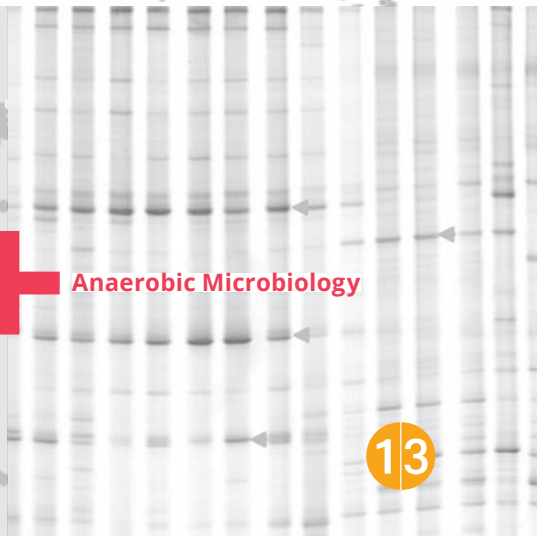
Molecular Ecology



Mammalian Evolutionary Genetics



Anaerobic Microbiology



HEAD Radek Procházka, MVDr. CSc. 5 prochazka@iapg.cas.cz

LABORATORY OF

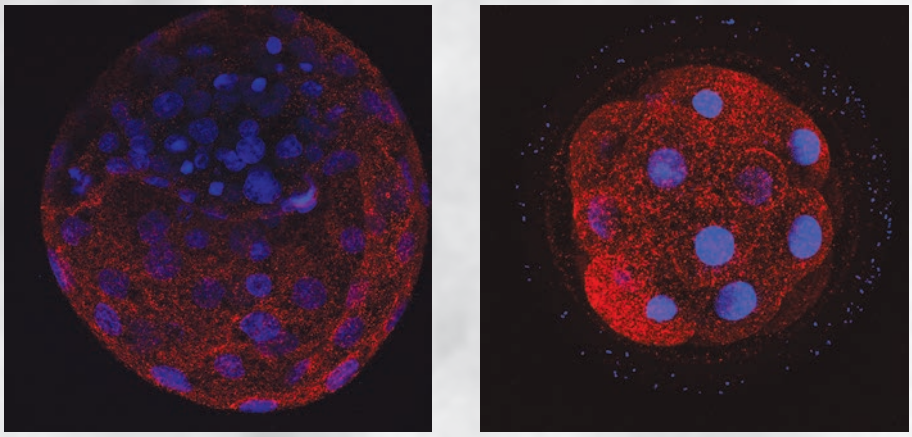
Developmental Biology

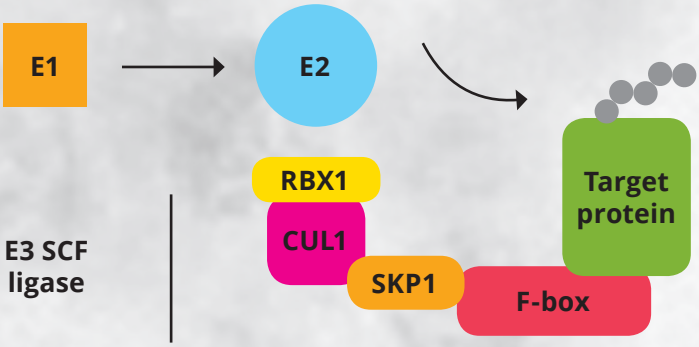
RESEARCHERS Jiří Kaňka 2 Jozef Laurinčík 7 Lucie Němcová **POSTDOCS** Ahmed Gad 1
Matej Murín 8 Tereza Toralová **Ph.D STUDENTS** Veronika Kinterová 6 Veronika Petrušková
RESEARCH ASSISTENT Jaroslava Kaňková 3 **TECHNICIAN** Monika Kopčíková 4

The Laboratory of Developmental Biology focuses on **gene and protein expression** during **oocyte meiotic maturation** and early **embryonic development** of mammals. We use pig and bovine oocytes and embryos cultivated *in vitro* as experimental models. Our research interests are primarily concentrated on three following areas: 1) Identification of genes and **signaling pathways** regulating oocyte maturation and developmental competence. We have been studying molecular mechanisms regulating oocyte meiotic arrest and meiotic resumption with a special attention to somatic follicular cell and oocyte intercellular communication. 2) Mechanisms of **embryonic genome activation** during the preimplantation development. Currently, our research concerns **ubiquitination** during bovine preimplantation development and its relevance to regulation of major embryonic genome activation. 3) Molecular studies on the role of oocyte **nucleolus** in regulation of early embryo development. Elegant studies in pig and mouse demonstrated that the oocyte nucleolus (nucleolar sphere) is completely essential both for completion of the oocyte meiosis and for further embryonic development. In our project, the pig oocytes and embryos will be used to study the content of the **nucleolar sphere** by proteomic and genomic approaches as well as the developmental competence conveyed by this structure.

MAIN TOPIC

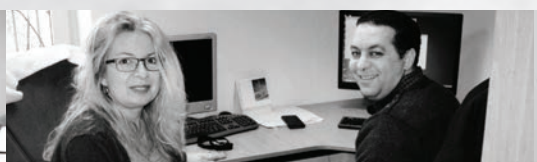
Currently, our most important research in the area of regulation of bovine embryonic development concerns ubiquitination. We concentrate on Skp1-Cullin1-Fbox (SCF) complex, the expression of its invariant components (Cullin 1, Skp1, Rbx1) and its contribution to degradation of maternal proteins. Our up to now results have shown that embryonic expression of all these genes starts in initial stages of development. Especially cullin 1 is activated very early, already at early 8 cell stage. Genes participating in ubiquitination are usually activated at 8-cell stage, and the early activation of cullin 1 suggests its necessity for embryonic genome activation. Protein localization analysis showed interesting results especially at the blastocyst stage. There was clear concentration of protein expression and SCF complex activation to trophectoderm. These results allowed us to initiate the experiments dealing with the application of SCF complex during preimplantation development and especially in maternal protein degradation. Further, we have silenced the proteasome and SCF complex pathways with several different approaches and thus have shown that SCF complex activity and protein degradation is important for embryonic genome activation and further preimplantation development.

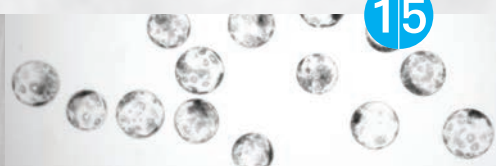




TOP ACHIEVEMENTS

- We characterized the expression of SKP1-Cullin1-F-box protein complex (**SCF-complex**) and its activity profile during **bovine preimplantation development** (Benešová et al. 2016, 2017). We have silenced proteasome pathway and SCF complex pathway with several different approaches and thus have proven the necessity of SCF complex for oocyte maturation, fertilization and preimplantation development of cattle.
- Our research significantly contributed to understanding molecular mechanisms of gonadotropin-induced **maturation of pig oocytes** by identification of **genes** and **signaling pathways** activated in cumulus cells by FSH/LH and epidermal growth factor-like peptides (Blaha et al. 2015a, 2017, Procházka et al. 2017).
- We contributed to identification of a key role of **mitogen-activated protein kinase 3/1** in regulation of mammalian oocyte meiosis resumption and ovulation (Blaha et al. 2015b, Procházka and Blaha 2015).
- Members of the laboratory actively participated in **teaching** of reproductive biology at Charles University in Prague.





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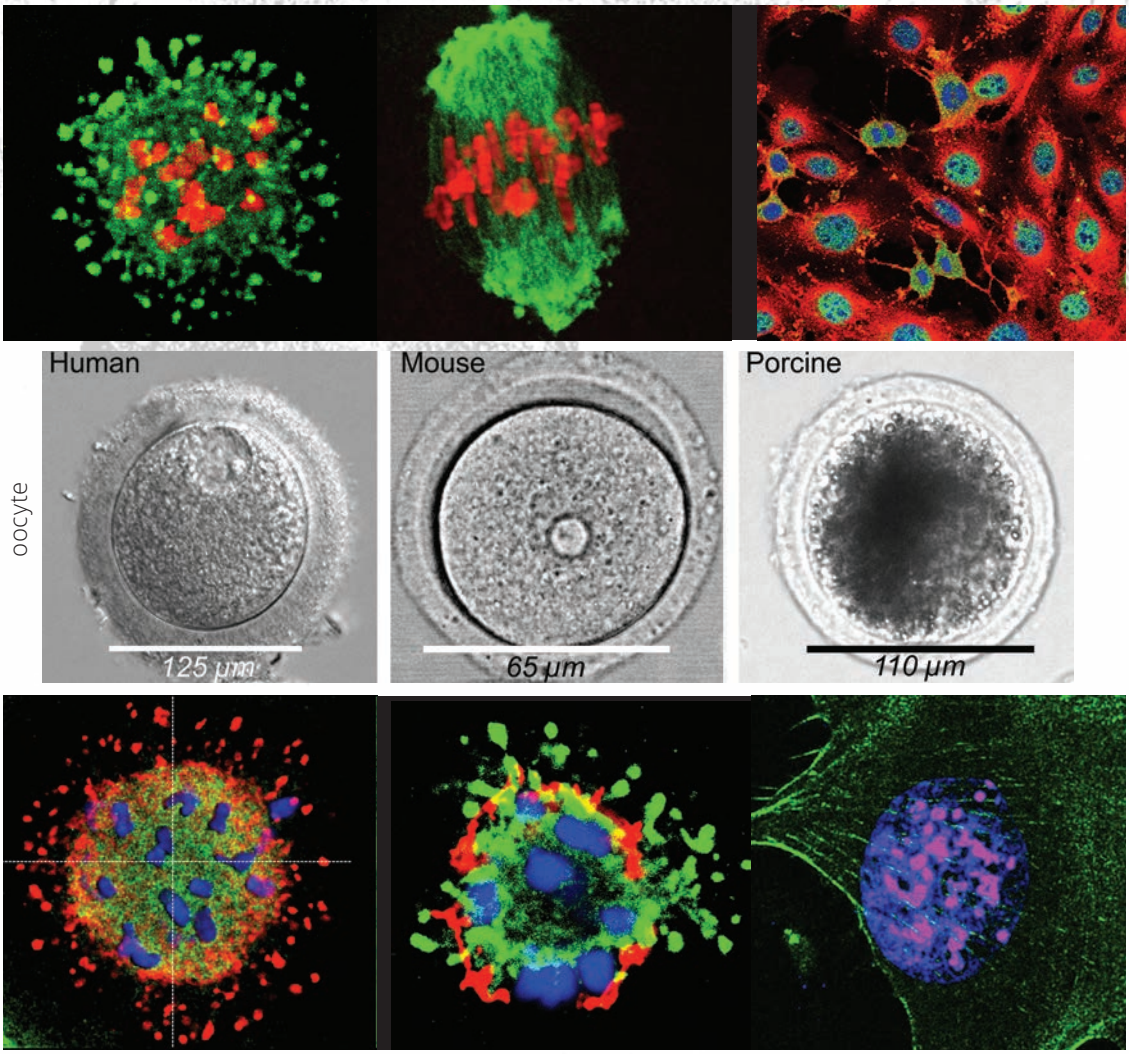
LABORATORY OF

Biochemistry and Molecular Biology of Germ Cells

RESEARCHERS Jaroslav Kalous 4 Michal Kubelka 6 **POSTDOCS** Lenka Gahurová, Rajan Iyyappan Denisa Jansová 2 **Ph.D. STUDENTS** Daria Aleshkina, Michal Dvořan, Markéta Končická 1 Edgar Del Llano 8 Anna Tětková 9 **TECHNICIANS** Jaroslava Šupolíková 5 Markéta Hančová 7

We study molecular mechanisms which regulate the physiology and pathology of oocyte and embryo. In the female, meiosis results in a large cell (oocyte) that is competent for fertilization and **fundamental** for **supporting embryonic development**. Important characteristic of oocyte and early embryo development is the dependence on utilization of stored RNAs and proteins. In the **absence of transcription**, the oocyte and embryo development relies on **maternally synthesized RNAs**. Therefore, the regulation of gene expression is controlled almost exclusively at the level of RNA stabilization and translation. We discovered that the RNA distribution in this unique cell indicates the presence of a **novel set of regulatory mechanisms** needed to ensure that specific **gene expression** occurs **at the right time and in the right place**. Progression through both **mitotic and meiotic cycles** is controlled by the sequential activation and inactivation of a set of different protein **kinases and phosphatases**. Our team aims to uncover the **changes in timing** and the degree of **activation of the M-phase protein** kinases which are **essential for cell division** in the oogenesis and embryogenesis. These mechanisms plays an important **role in the maintenance of genomic stability**. Our studies suggest **spatio-temporally regulated translational** control by the mTOR/eIF4F axis in oocyte and embryo. We investigate the translational components that are potentially **clinically relevant** targets for the development of a **healthy oocyte**.

Fluorescent images of translational regulator on the newly forming spindle. RNA binding protein is localized in the nucleus of the cells. Oocytes from various mammalian species and their size. Inactivated translational repressor 4E-BP1 after nuclear envelope breakdown. RNA is localized in the nucleus of the cell.



- We revealed a **novel mechanism** that-following the resumption of meiosis-controls **the temporal and spatial translation** of transcripts required for **genomic stability**.
- We showed that **Aurora A** kinase **do not influence CPEB1** activity and consequently synthesis of cyclin B1.
- We showed that **inactivation of 4E-BP1 promotes *in situ* translation** at the developing spindle.
- We described that **CDK1 influence** the **mTOR/4F** axis during oocyte meiosis.
- We unveiled that the **mTOR/4E-BP1** axis influences **similarly mouse** and **human oocyte**.
- We found that cell **nucleus** contains **abundant RNA population**.

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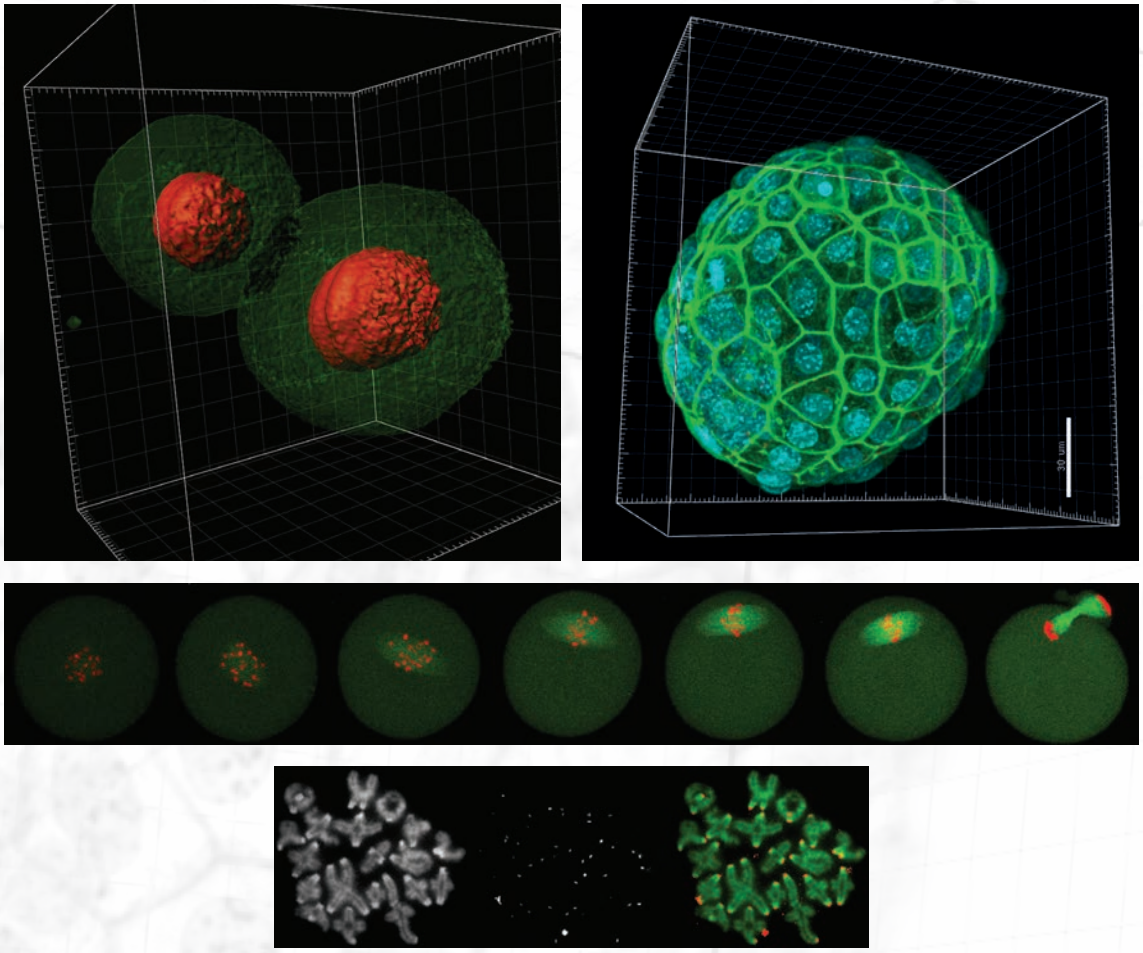
LABORATORY OF

Cell Divison Control

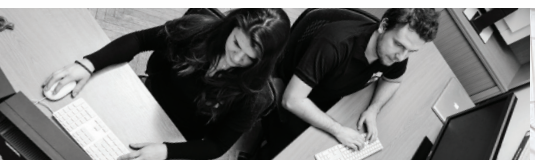
RESEARCHER Irfan Tur **Ph.D STUDENTS** Lenka Radoňová 1 Tereza Svobodová 6 Michal Škultéty 8
DIPLOMA STUDENTS Pavla Bednářová 7 Olivie Zezulová 4 Lenka Libichová 3
BACHELOR STUDENTS Kateřina Holomková 2 Regína Gorylová

Our research is focused on cell **cycle control mechanisms** involved in monitoring **chromosome segregation** in mammalian **oocytes** and **early embryos**. Our goal is to understand the influence of **maternal aging** on chromosome segregation and increased frequency of **aneuploidy**. As model systems we use mammalian oocytes and embryos. Most of the techniques we use, such as live cell confocal microscopy, functional imaging, kinase assays or biosensors, allow to study processes at the level of individual cells. Our results are important for understanding of control mechanisms of chromosome segregation and also for understanding of pathological conditions, such as Down syndrome.

Mouse 2—cell embryo, nucleus (red) and cytoplasm (green) are visualized
Mouse blastocyst—visualizing nuclei and borders between cells
Assembly of the spindle and division of chromosomes in mouse oocytes
Chromosome spreads from mouse meiosis I, chromosomes (green) with kinetochores (red)



- Discovery that **Spindle Assembly Checkpoint** (SAC) is **compromised in mammalian oocytes** (Sebestova et al., 2012) and that the premature segregation of sister chromatids shows significant differences between mouse strains (Danylevska et al. 2014).
- Our laboratory revealed important functional differences between **oocytes** matured **in vivo** and **in vitro** (Kovacovicova et al. 2016).
- We discovered that the **spindle length** is controlled by a ratio between nuclear and cytoplasmic volumes (Novakova et al. 2016).
- In collaboration with other laboratories we contributed to the discovery of **molecular mechanisms** behind **speciation in mammals** (Bhattacharyya et al., 2013) or regulation of **localized translation in mammalian oocytes** (Susor at al. 2015).
- Implementation and further development of **advanced microscopy** and micromanipulation techniques, such as microinjection, micromanipulation, multichannel live cell imaging and nuclear transfer.



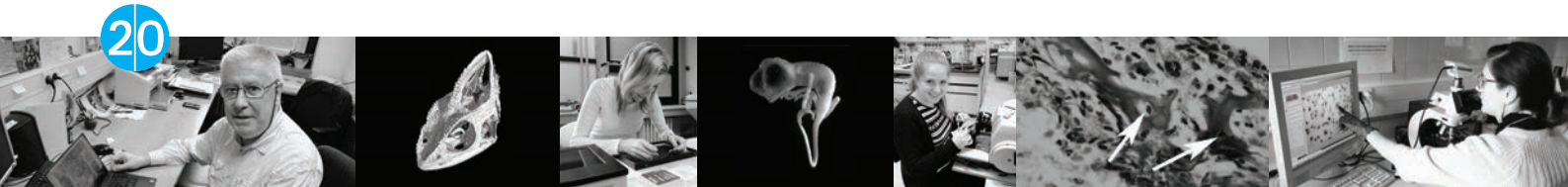
HEAD Marcela Buchtová, Doc., RNDr., Ph.D. 1 buchtova@iach.cz

LABORATORY OF

Molecular Morphogenesis

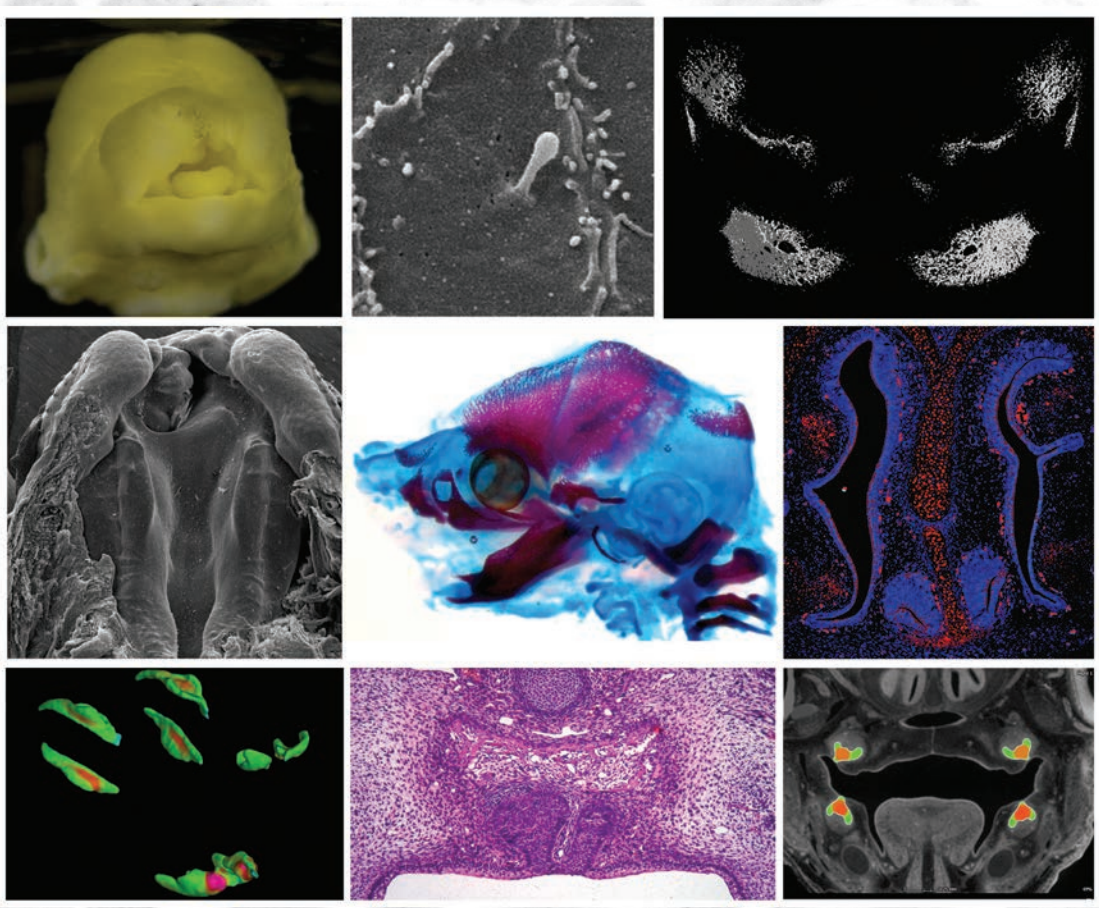
RESEARCHERS Eva Matalová 8 Hervé Lesot, Jan Štembírek 17 Eva Švandová **POSTDOCS** Iveta Putnová 20 Eva Hrubá 14 Barbora Veselá 11 Petra Celá Kolísková 3 Veronika Oralová 2 **PhD STUDENTS** Marek Hampl 18 Marie Landová 4 Jana Dumková, Barbora Putnová 10 Jan Bobek 7 Alice Ramešová 9 Petra Nevoránková 16 Pavel Hurník, Adéla Kratochvílová 12 Petra Bilíková 15 **MSc STUDENTS** Michael Killinger 13 Kristýna Olbertová 6 **BACHELOR STUDENTS** Lucia Bubelínyová, Barbora Bílková **STUDENTS** Tereza Smutná 5 Zuzana Ševčíková **RESEARCH ASSISTENT** Lucie Vrlíková 19 **TECHNICIAN** Veronika Jakešová

Knowledge of **developmental processes** is a key to understand causes of developmental abnormalities or to uncover the origin and diversification of lineage-specific structures during vertebrate evolution. Our laboratory focuses on fundamental morphogenetic processes in **organogenesis** with special interest in formation of **craniofacial structures** and **limb** patterning. Novel molecules and unique roles for known molecules are investigated during cell proliferation, adhesion, migration, differentiation and cell death. Particular attention is paid to hard tissues development, including teeth (**odontogenesis**) and bones (**osteogenesis**). Physiological aspects at molecular and cellular levels are investigated and related **developmental disorders** are examined. Along with increasing longevity of human population, complications related to bone and dental tissues such as osteoporosis and tooth loss become a significant medical and scientific issue. We use in vivo, ex vivo and in vitro approaches in several experimental models including mice, pig, chicken and chameleon embryos to reveal underlying developmental mechanisms. The effort of LMM is also to contribute to recent knowledge in basic and biomedical research with links to practical applications in tissue repair and regeneration.



MAIN TOPIC

Cleft palate development can be associated with craniofacial diseases called ciliopathies, which are caused by defective primary cilia morphology or signal transduction. We focus on transmembrane protein 107 (TMEM107) that is localized in the primary cilia and enriched at the transition zone where it acts to regulate protein content of the cilia. ***Tmem107***$^{-/-}$ *mice are affected by a broad spectrum of craniofacial defects including cleft lip and palate. Palatal defects are caused by increased proliferation in mesenchyme leading to early overgrowth of palatal shelves followed by the defect in their horizontalization. Moreover, the expression of epithelial stemness marker SOX2 and mesenchymal SOX9 was altered in palatal shelves of* ***Tmem107***$^{-/-}$ *animals. Analysis of acetylated alpha-tubulin and IFT88 revealed region-specific changes in cilia morphology and intraflagellar transport in palatal shelves. Thus, Tmem107 seems to be essential for proper head development and the craniofacial phenotype including expansion of the facial midline corresponds to the disruption in Hedgehog pathway activity; however interference with function of region-specific molecules such as Sox genes can explain complex tissue-specific mutant phenotype.*



TOP ACHIEVEMENTS

- We described genes that can be used to identify the **craniofacial prominences** and examined a role of several candidate genes in loss-of-function and gain-of-function experiments (Cela et al. 2013, Nimmagadda et al. 2015, Cela et al. 2016, Cela et al. 2018).
- We revealed species-specific differences in odontogenesis underlying the initiation of variable number of teeth generations and developmental processes that occur during the loss of successional **dental lamina** in monophyodont species (Dosedelova et al. 2015, Dosedelova et al. 2016, Putnova et al. 2017).
- We uncovered new non-apoptotic functions of several **caspases** and their participation in endochondral and intramembranous ossification (Svandova et al. 2014, Adamova et al. 2016, Janeckova et al. 2018).
- We demonstrated that FasL participates in MMP2 production in osteoblasts (Svandova et al. 2018).

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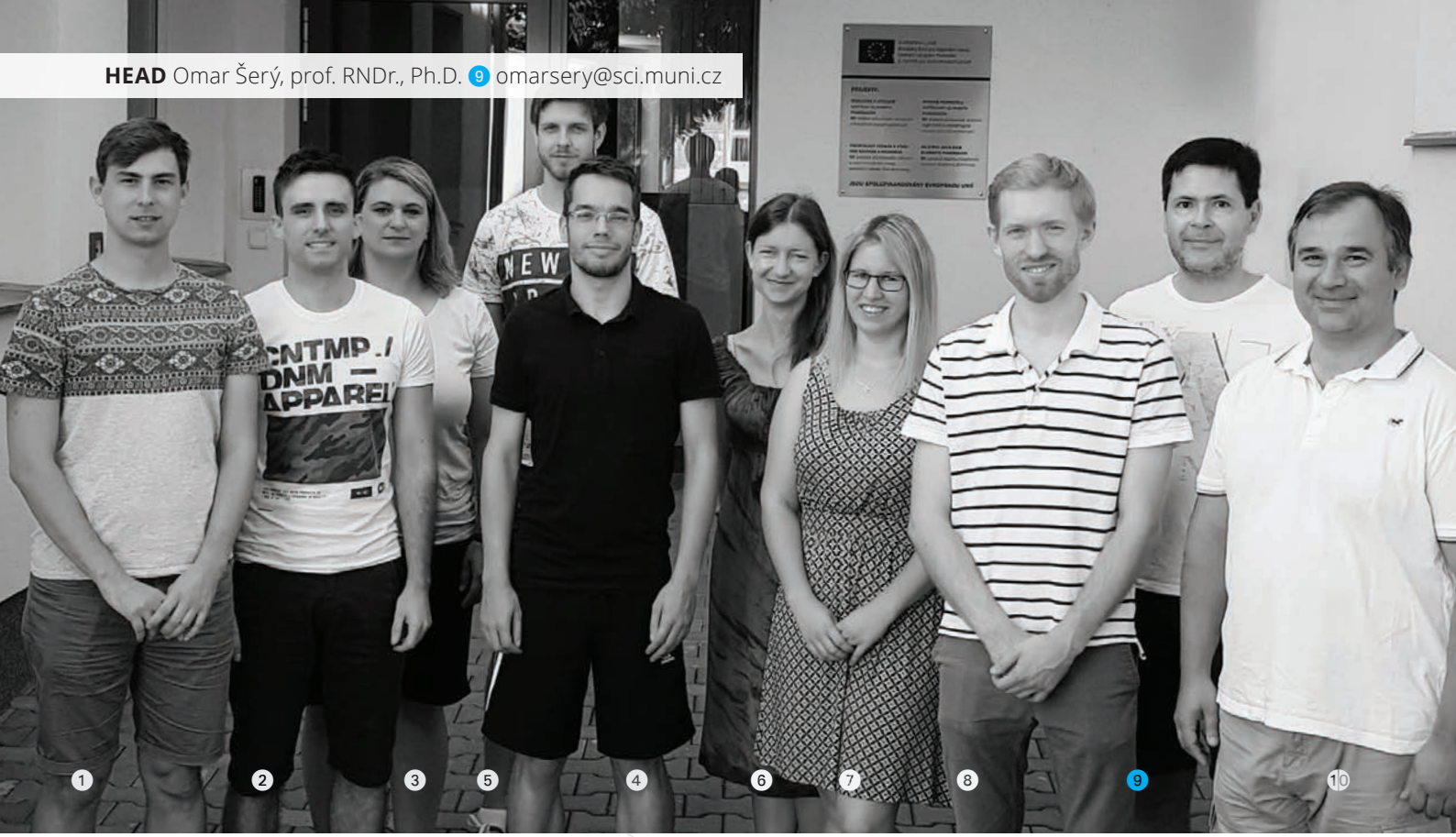


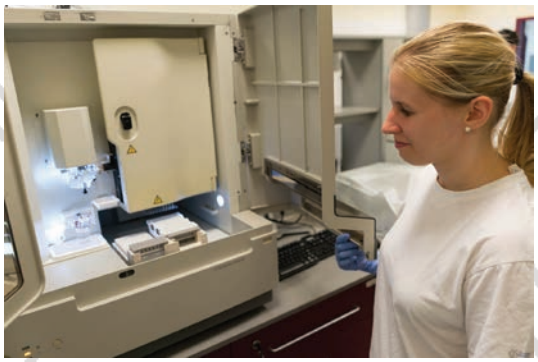
LABORATORY OF

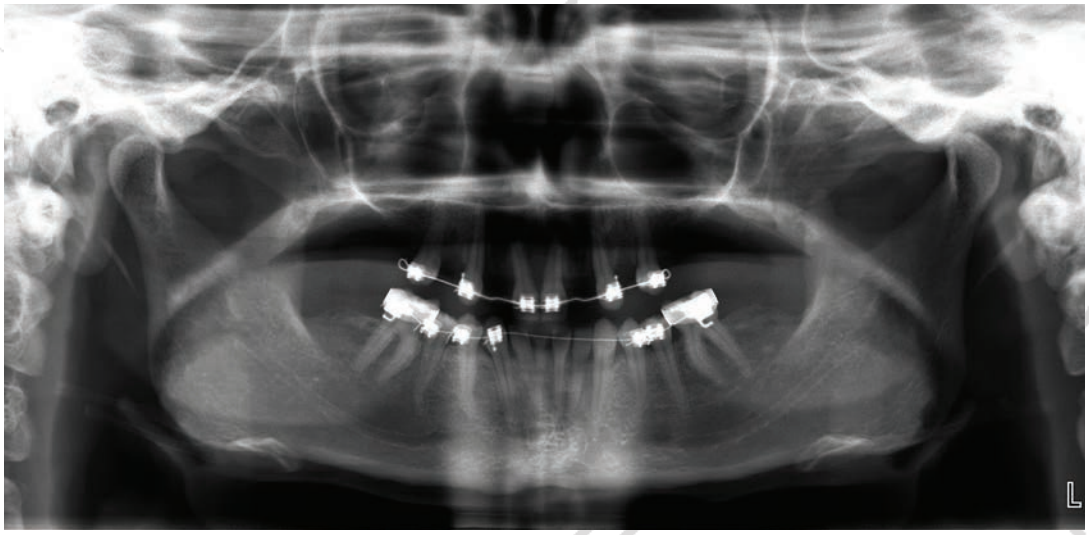
Neurobiology and Pathological Physiology

RESEARCHERS Vladimir Balcar, Pavel Kulich 10 Tomáš Zeman 8 Ondřej Bonczek 2
POSTDOCS Miroslav Bardelčík 1 Peter Bielik 4 Laura Ewerlingová 7 Jan Vysloužil 5
RESEARCH ASSISTENTS Marie Jandová 6 Markéta Raclavská 3

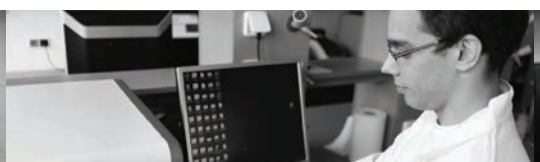
The laboratory covers a wide range of research areas dealing with molecular basis of development of diseases and selected traits. We contribute to research **of psychiatric diseases and multifactorial disorders** such as **schizophrenia, Alzheimer's disease, mild cognitive disorder, alcohol dependence, and ADHD** mostly by conducting **genetic association studies** and by identifying genes increasing susceptibility for these disorders. The fundamental aim of the research is to characterise the DNA variants that increase disease susceptibility by causing abnormalities in the structure or function of genes to create possible new treatments or prevention strategies. Particular interest is given to **CD36 gene polymorphisms**. Concurrently, we pay attention to the role of other risk factors in the pathogenesis of these diseases. In addition, laboratory is focused on studies related to the **oral sensing of fatty acids** (in relation to **obesity** and genetic variation) or to the inherited **tooth agenesis (oligodontia and hypodontia)**. Further, of great interest is the **research of the toxic effects of nanoparticles** studied on mouse models. Moreover, laboratory team conducts molecular analyses of microorganisms and study their occurrence in nature and in human body. With respect to the focus of laboratory, we utilise techniques such as NGS sequencing, capillary DNA sequencing, Real-Time PCR methods, electron microscopy.

*We revealed heterozygous g.9527G>T mutation in the **PAX9** gene that leads to lower expression of PAX9 protein and thus could contribute to the development of tooth agenesis (Šerý et al. 2015). In the research of **tooth agenesis** we use NGS sequencing (instrument MiSeq) to reveal new mutations. In addition, capillary DNA sequencing is employed to prove NGS results.*





- We have **found a relationship** between rs3211892 polymorphism of **CD36** gene and Alzheimer's disease as allele A was found to be associated with **Alzheimer's disease** (Šerý et al. 2017). In addition, we showed that Alzheimer's disease patients have significantly later onset of diabetes, hypertension and stroke in comparison with control subjects (Šerý et al. 2014).
- It was reported that rs1761667 polymorphism of **CD36** gene is associated with **variations in fatty acid taste perception** in several populations as A-allele was associated with higher lipid taste perception thresholds than G-allele in obese individuals (Daoudi et al. 2015, Mrizak et al. 2015, Sayed et al. 2015).
- Our laboratory stressed that the comorbidity between **schizophrenia and diabetes mellitus** might have **common genetic roots** and IDE gene could become new candidate gene for further research of genetic causes of schizophrenia (Ewerlingová et al. 2019).
- Our laboratory showed that **CD36** receptor may be involved in mediating the effects of vascular endothelial growth factor (VEGF) on **intraocular pressure** (IOP). As a result, these findings will help to identify the patients at risk of acutely elevated IOP following the anti-VEGF therapy (Matušková et al. 2017).



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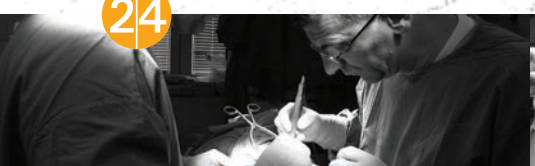
LABORATORY OF

Cell Regeneration and Plasticity

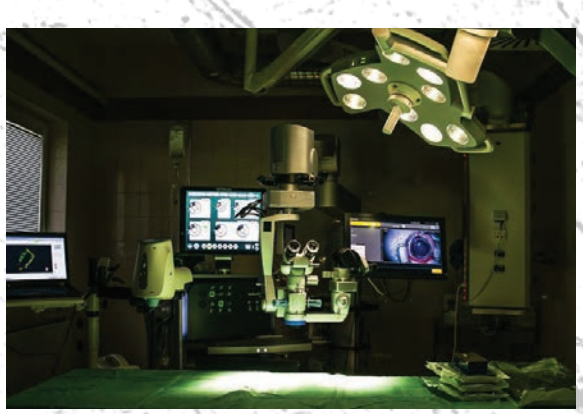
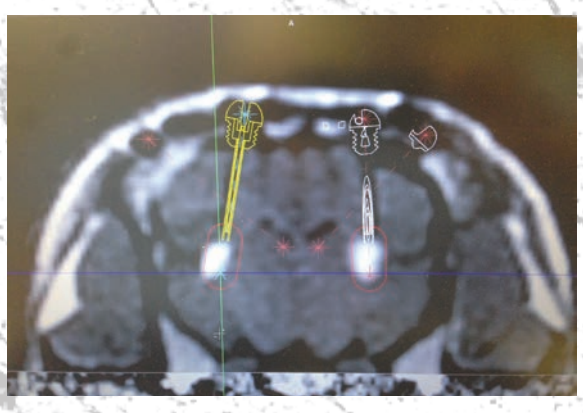
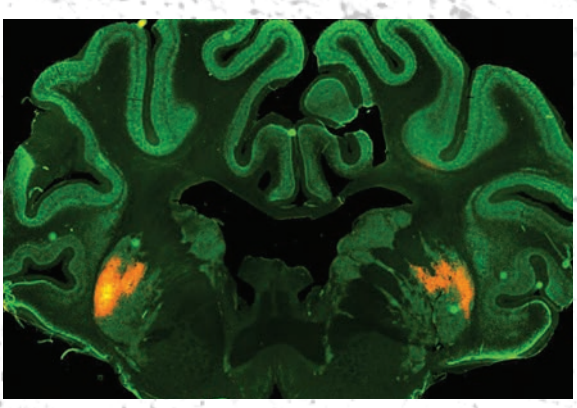
RESEARCHERS Jan Motlík 1 Štefan Juhás, Jiří Klíma 10 Taras Ardan 3 Jana Juhásová, Eva Nagyová
POSTDOCS Božena Bohuslavová 5 Saskia Drutovič, Sonali Rohiwal 8 Ivona Valeková
Ph.D STUDENTS Monika Baxa, Nguyen The Duong 12 Petra Šmatlíková 4 Petra Vochozková, Lucie Zemanová
TECHNICIANS Lenka Trávníčková 11 Patrície Jandurová 9 Irena Deylová 7 Hana Říhová 2

The main aim of our laboratory is a biomedical research using large animal model-the minipig. With the help of minipigs we study and seek treatment for various serious human diseases. Our main focus is on nervous system disorders, such as **Huntington's disease** (HD), **amyotrophic lateral sclerosis** (ALS), **spinal cord injury** and **retinopathies** (macular degeneration, Stargardt disease). But we also collaborate with medical doctors on **gastrointestinal tract diseases**. New treatments are mostly developed first on rodent models, however miniature pigs are physiologically and anatomically closer to humans and such preclinical models are essential before clinical trials in humans, including testing of new cell and gene therapies.



MAIN TOPIC

1) Our lab is equipped with the ophthalmic surgery microscope (Hi-R NEO 900A, Haag-Streit), phacoemulsifier/vitrectome (R-Evolution CR, Optikon), ophthalmic green laser (Merilas 532a, Meridian), and optical coherent tomography (OCT) (Optovue, iVue) for experimental eye surgery and noninvasive follow-up examinations.
2) MRI guided injection of huntingtin lowering gene therapy into striatum of transgenic minipigs for Huntington´s disease.
3) Immunohistochemical analysis of porcine brain section after AAV5-miHTT injection
4) Pigs injected with miHTT-AAV5 few hours after surgery.


TOP ACHIEVEMENTS

- We generated **transgenic minipig** model of Huntington's disease (HD), carrying N-terminal part of human mutated huntingtin to be used for basic research of HD pathological mechanisms as well as for preclinical testing of new therapies for this incurable neurodegenerative disease.
- We demonstrated broad distribution and strong human mutant **huntingtin lowering** after AAV5-miHTT **gene therapy** in a Huntington disease minipig model.
- We developed adjustable computer-controlled **compression model of spinal cord injury** in minipig. This model clinically as well as histopathologically faithfully simulate spinal cord injury in men. We implement preclinical experiments with newly established neural stem cell lines and gene therapy to introduce potential cure.
- We showed survival of syngeneic as well as allogeneic iPSC-derived neural precursors after **spinal grafting** in minipigs.
- We helped in developing a new surgical technique of **subpial application** of gene therapy.
- We helped to introduce new surgical approaches into clinical practice, such as **Natural Orifice Transluminal Endoscopic Surgery, Peroral Endoscopic Myotomy**.



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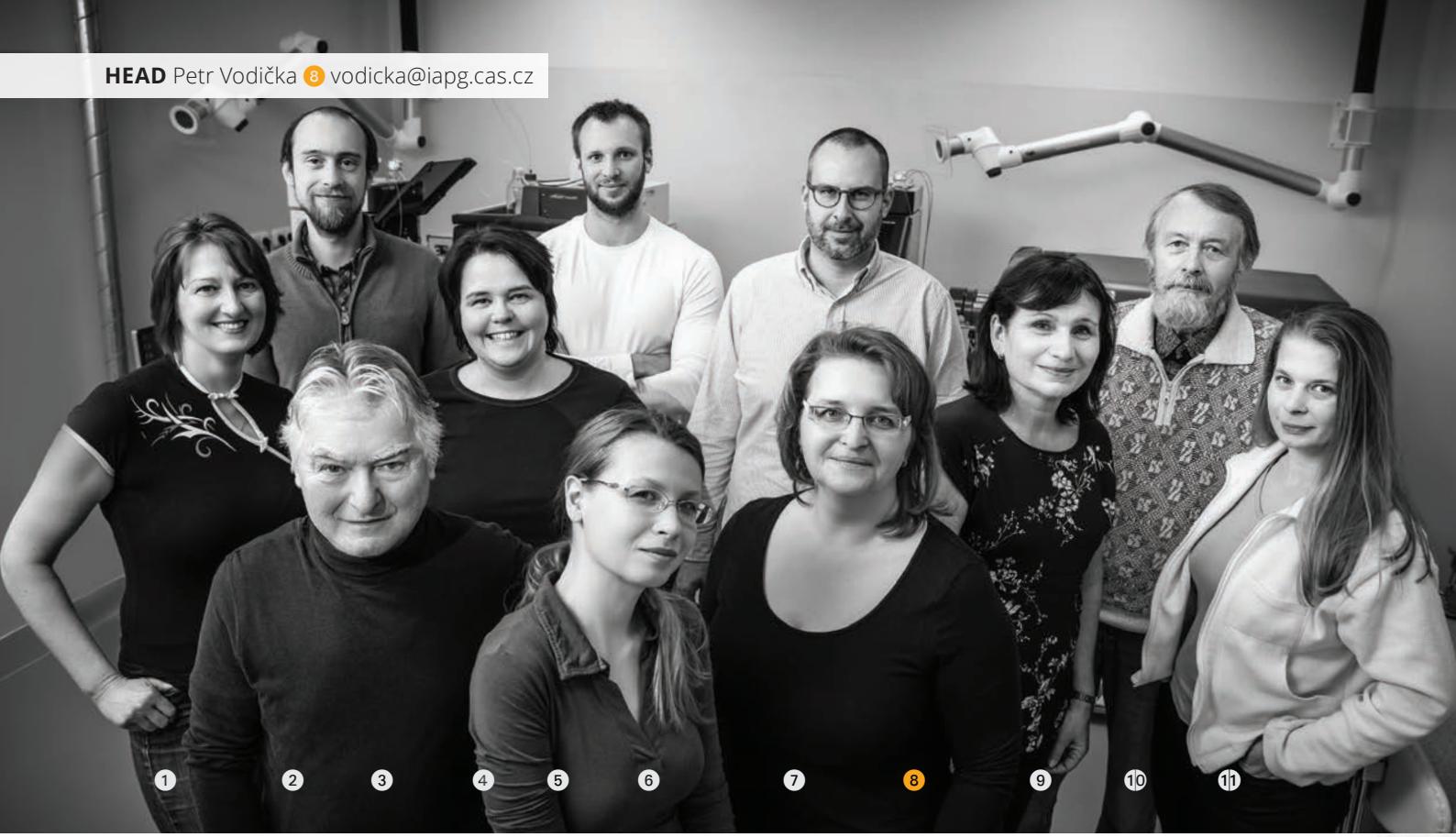
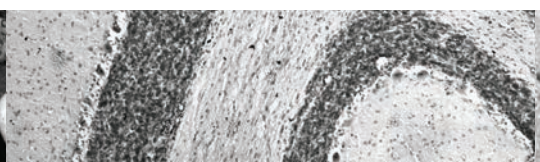
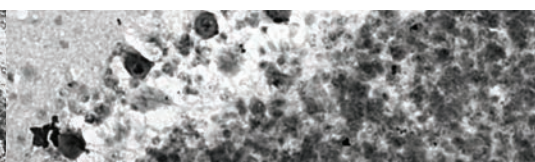


LABORATORY OF

Applied Proteome Analyses

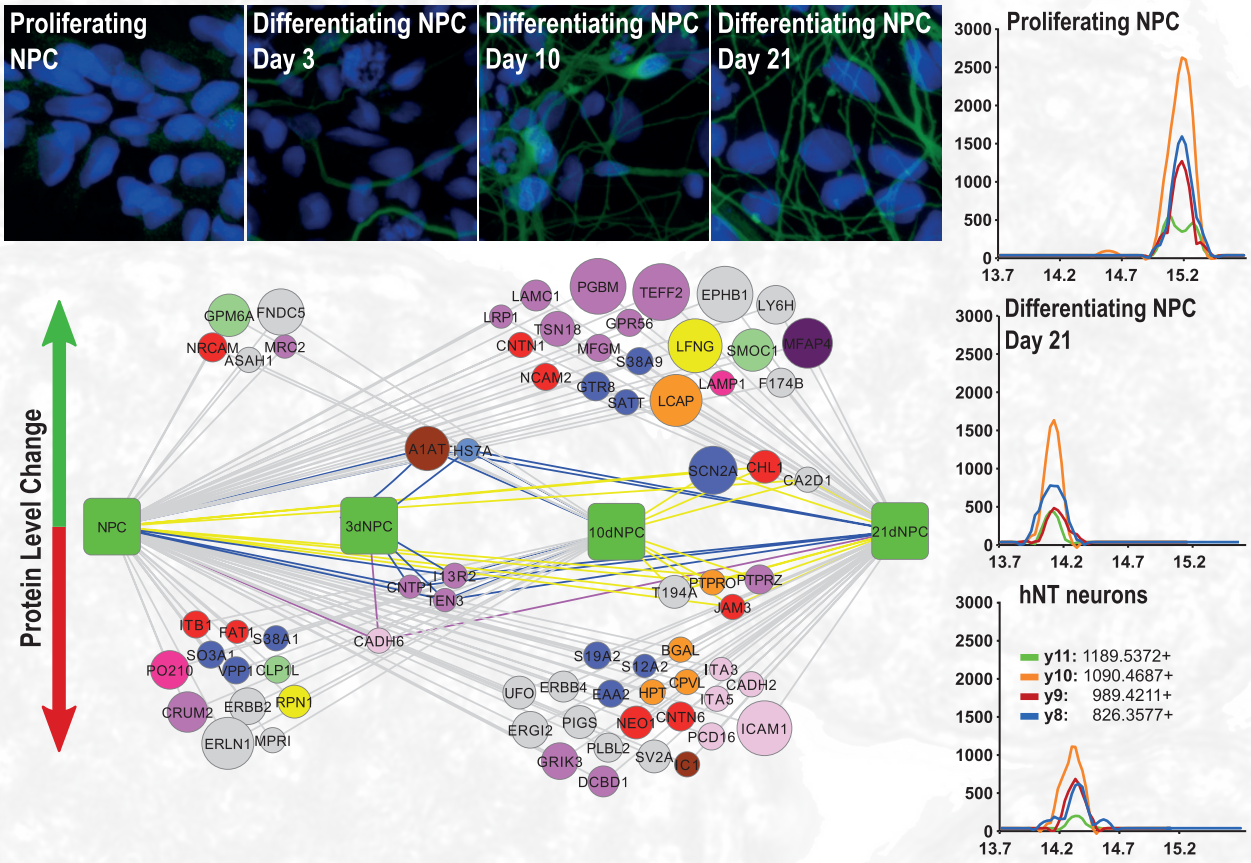
RESEARCHERS Helena Kupcová Skalníková 4 Vratislav Horák 10 **POSTDOCS** Rita Suchá, Jiřina Tylečková, Kateřina Vodičková Kepková 1 Anna Palánová **Ph.D STUDENTS** Martina Žižková, Jakub Červenka 2 Jana Čížková 11 Ievgeniia Poliakh 6 Petr Vaněk **RESEARCH ASSISTENTS** Jiří Klaudy 3 Jaromír Novák 5 **TECHNICIANS** Jitka Klučinová 7 Jaroslava Šestáková 9

Our laboratory is using a **systems biology** approach with strong focus on **proteomics** to study biological processes connected to disease and aging. Currently, two basic themes are covered: neurobiology and cancer. **Neurobiology group** studies pathology of **neurodegeneration** using animal and *in vitro* cellular models of **Huntington disease** (HD) and processes governing the differentiation of **neural stem cells** (NSCs). **Cancer biology group** studies **cell-to-cell communication** between tumor and stromal cells and **cancer immunology** on porcine model of **malignant melanoma** developed at IAPG (Melanoma-bearing Libechov Minipig, **MeLiM**). These two research areas are connected by a common methodological approach based on the study of cell populations, their proteomes and secretomes using both antibody dependent and independent methods, including immunocyto and histochemistry, flow cytometry, multiplexed immunoassays and **mass spectrometry** based proteomics. Other common area is the use of miniature pigs as model animals, with **minipig** transgenic for fragment of mutant human **huntingtin** used as a HD model and minipig breed with hereditary malignant melanoma used as a cancer research model.

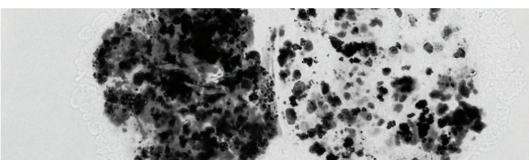
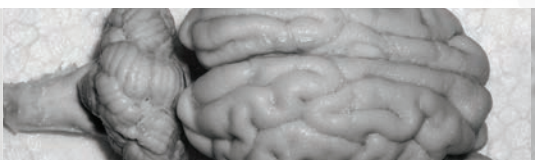
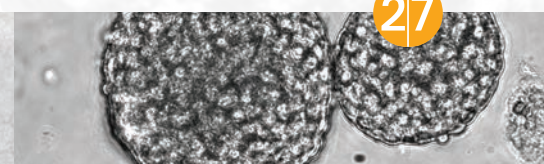
MAIN TOPIC

In development, neural precursor cells (NPC) differentiate into neurons and glia to form mature functional central nervous system (CNS). Deciphering the processes directing neural differentiation is important both for understanding neurodevelopmental diseases and for the use of NPC in cell therapies. One of the model systems available to study these processes is an in vitro differentiation of human NPC into mix of neurons and glia. Using mass spectrometry based proteomics we identified and quantified changes in more than 350 cell surface proteins during 20 days of in vitro differentiation of these cells. Identifying changes in cell surface proteins is especially useful, as it allows for flow cytometry based sorting of specific living cell populations for further use.



TOP ACHIEVEMENTS

- Using 2D electrophoresis, mass spectrometry and **antibody microarrays** we analyzed changes in proteins and **signaling pathways** during differentiation of fetal porcine **neural stem cells** (Skalnikova et al. 2007, 2008).
- In collaboration with Paola Picotti group at ETH Zurich we developed mass spectrometry assay for simultaneous quantification of multiple cell processes, **"sentinel assay"** (Soste, Hrabakova et al. 2014).
- We participate in **preclinical testing** of experimental **gene therapy** for **Huntington disease**, using miRNA gene silencing with AAV vector mediated delivery (collaboration with uniQure Inc., Netherlands, Evers et al. 2018).
- In collaboration with Palacký University in Olomouc we identified proteins responsible for resistance of cancer cells to **aurora kinase** based **cytostatic** and obtained European patent EP2788504 for "Method for determination of **cancer cell sensitivity** towards aurora kinase inhibitors".
- Using the **MeLiM** (Melanoma-bearing Libechov minipig) strain, a unique large **animal cancer model**, we can in detail monitor the progression and spontaneous regression of **metastatic melanoma** and the participation of various **immune cells** and cytokines in these natural processes.

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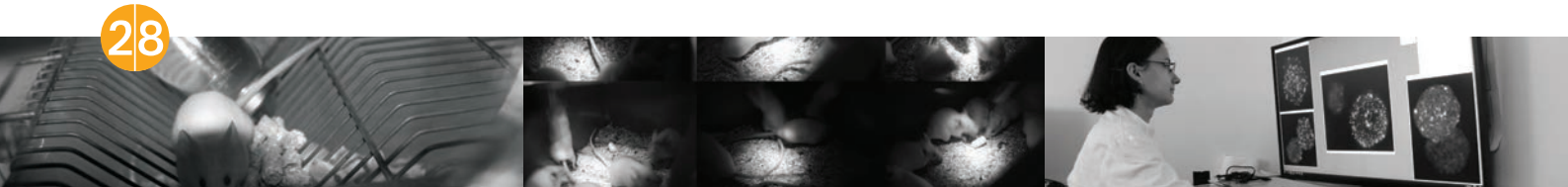
LABORATORY OF

DNA Integrity

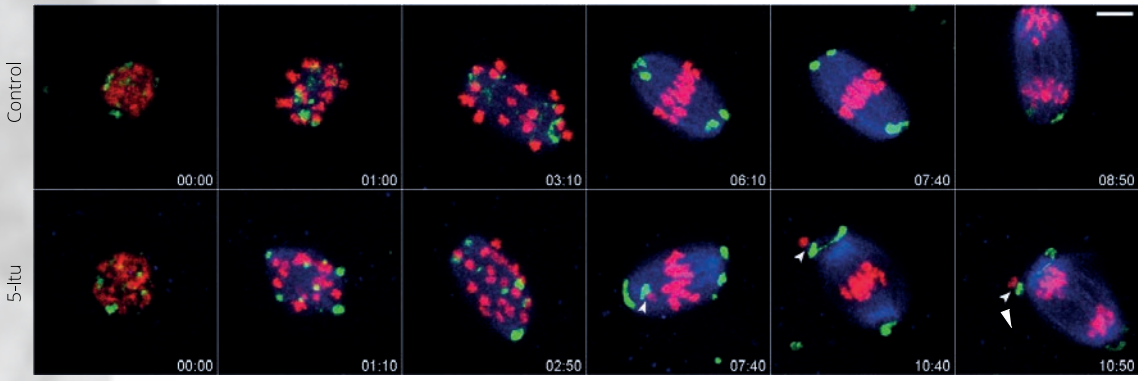
POSTDOC Dávid Drutovič 7 **Ph.D STUDENTS** Tomáš Ďuríček 2 Ivana Ferencová 3 Lucie Knoblochová 1 Michaela Vaškovičová 4 **TECHNICIAN** Ema Glöcknerová 5

Our mission is to understand how **compromised DNA/chromosome integrity** participates in the non-cancerous human diseases such as infertility or neurological disorders. Our interest in **chromosome dynamics and integrity in female meiosis** originates from the existence of the two greatly distinct cell lines in animals: *germ cells* and *somatic cells*. They have significantly different demands for the genetic stability. The germ lines must ensure transmission of the genetic information to the offsprings and must be very effective in the DNA integrity maintenance. In somatic cells, DNA repair is a compromise between growth speed, cancer risk and also the cost for DNA repair. In mammalian oocytes and early embryos we focus both on the mechanism of *chromosome segregation* as well as on *DNA damage response (DDR) on the DNA double strand breaks (DSB)*. We are also interested in **DDR in neurological Huntington's disease**. The connection of DNA damage to cancer is well known. However neurological disorders are also associated with DNA damage and compromise DNA repair, although they have completely different impact for patients in comparison to cancer. It provokes a question, how it is possible that DNA damage can lead to two completely different problems: cancer or neurodegeneration? We are interested in DSB response in cells compromised by the presence of mutated Huntingtin that is causative for Huntington's disease. Our goal is to understand problems with DSB response in Huntington's disease and help to use this knowledge both for diagnostic and therapeutic purpose.

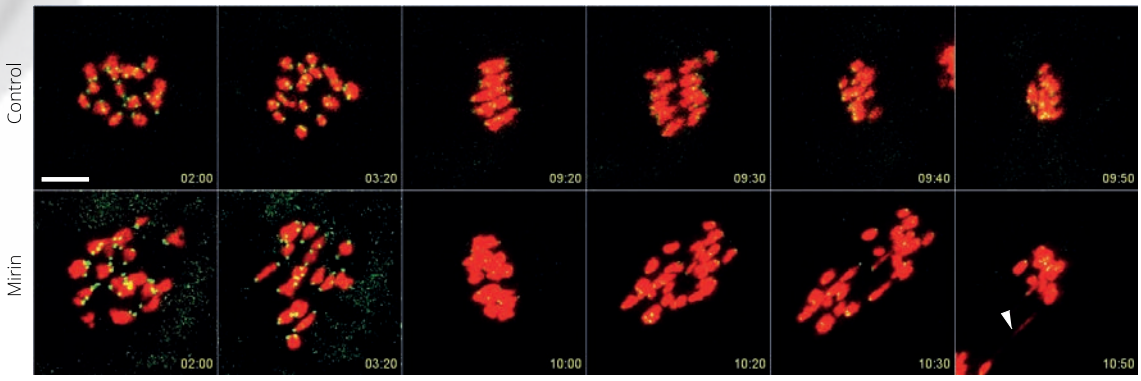


MAIN TOPIC

Figure 1 *Spindle formation and chromosome segregation during meiosis of mouse oocyte. Oocytes express H2B-mCHERRY (chromosomes) and CDK5-RAP2-EGFP (microtubule organizing centers – MTOCs) from microinjected mRNAs. Spindles are visualized by staining with fluorogenic drug SiR-tubulin. Normal chromosome segregation (control) and defective chromosome segregation (5-Itu) when Haspin kinase was inhibited by small molecule inhibitor 5-Itu.*
Figure 2 *Chromosome segregation and integrity in mouse oocytes expressing H2B-mCHERRY (chromosomes) and CENPC-EGFP (kinetochors). Normal segregation of intact chromosomes in control oocyte and defective chromosome segregation associated with formation of DNA bridges in oocyte in which a genome integrity critical molecule MRE11 was inhibited by small molecule Mirin. All images represent maximum confocal z-stack projections.*



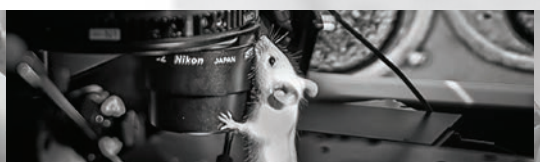
H2B-mCHERRY, CDK5-RAP2-EGFP, SiR-tubulin



H2B-mCHERRY, CENPC-EGFP

TOP ACHIEVEMENTS

- We have discovered **multiple roles of PLK1 during female meiosis** when PLK1 regulates nuclear envelope break down, spindle formation, microtubule-kinetochor attachments and it is also critical for anaphase I onset by regulation of APC/C (PLoS One. 2015 Feb 6;10(2):e0116783).
- We have shown that **during meiotic maturation oocytes are able to repair the double-strand DNA breaks** and that MRE11 nuclease is critical for chromosome integrity (Cell Cycle. 2016;15(4):546-58).
- We have uncovered requirements of **Aurora B** and **C** for correct **chromosome segregation** in mammalian oocytes and normal fertility. (J Cell Sci. 2016 Oct 1;129(19):3648-3660 and Curr Biol. 2018 Nov 5;28(21):3458-3468.e5.).
- We have established productive collaborations with laboratories of Dr. Karen Schindler (**Rutgers University**, New Jersey, USA) and Dr. Tomoya Kitajima (**RIKEN Center for Biosystems Dynamics Research**, Kobe, Japan).
- We are **teaching** cell cycle regulation, genome integrity and oocyte biology at **Faculty of Science and 2nd faculty of Medicine of Charles University in Prague**.

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LABORATORY OF

Fish Genetics

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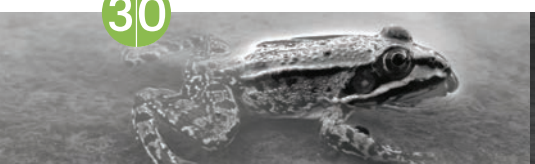
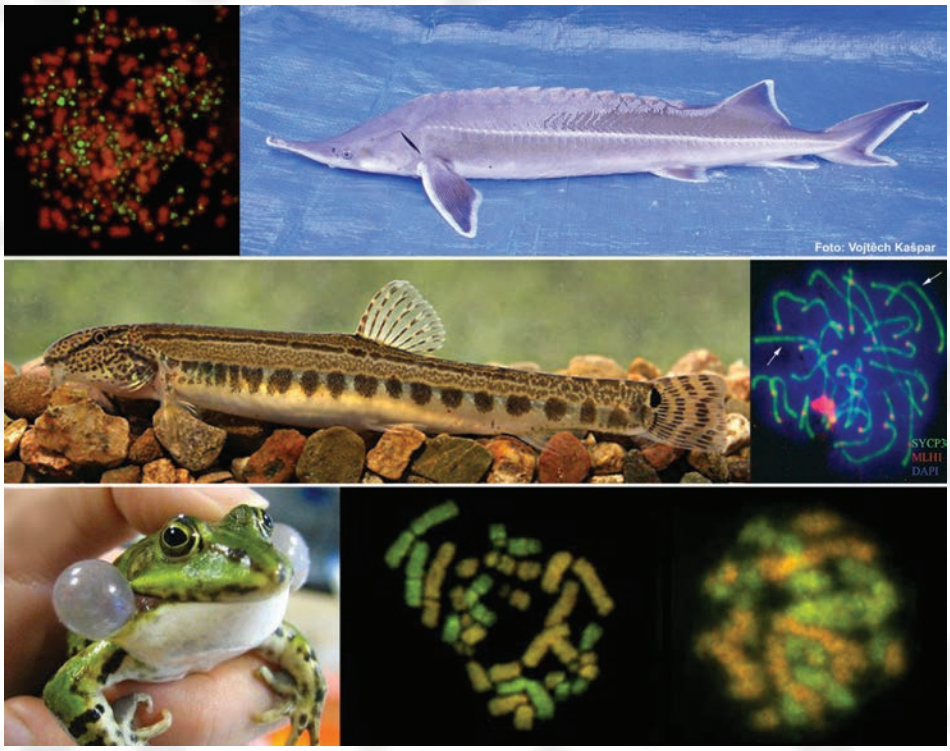
Activity of Laboratory is focused on **clonal reproduction and polyploidy in fishes and other lower vertebrates**. The long-term studies analysed hybrid asexual vertebrates using model systems of hybrid complexes of spiny loaches of the **genus *Cobitis***, fishes of the **genus *Carassius*** and also in water frogs, **genus *Pelophylax***. The issues of fish polyploidy is further developed in analysis of **hybrid polyploid sturgeons**. Related to this, we intensively analysed cytogenomics of other **basal non-teleost fishes** (gars, bowfin) and the role of transposons in fish genomes as well. Laboratory is engaged in National program of gene resources (Ministry of Agriculture) by analyses of genetic parameters fish breeds, strains and lines (common carp, tench, whitefishes, trouts, sturgeons).



MAIN TOPIC

1) Sturgeons, highly endangered ancient ray-finned fish lineage, experienced at least three independent whole genome duplication events. We are studying the hybrid and ploidy diversity of cultured sturgeons. Using combination of genome manipulation methods and spontaneous polyploids, we discovered the highest chromosome count among vertebrates ~ 520.
2) European spined loaches ***(Cobitis)*** *include several morphologically and ecologically very similar species that have parapatric distribution and meet in hybrid zones. We are combining molecular phylogenetics, artificial crossing experiments, NGS sequencing and cytogenomic approaches to describe genetic background and consequences of their reproduction,* ***sperm-dependent parasitism — gynogenesis****, with frequent switch of sexual hosts.*
3) Water frogs from Central Europe include hybrids of both sexes, collectively named ***Pelophylax esculentus****. Some hybrid lineages consist of all males providing a chance to understand the origin and perpetuation of a host-parasite (egg-dependent) system compared to a common sperm-dependent parthenogenesis. Here we studied origin and perpetuation of all-male hybrid lineages. We found that these lineages were only rarely formed in the past. Therefore, modifications in meiosis turning sexual reproduction to asexual were a rare event in these hybrid tetrapods.*



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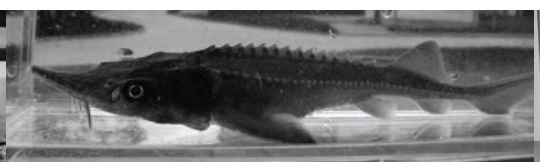
TOP ACHIEVEMENTS

- Laboratory was awarded by **The Award of CAS** for outstanding results of great scientific significance entitled „Clonal vertebrates: discovery, mechanisms, biodiversity and reconstruction in model cobitoid loaches“ in 2012.
- The synthesis of clonality and polyploidy in vertebrate by **hybridization between two sexual species** was the first one in the world after 80 years since discovery of the first asexual vertebrate.
- Discovery of hemiclonal lineage with *Pelophylax esculentus* complex that **transmit male and not female genome clonally** over generation.
- Using cytogenomic analysis of two gar genera, *Atractosteus* and *Lepisosteus*, uncovered **a GC chromosomal pattern** uncharacteristic for fishes but corresponding to mammals.
- The Second Highest Chromosome Count among Vertebrates is Observed in Cultured Sturgeon, and is Associated with Genome Plasticity.
- Laboratory **contributed 5 chapters** into Fish Cytogenetic Techniques (Chondrichthyans and Teleosts), Eds: Catherine Ozouf-Costaz, Eva Pisano, Fausto Foresti, Lurdes Foresti de Almeida Toledo, CRC Press, Inc., Enfield, NH 03748, USA, 2015.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LABORATORY OF

Molecular Ecology

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Marco Alejandro Escalante **Ph.D STUDENTS** Michaela Strážnická 5 **TECHNICIAN** Petra Šejnohová 6

The major research focus of the lab is the **response of organisms to climate change**, primarily following the last ice age. By comparing genomes of **bank voles** (*Myodes glareolus*, a.k.a. *Clethrionomys glareolus*), we have provided firm evidence that an immigrant population of these small woodland mammals that arrived to Great Britain at the end of the last ice age partly replaced a pre-existing bank vole population, resulting in a genetic pattern termed the 'Celtic fringe'. With the recent projects, we are seeking to determine if such **climate-related population replacements** occurred also in other parts of the species' broad Eurasian range and to identify key **adaptations** that allowed some populations replace the others. This involves studying genes with known link to climate adaptation in other species (candidate gene approach) as well as comparing levels of population differentiation across many genes via **genome sequencing** (genome scan approach), gene expression analysis and ecological niche modelling. Such findings will be of particular relevance to population replacements in response to current climate change. We believe that disentangling the processes behind replacements that occurred in the past may help understand and ultimately predict the response of species to current and future climate change. Other our research areas are the conservation genetics and molecular systematics of **fishes**, **frogs** and **snakes**, and the evolutionary genetics of Holarctic **Daphnia**.

MAIN TOPIC

The Hb F variant of bank vole haemoglobin contains a reactive amino acid cysteine on its surface. Our functional study demonstrated that Hb F confers enhanced erythrocyte resistance to a controlled free-radical attack. The mechanistic basis is that the exposed and negatively charged side-chain sulphur atom makes the cysteine a highly reactive residue with the capacity to participate in the regeneration of the major intracellular antioxidant glutathione. Because the rate of ROS production markedly increases during energetically demanding physiological states, such as muscular activity, increased rate of growth or reproduction, or under thermal stress, the variant haemoglobin likely is advantageous under a multitude of ecological conditions.

TOP ACHIEVEMENTS

- Using **genome sequencing**, we found evidence for a **population replacement** in the bank vole related to **the climatic change** following the last ice age.
- We discovered a mutation in **haemoglobin** of the bank vole increasing red blood cell **resistance to free radicals**, allowing a better **adaptation** to stressful environmental conditions.
- We discovered and described for science **a new species of fish** from the Danube River basin.
- We discovered a widespread **transfer of mitochondrial DNA** between species of *Daphnia* crustaceans, which shed light on the process of **ecological adaptation** in these important model organisms.
- For her diploma thesis on haemoglobin adaptation, our student Michaela Strážnická received an **Award of The Minister of the Environment**.
- For the paper describing *Barbus biharicus*, we were awarded the **Vitális Sándor Literary Prize** of the Hungarian Hydrological Society.

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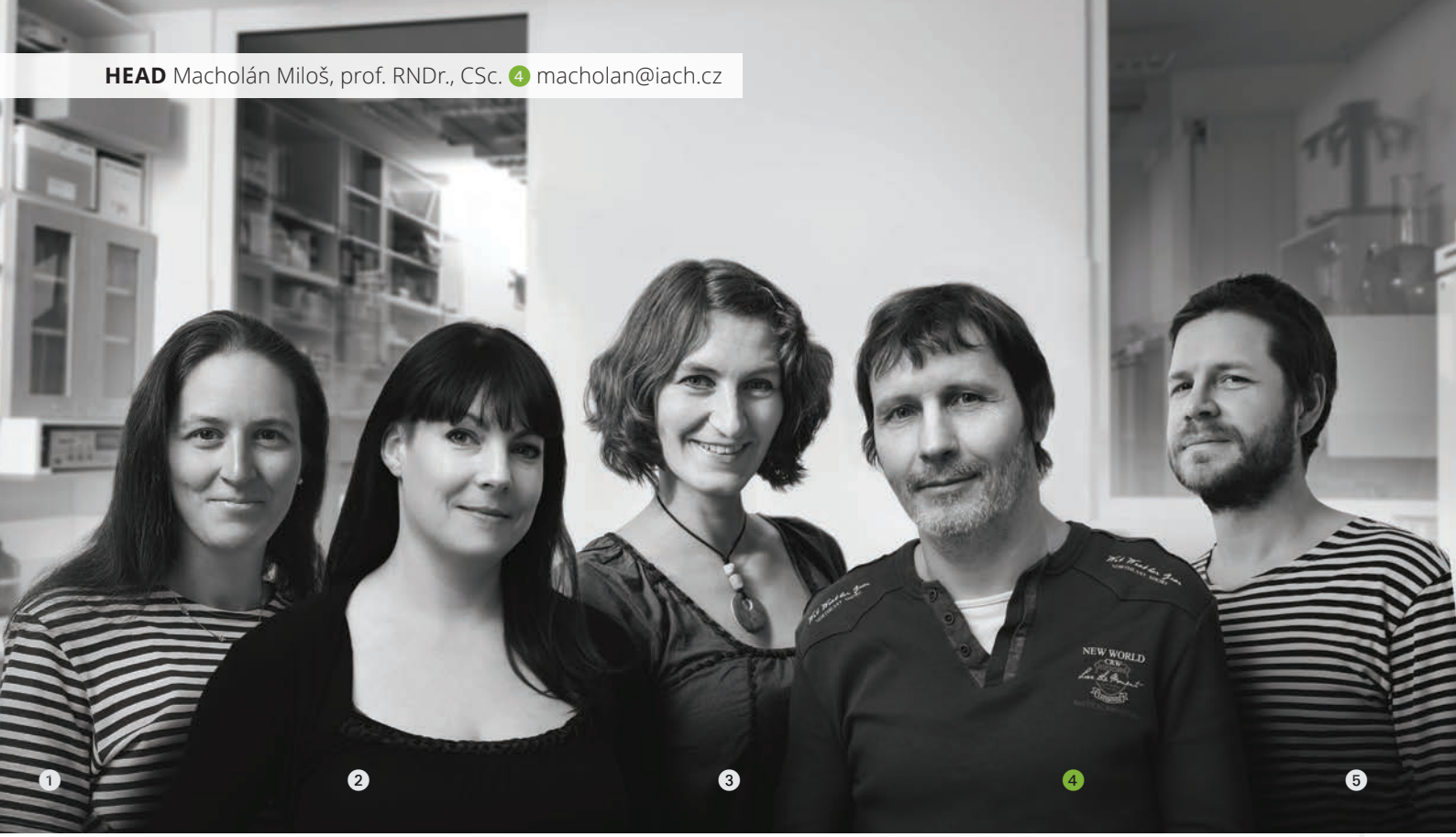
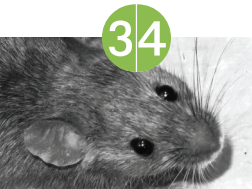


LABORATORY OF

Mammalian Evolutionary Genetics

RESEARCHER Barbora Vošlajerová 3 **POSTDOC** Kristina Daniszová 2 Zuzana Hiadlovská 1
Radovan Smolinský **RESEARCHER ASSISTENTS** Ondřej Mikula 5 **TECHNICIAN** Jana Kopecká

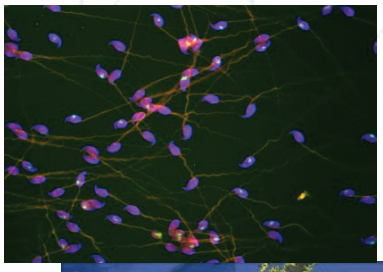
The description and understanding of the origin and maintenance of overall biodiversity is a crucial task in contemporary biology. Our laboratory focuses on **genetic and phenotypic variation** and **evolution of mammals**, using both **wild and model species**. In the former case we focus on description of the genetic and morphological variation and **systematic relationships** among small mammals of the Palearctic and Afrotropical zoogeographic realms. In the latter case we capitalize on the house mouse *(Mus musculus)* as a unique evolutionary model for studying factors involved in process of speciation. Our aim is to elucidate mechanisms involved in formation of prezygotic and postzygotic reproductive barriers (including so called "**speciation genes**") and to detect those parts of the genome breaking these barriers (so called "**antispeciation genes**"). For this purpose we use large number of molecular genetic techniques as well as analyses of phenotypic differences in ecology, behaviour and physiology between the two subspecies potentially affecting processes shaping hybrid zone patterns. Our results brings direct insights into the understanding of the **process of speciation**. Given the way the zone has arisen we try to supplement these data with phylogeographic mapping of the western Palearctic to reveal involvement of individual haplogroups in its origin.



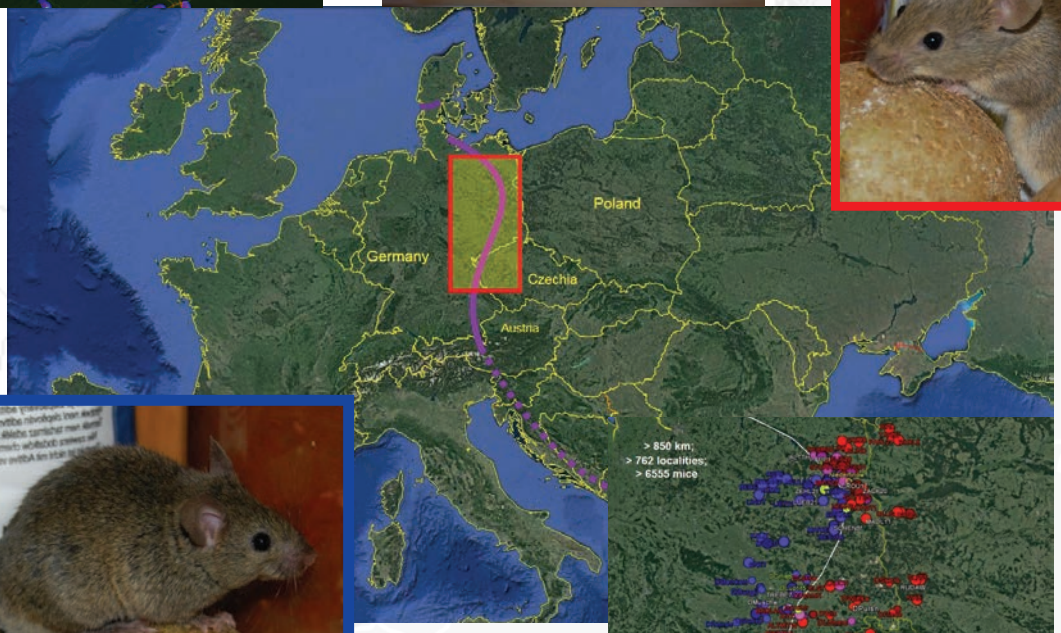



MAIN TOPIC

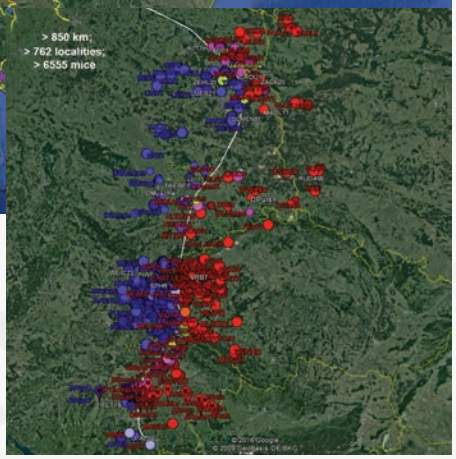
*Two subspecies of the house mouse **M. m. musculus** and **M. m. domesticus** hybridize in Europe. The zone dynamics is studied across a vast area between the Baltic Sea coast and the Alps in order to distinguish random influences (colonization history, human activities, local geographic barriers, genetic drift) and deterministic factors (natural selection). We focus on both phenotype differences between the two subspecies (sexual preferences, aggression, coping with stressful conditions, exploration and dispersal, production and profiles of androgen-binding proteins, major urinary proteins, steroid hormones) and genetic processes shaping the hybrid zone patterns studied through various molecular markers (SNP, allozymes, microsatellites, sequences) and specific analyses (gene expression, gene copy number variation).*



M. m. musculus

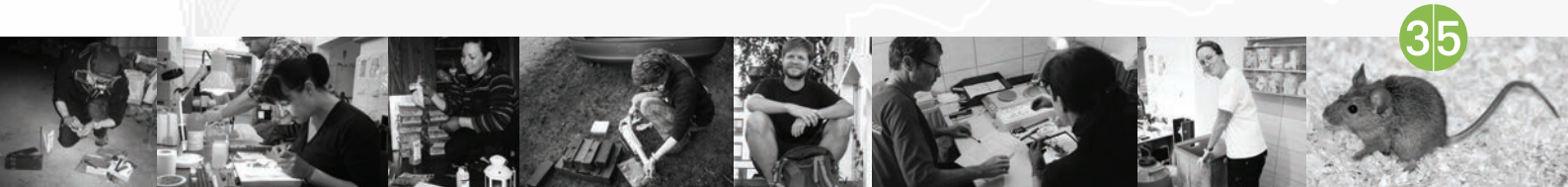


M. m. domesticus



TOP ACHIEVEMENTS

- We revealed that differences in **social structure, behaviour and physiology** in closely related species may be crucial for dynamics of their **speciation** (Daniszová et al. 2017, Hiadlovská et al. 2013, 2014, 2015).
- We contributed to description of unique model for unravelling the role of **salivary Androgen binding proteins** in mouse communication (Chung et al. 2017).
- We brought new insights into the **evolutionary history of East African rodents** (Bryja et al. 2014, 2017).
- Members of the laboratory actively contribute to **teaching** at the universities and prepare **textbooks** and **popularisation materials** (Svoboda, Macholán 2014, Macholán 2014).



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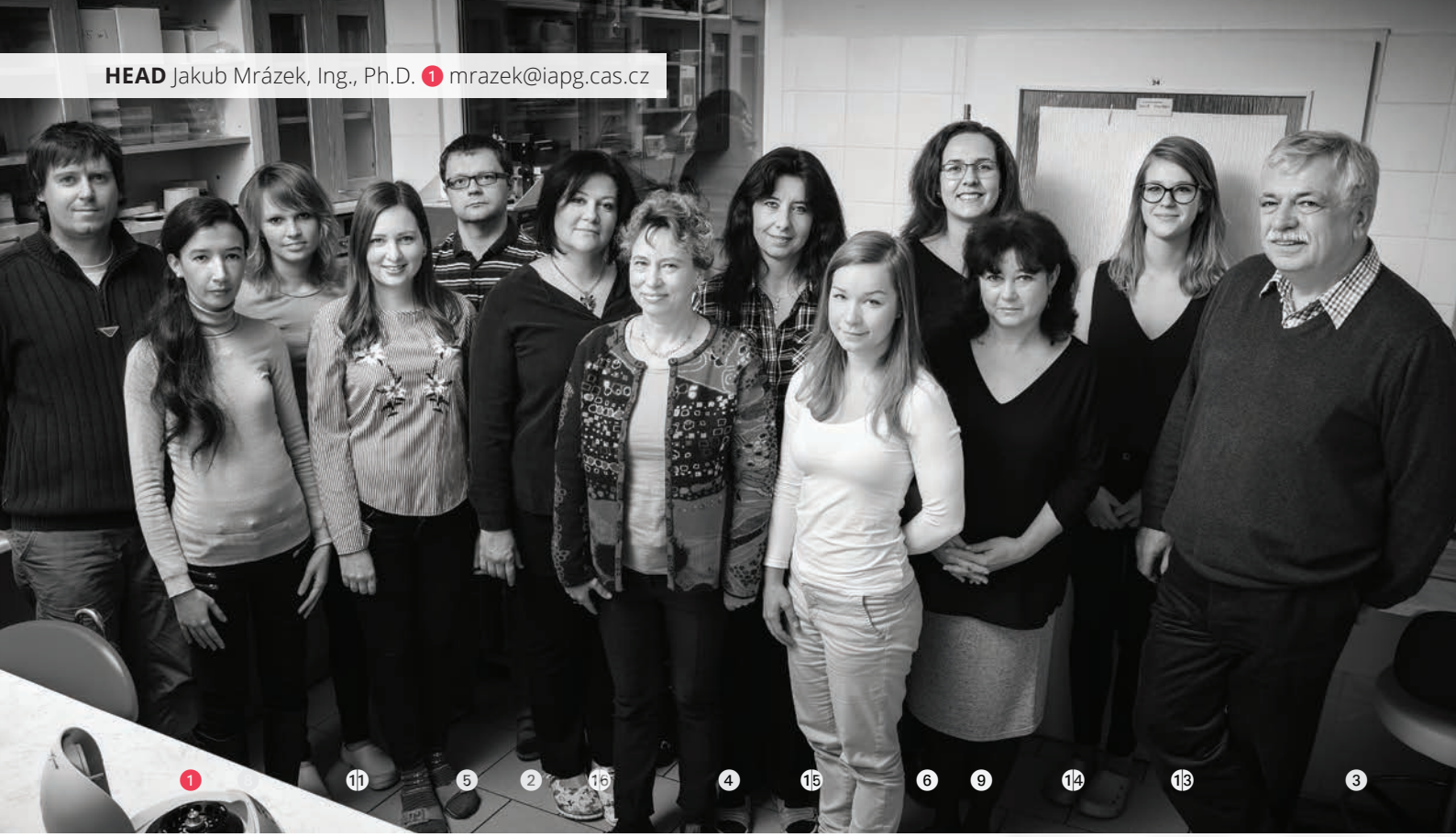

LABORATORY OF

Anaerobic Microbiology

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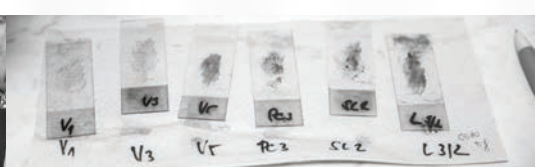
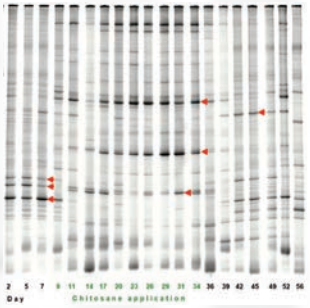
STUDENTS Lucie Benešová 10 Adéla Štěpánová 11 Renata Tarasová 12 Barbora Zavoloková 13
TECHNICIANS Hana Bartoňová 14 Hana Bubíková 15 Lenka Štrosová 16

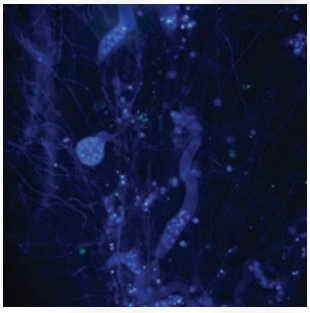
Our group has been studying anaerobic microbes for more than 40 years, with focus on human and animal gut. Animal **gut microbiota** plays irreplaceable role – it participates in nutrition processing and production of host beneficial metabolites, stimulates host's immune system and prevents contamination of pathogens. The gut microbiota is currently considered as a separate organ with its own individual and evolutionary development. It also plays a key role in many civilization disorders (obesity, diabetes, ulcer colitis, Crohn's disease, gut cancer, etc.), and also in diseases not related to gut, e.g. autism, Alzheimer's disease, stress (**="gut-brain axis"**). We use two main approaches to study microbiota ecosystems: microbiological with isolation and **description of new microorganisms**, and by molecular methods, when the **microbiome diversity** is analysed as a whole, without the need of cultivation.

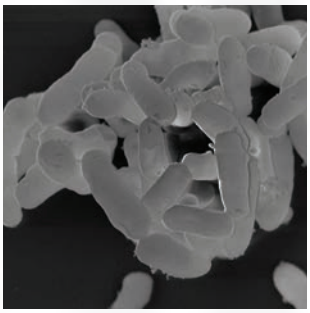


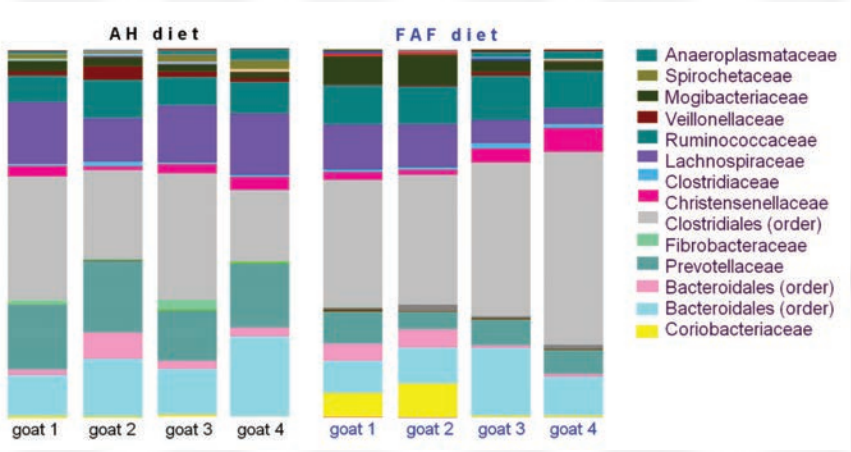
MAIN TOPIC

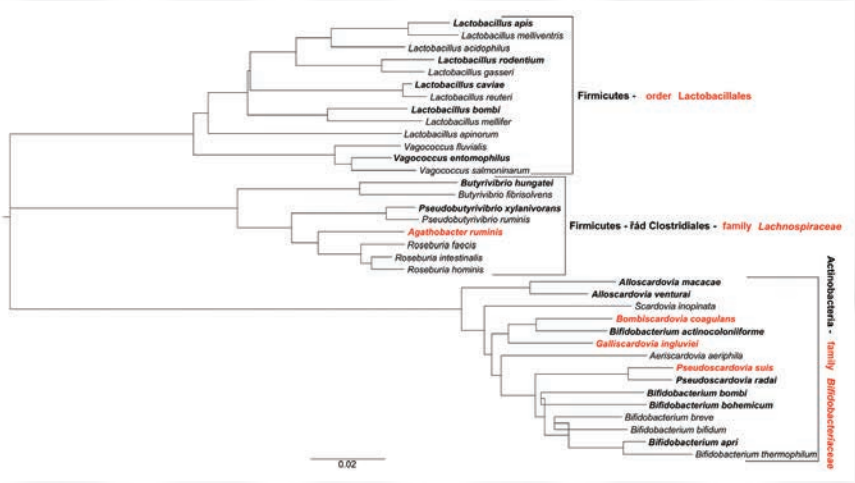
*Methodological ground of our research is isolation and description of new anaerobic bacterial and fungal taxons, and estimation of their morphology, metabolism and role in the host's ecosystem. We focus on beneficial gut bacteria (bifidobacteria, lactobacilli), and also on potentially technologically important microorganisms with high cellulolytic and xylanolytic activities (butyrate producing bacteria, anaerobic fungi). We also study phylogenetic status (classification and evaluation of evolution of organisms based on molecular markers) of family **Bifidobacteriaceae**, order Lactobacillales and genera **Propionibacterium**. Eighteen new microbial species and genera have already been described by our group.*
Second methodological approach is the application of tools of molecular biology for description of microbial communities.
Our projects include analyses of gut microbiome from patients with inflammatory bowel diseases and estimation of treatment (biological treatment by anti-TNFalpha, prebiotics and microbiota transplantation), characterization of metabolic syndrome in schizophrenia patients and role of microbiome in "gut-brain" axis. Our lab also deals with description and alteration of microbial communities in bio-waste treatment with aim to increase efficiency of methane production, or in contrary to methane emission reduction in ruminal microbiomes.











TOP ACHIEVEMENTS

- Large **collection** of anaerobic bacteria and fungi.
- We have isolated and **described** 18 new bacterial genera and species.
- Jiří Killer has been **awarded** by the Czechoslovak Society for Microbiology (ČSSM) as the best Czech-Slovak young microbiologist in 2015.
- Intensive **cooperation** with domestic (CAS, IKEM, IsCare) and foreign (Scotland, New Zealand, USA, Argentina) research institutes.
- Members of your laboratory actively contribute to students **teaching** at national (CULS, ChU, IChT) and international universities (UNISS, Italy).

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IAPG

Units

Supporting units are essential for the smooth running of the Institute. They take serious care for our campus, finances, animals as well as incentive atmosphere.

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1 2 3 4 5 6 7 8 9 10 11

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Marie Hradcová 6 Tomáš Břehovský 7 Venuše Burčová 8 Petr Jón 9

Projects

QI101A166	MZE	Biotechnology in pig husbandry and breeding	2010	2014
GAP502/11/0593	GA0	Signaling pathways and genes regulating gonadotropin-induced maturation of pig cumulus-oocyte complexes	2011	2014
GAP506/11/1792	GA0	Population structure, dispersal, and explorative behaviour in the zone of secondary contact of house mice	2011	2014
GAP506/11/1872	GA0	Adaptive genomic divergence to climatic refugia	2011	2015
GPP301/11/P081	GA0	Role of CDC25B phosphatase during cell cycle resumption: The Comparison of meiotic resumption in oocytes and G2 checkpoint recovery in somatic cells	2011	2013
GPP506/11/P596	GA0	Polyploidization as a key factor in genome evolution of basal vertebrates´ lineages	2011	2013
TA01011466	TA0	Biomedical model of miniature pigs for testing of new medicaments and for new treatments of traumatic spinal cord injury and neurodegenerative diseases	2011	2014
7E12046	MSM	RuminOmics	2012	2015
ED2.1.00/03.0124	MSM	ExAM Experimental Animal Models	2012	2015
GBP503/12/G147	GA0	Centre for studies on toxicity of nanoparticles	2012	2018
GCP302/12/J059	GA0	Cellular and molecular mechanisms in tooth-bone complex formation	2012	2014
GPP506/12/P857	GA0	Where does a species start and end? Speciation in a ring studied in the era of phylogenomics with application to European spined loaches	2012	2014
LH12057	MSM	The signaling pathways synchronizing nuclear envelope break down, chromosome condensation a spindle formation during mammalian meiosis of oocytes	2012	2015
GA13-12291S	GA0	Retention of specific mRNAs in the nucleus of the fully grown mammalian oocyte	2013	2017
GA13-12580S	GA0	Which mechanisms affect the diversity of clones and their coexistence with sexual species? European loaches of the genus Cobitis as a model	2013	2017
GA13-37277S	GA0	Mechanisms and impact of polyploidisation in evolution of animals – lessons from the fish family Botiidae	2013	2016
GP13-24730P	GA0	The Role of Skp1-Cullin1-F-box Complex in Protein Ubiquitination and Degradation during Bovine Preimplantation Development	2013	2018
7AMB14PL031	MSM	The ways to unisexuality: mechanisms initiating parthenogenesis in fish	2014	2015
7F14308	MSM	Comparative study of Huntington's disease using biochemical, immunocytochemical and molecular genetic methods on the mouse, minipig and human tissues and cells	2014	2017
EE2.3.45.0037	MSM	Mendel´s interactive school of genetics	2014	2015
GA14-31540S	GA0	Mechanism of limb development and molecular basis of disruptions in skeletal patterning	2014	2016
GB14-37368G	GA0	Centre of orofacial development and regeneration	2014	2018
GP14-29273P	GA0	Study of developmental processes determining the number of tooth generations	2014	2016
GA15-13265S	GA0	High resolution genomic analysis of introgression across a species barrier	2015	2019
GA15-22765S	GA0	Role of the regulatory factors acting at 3'end of mRNA in correct progression of mammalian oocyte meiotic maturation.	2015	2019
GJ15-19947Y	GA0	When a hallmark of meiosis is lost: studying the formation of clonal and hemiclonal genomes in vertebrate animals using comparative cytogenomics	2015	2017

QJ1510138	MZE	Innovation of reproductive biotechiques in farm animals	2015	2018
QJ1510338	MZE	Fermented dairy products and cheeses for the health nutrition of people, manufacturing technological processes and evaluation methods with the emphasis on the high microbiological safety and improved nutrition parameters	2015	2018
EF15_003/0000460	MSM	EXCELLENCE in Molecular Aspects of the early development of vertebrates	2016	2022
GA16-03248S	GA0	Genomic study of adaptive population shifts in response to climate change	2016	2018
GA16-05534S	GA0	Microenvironment of malignant melanoma as a factor of tumor aggressiveness	2016	2018
GA16-12431S	GA0	Structure and synergism of fibrolytic enzymes in the rumen	2016	2018
GA16-23773S	GA0	Phylogeography, selection and mutation rate at the whole-genome level: Inference from mtDNA sequences of the house mouse	2016	2018
LH15255	MSM	Genomic study of a climate-driven population replacement	2016	2017
LO1609	MSM	Models of the Serious Human Diseases: Traumatic Spinal Cord Injury, Huntington's Disease, Melanoma and Infertility	2016	2020
NV16-31806A	MZ0	New methods of in vivo monitoring and management of colonic anastomosis leak in experimental model	2016	2019
GA17-09807S	GA0	Why and how animals abandon sex? On the causal role of hybridization in triggering asexual reproduction	2017	2019
GA17-14886S	GA0	Molecular and cellular dynamics of tooth-bone interface in model species with acrodont, pleurodont and thecodont dentition	2017	2019
GA17-22604S	GA0	The lizard perspective on mammalian sex chromosomes	2017	2019
GA17-25320S	GA0	Genotypes and phenotypes associated with Y chromosome introgression in the European house mouse hybrid zone: comparison among transects	2017	2019
LTAUSA17097	MSM	Spindle dynamics and chromosome segregation during oocyte meiotic maturation	2017	2021
NV17-31852A	MZ0	The interplay between the gut microbiota and brain functions: implication for metabolome and metabolic syndrome in schizophrenia	2017	2020
EF16_027/0008502	MSM	International mobility fo IAPG researchers for transfer of biomedical innovations	2018	2019
GA18-09323S	GA0	Genome duplication in sturgeon evolution and impact on their biology	2018	2020
GA18-19395S	GA0	Non-coding RNAs matters: role in mammalian oocyte and embryo	2018	2020
NV18-04-00455	MZ0	The role of CD36 gene in pathogenesis of Alzheimer´s disease	2018	2021
GA18-04393S	GA0	Experimental transplantation of the retinal pigmented epithelial cells in a large animal model	2018	2020
GA18-04859S	GA0	Fate decisions in the dental placode: an investigation into the signalling factors that determine cell fate decisions in the early oral cavity	2018	2020
LTC18079	MSM	Proteomic characterization of cell membrane surface proteins, secretome and exosomes in human cell based Huntington's disease model.	2018	2021
LTC18081	MSM	Caspases as novel regulators in osteogenic cellular networks	2018	2020
NV18-07-00073	MZ0	c-Myb and its transcriptional program in physiological and pathological osteogenic processes	2018	2021

Publications

2018 Papers

Bálek, L., Buchtová, M., Kunová Bosáková, M., Vařecha, M., Foldynová-Trantírková, S., Gudernová, I., Veselá, I., Havlík, J., Neburková, J., Turner, S., Krzyscik, M. A., Zakrzewska, M., Klimaschewski, L., Claus, P., Trantírek, L., Cígler, P., Krejčí, P. Nanodiamonds as "artificial proteins": Regulation of a cell signalling system using low nanomolar solutions of inorganic nanocrystals. Biomaterials. 2018, 176(1), 106–121. ISSN 0142–9612.

Barby, F. F., Ráb, P., Lavoué, S., Ezaz, T., Bertollo, L. A. C., Kilian, A., Maruyama, S. R., de Oliveira, E. A., Artoni, R. F., Santos, M. H., Jegede, O. I., Hatanaka, T., Tanomtong, A., Liehr, T., Cioffi, M. d. B. From Chromosomes to Genome: Insights into the Evolutionary Relationships and Biogeography of Old World Knifefishes (Notopteridae; Osteoglossiformes). Genes. 2018, 9(6), 306. ISSN 2073–4425.

Bonczek, O., Bielik, P., Krejčí, P., Zeman, T., Izakovičová-Hollá, L., Šoukalová, J., Vaněk, J., Gerguri, T., Balcar, V. J., Šerý, O. Next generation sequencing reveals a novel nonsense mutation in MSX1 gene related to oligodontia. PLoS ONE. 2018, 13(9), e0202989. E-ISSN 1932–6203.

Bovera, F., Loponte, R., Pero, M. E., Cutrignelli, M. I., Calabro, S., Musco, N., Vassalotti, G., Panettieri, V., Lombardi, P., Piccolo, G., Di Meo, C., Siddi, G., Fliegerová, K., Moniello, G. Laying performance, blood profiles, nutrient digestibility and inner organs traits of hens fed an insect meal from Hermetia illucens larvae. Research in Veterinary Science. 2018, 120(2), 86–93. ISSN 0034–5288.

Celá, P., Hampl, M., Shylo, N., Christopher, K. J., Kavková, M., Landová, M., Zikmund, T., Weatherbee, S. D., Kaiser, J., Buchtová, M. Ciliopathy Protein Tmem107 Plays Multiple Roles in Craniofacial Development. Journal of Dental Research. 2018, 97(1), 108–117. ISSN 0022–0345.

Csukasi, F., Duran, I., Barad, M., Bárta, T., Gudernová, I., Trantírek, L., Martin, J. H., Kuo, C. Y., Woods, J., Lee, H., Cohn, D. H., Krejčí, P., Krakow, D. The PTH/PTHrP-SIK3 pathway affects skeletogenesis through altered mTOR signaling. Science Translational Medicine. 2018, 10(459), eaat9356. ISSN 1946–6234.

Čavlovič, K., Buj, I., Karaica, D., Jelič, D., Choleva, L. Composition and age structure of the Pelophylax esculentus complex (Anura; Ranidae) population in inland Croatia. Salamandra. 2018, 54(1), 11–20. ISSN 0036–3375.

de Bello Cioffi, M., Moreira-Filho, O., Ráb, P., Sember, A., Molina, W. F., Bertollo, L. A. C. Conventional Cytogenetic Approaches—Useful and Indispensable Tools in Discovering Fish Biodiversity. Current Genetic Medicine Reports. 2018, 6(4), 176–186. E-ISSN 2167–4876.

de Oliveira, E. A., Sember, A., Bertollo, L. A. C., Yano, C. F., Ezaz, T., Moreira-Filho, O., Hatanaka, T., Trifonov, V., Liehr, T., Al-Rikabi, A. B. H., Ráb, P., Pains, H., de Bello Cioffi, M. Tracking the evolutionary pathway of sex chromosomes among fishes: characterizing the unique XX/XY1Y2 system in Hoplias malabaricus (Teleostei, Characiformes). Chromosoma. 2018, 127(1), 115–128. ISSN 0009–5915.

Doležálková-Kaštánková, M., Pruvost, N. B. M., Plötner, J., Reyer, H. U., Janko, K., Choleva, L. All-male hybrids of a tetrapod Pelophylax esculentus share its origin and genetics of maintenance. Biology of Sex Differences. 2018, 9(1), 13. ISSN 2042–6410.

Dolinská, S., Drutovič, D., Mlynárčik, P., Königová, A., Molnár, L., Urda Dolinská, M., Štrkolcová, G., Várady, M. Molecular evidence of infection with air sac nematodes in the great tit (Parus major) and the captive-bred gyrfalcon (Falco rusticolus). Parasitology Research. 2018, 117(12), 3851–3856. ISSN 0932–0113.

Dolný, A., Šigutová, H., Ožana, S., Choleva, L. How difficult is it to reintroduce a dragonfly? Fifteen years monitoring Leucorrhinia dubia at the receiving site. Biological Conservation. 2018, 218(3), 110–117. ISSN 0006–3207.

Evers, M., Miniarikova, J., Juhás, Š., Vallés, A., Bohuslavová, B., Juhásová, J., Kupcová Skalníková, H., Vodička, P., Valeková, I., Brouwers, C., Blits, B., Lubelski, J., Kovářová, H., Ellederová, Z., van Deventer, S., Petry, H., Motlík, J., Konstantinová, P. AAV5-miHTT Gene Therapy Demonstrates Broad Distribution and Strong Human Mutant Huntingtin Lowering in a Huntington's Disease Minipig Model. Molecular Therapy. 2018, 26(9), 2163–2177. ISSN 1525–0016.

Fabryová, A., Kostovčík, M., Diez-Mendez, A., Jimenez-Gomez, A., Celador-Lera, L., Saati-Santamaria, Z., Sechovcová, H., Menéndez, E., Kolařík, M., García-Fraile, P. On the bright side of a forest pest-the metabolic potential of bark beetles' bacterial associates. Science of the Total Environment. 2018, 619(APR 1 2018), 9–17. ISSN 0048–9697.

Fafílek, B., Bálek, L., Kunová Bosáková, M., Vařecha, M., Nita, A., Gregor, T., Gudernová, I., Křenová, J., Ghosh, S., Piskáček, M., Jonatová, L., Cernohorsky, N., Zieba, J. T., Kostas, M., Haugsten, E. M., Wesche, J., Erneux, C., Trantírek, L., Krakow, D., Krejčí, P. The inositol phosphatase SHIP2 enables sustained ERK activation downstream of FGF receptors by recruiting Src kinases. Science Signaling. 2018, 11(548), eaap8608. ISSN 1945–0877.

Hálová, A., Janoutová, J., Ewerlingová, L., Janout, V., Bonczek, O., Zeman, T., Gerguri, T., Balcar, V. J., Šerý, O. CHAT gene polymorphism rs3810950 is associated with the risk of Alzheimer's disease in the Czech population. Journal of Biomedical Science. 2018, 25(1), 41. ISSN 1021–7770.

Hanna, C. W., Taudt, A., Huang, J., Gahurová, L., Kranz, A., Andrews, S., Dean, W., Francis Stewart, A., Colomé-Tatché, M., Kelsey, G. MLL2 conveys transcription-independent H3K4 trimethylation in oocytes. Nature structural & molecular biology. 2018, 25(1), 73–82. ISSN 1545–9993.

Hatanaka, T., de Oliveira, E. A., Ráb, P., Yano, C. F., Bertollo, L. A. C., Ezaz, T., Jegede, O. I., Liehr, T., Olaleye, V. F., Cioffi, M. d. B. First chromosomal analysis in Gymnarchus niloticus (Gymnarchidae: Osteoglossiformes): insights into the karyotype evolution of this ancient fish order. Biological Journal of the Linnean Society. 2018, 125(1), 83–92. ISSN 0024–4066.

Hnátková, E., Triantaphyllidis, C., Ozouf-Costaz, C., Choleva, L., Majtánová, Z., Bohlen, J., Ráb, P. Karyotype and chromosomal characteristics of rDNA of Cobitis strumicae Karaman, 1955 (Teleostei, Cobitidae) from Lake Volvi, Greece. Comparative Cytogenetics. 2018, 12(4), 483–491. ISSN 1993–0771.

Hosák, L., Šerý, O., Sadykov, E., Studnická, J. Retinal abnormatilites as a diagnostic or prognostic marker of schizophrenia. Biomedical Papers. 2018, 162(3), 159–164. ISSN 1213–8118. Hovořáková, M., Lesot, H., Peterka, M., Peterková, R. Early development of the human dentition revisited. Journal of Anatomy. 2018, 233(2), 135–145. ISSN 0021–8782.

Hroncová, Z., Konopásková, K., Volštátová, T., Killer, J. Quantification of Firmicutes, Actinobacteria, and Gammaproteobacteria from Bohemian Honey. Scientia Agriculturae Bohemica. 2018, 49(3), 192–200. ISSN 1211–3174.

Janečková, E., Bíliková, P., Matalová, E. Osteogenic Potential of Caspases Related to Endochondral Ossification. Journal of Histochemistry and Cytochemistry. 2018, 66(1), 47–58. ISSN 0022–1554.

Janko, K., Pačes, J., Wilkinson-Herbots, H., Costa, R. J., Roslein, J., Drozd, P., Iakovenko, N., Rídl, J., Hroudová, M., Kočí, J., Reifová, R., Šlechtová, V., Choleva, L. Hybrid asexuality as a primary postzygotic barrier between nascent species: On the interconnection between asexuality, hybridization and speciation. Molecular Ecology. 2018, 27(1), 248–263. ISSN 0962–1083.

Jansová, D., Tětková, A., Končická, M., Kubelka, M., Šušor, A. Localization of RNA and translation in the mammalian oocyte and embryo. PLoS ONE. 2018, 13(3), e0192544. E-ISSN 1932–6203.
Joch, M., Mrázek, J., Skřivanová, E., Čermák, L., Marounek, M. Effects of pure plant secondary metabolites on methane production, rumen fermentation and rumen bacteria populations in vitro. Journal of Animal Physiology and Animal Nutrition. 2018, 102(4), 869–881. ISSN 0931–2439.

Juhás, Š., Harris, N., Ilková, G., Rehák, P., Zsila, F., Kogan, F. Y., Lahmy, O., Zhuk, R., Gregor, P., Koppel, J. RX-207, a Small Molecule Inhibitor of Protein Interaction with Glycosaminoglycans (SMIGs), Reduces Experimentally Induced Inflammation and Increases Survival Rate in Cecal Ligation and Puncture (CLP)-Induced Sepsis. Inflammation. 2018, 41(1), 307–314. ISSN 0360–3997.

Kalous, J., Tětková, A., Kubelka, M., Šušor, A. Importance of ERK1/2 in Regulation of Protein Translation during Oocyte Meiosis. International Journal of Molecular Sciences. 2018, 19(3), 698. E-ISSN 1422–0067.

Karmous, I., Plesník, J., Khan, A. S., Šerý, O., Abid, A., Mankai, A., Aouidet, A., Khan, N. A. Orosensory detection of bitter in fat-taster healthy and obese participants: Genetic polymorphism of CD36 and TAS2R38. Clinical Nutrition. 2018, 37(1), 313–320. ISSN 0261–5614.

Killer, J., Mekadim, C., Pechar, R., Bunešová, V., Mrázek, J., Vlková, E. Gene encoding the CTP synthetase as an appropriate molecular tool for identification and phylogenetic study of the family Bifidobacteriaceae. MicrobiologyOpen. 2018, 7(4), e579. ISSN 2045–8827.

Killer, J., Mekadim, C., Pechar, R., Bunešová, V., Vlková, E. The threonine-tRNA ligase gene region is applicable in classification, typing, and phylogenetic analysis of bifidobacteria. Journal of Microbiology. 2018, 56(10), 713–721. ISSN 1225–8873.

Knytl, M., Kalous, L., Rylková, K., Choleva, L., Merilä, J., Ráb, P. Morphologically indistinguishable hybrid Carassius female with 156 chromosomes: A threat for the threatened crucian carp, C. carassius, L. PLoS ONE. 2018, 13(1), e0190924.
E-ISSN 1932–6203.

Kotlík, P., Marková, S., Konczal, M., Babik, W., Searle, J. B. Genomics of end-Pleistocene population replacement in a small mammal. Proceedings of the Royal Society. B – Biological Sciences. 2018, 285(1872), 20172624. ISSN 0962–8452.

Kunová Bosáková, M., Vařecha, M., Hampl, M., Duran, I., Nita, A., Buchtová, M., Doseděl ová, H., Machat, R., Xie, Y., Ni, Z., Martin, J. H., Chen, L., Jansen, G., Krakow, D., Krejčí, P. Regulation of ciliary function by fibroblast growth factor signaling identifies FGFR3-related disorders achondroplasia and thanatophoric dysplasia as ciliopathies. Human Molecular Genetics. 2018, 27(6), 1093–1105. ISSN 0964–6906.

Kyllar, M., Putnová, B., Jekl, V., Stehlik, L., Buchtová, M., Štembírek, J. (2018): Diagnostic Imaging Modalities and Surgical Anatomy of Temporomandibular Joint in Rabbit. Laboratory Animals, 52(1):38–50

Lebedová, J., Nováková, Z., Večeřa, Z., Buchtová, M., Dumková, J., Dočekal, B., Bláhová, L., Mikuška, P., Míšek, I., Hampl, A., Hilsherová, K. Impact of acute and subchronic inhalation exposure to PbO nanoparticles on mice. Nanotoxicology. 2018, 12(4), 290–304. ISSN 1743–5390.

Matušková, V., Balcar, V. J., Khan, N. A., Bonczek, O., Ewerlingová, L., Zeman, T., Kolář, P., Vysloužilová, D., Vlková, E., Šerý, O. CD36 gene is associated with intraocular pressure elevation after intravitreal application of anti-VEGF agents in patients with age-related macular degeneration: Implications for the safety of the therapy. Ophthalmic Genetics. 2018, 39(1), 4–10. ISSN 1381–6810.

Mazoch, V., Mikula, O., Bryja, J., Konvičková, H., Russo, I. R., Verheyen, E., Šumbera, R. Phylogeography of a widespread sub-Saharan murid rodent Aethomys chrysophilus: the role of geographic barriers and paleoclimate in the Zambezian bioregion. Mammalia. 2018, 82(4), 373–387. ISSN 0025–1461.

Mekadim, C., Killer, J., Pechar, R., Mrázek, J. Variable regions of the glyS, infB and rplB genes usable as novel genetic markers for identification and phylogenetic purposes of genera belonging to the family Propionibacteriaceae. International Journal of Systematic and Evolutionary Microbiology. 2018, 68(8), 2697– 2705. ISSN 1466–5026.

Mekadim, C., Killer, J., Mrázek, J., Bunešová, V., Pechar, R., Hroncová, Z., Vlková, E. Evaluation of the infB and rpsB gene fragments as genetic markers intended for identification and phylogenetic analysis of particular representatives of the order Lactobacillales. Archives of Microbiology. 2018, 200(10), 1427–1437. ISSN 0302–8933.

Mekadim, C., Killer, J., Pechar, R., Mrázek, J. Fragment of the aspartyl-tRNA synthetase applicable as a shared classification and phylogenetic marker in particular representatives of the order Lactobacillales. Folia Microbiologica. 2018, doi: 10.1007/s12223–018–0638–8

Mořkovský, L., Janoušek, V., Reif, J., Rídl, J., Pačes, J., Choleva, L., Janko, K., Nachman, M. W., Reifová, R. Genomic islands of differentiation in two songbird species reveal candidate genes for hybrid female sterility. Molecular Ecology. 2018, 27(4), 949–958. ISSN 0962–1083.

Mrázek, J., Mekadim, C., kučerová, P., Švejstil, R., Salmonová, H., Vlasáková, J., Tarasová, R., Čížková, J., Červinková, M. Melanoma-related changes in skin microbiome. Folia Microbiologica. 2018, doi: 10.1007/s12223–018–00670–3

Nagyová, E. The Biological Role of Hyaluronan-Rich Oocyte-Cumulus Extracellular Matrix in Female Reproduction. International Journal of Molecular Sciences. 2018, 19(1), 283. E-ISSN 1422–0067.

Nguyen, A. L., Drutovič, D., Vazquez, B. N., Yakoubi, W. E., Gentilello, A. S., Malumbres, M., Šolc, P., Schindler, K. Genetic Interactions between the Aurora Kinases Reveal New Requirements for AURKB and AURKC during Oocyte Meiosis. Current Biology. 2018, 28(21), 3458–3468. ISSN 0960–9822.

Perrot-Minnot, M. J., Špakulová, M., Wattier, R., Kotlík, P., Düsen, S., Aydoğ,du, A., Tougard, C. Contrasting phylogeography of two Western Palaearctic fish parasites despite similar life cycles. Journal of Biogeography. 2018, 45(1), 101–115. ISSN 0305–0270.

Plesník, J., Šerý, O., Khan, A. S., Bielik, P., Khan, N. A. The rs1527483, but not rs3212018, CD36 polymorphism associates with linoleic acid detection and obesity in Czech young adults. British Journal of Nutrition. 2018, 119(4), 472–478. ISSN 0007–1145.

Ráb, P. Ostnojazyčné ryby řádu Osteoglossiformes 1. Motýlkovec africký. Živa. 2018, –(1), 38–40.

Ráb, P. Ostnojazyčné ryby řádu Osteoglossiformes 2. Arapaimy – populární i neznámé. Živa. 2018, –(2), 99–101.

Ráb, P. Ostnojazyčné ryby řádu Osteoglossiformes 3. Arowany a baramundi. Živa. 2018, –(3), 146–150.

Ráb, P. Ostnojazyčné ryby řádu Osteoglossiformes 4. Nožovci. Živa. 2018, –(4), 191–193.

Ráb, P. Ostnojazyčné ryby řádu Osteoglossiformes 5. Aba a rypouni. Živa. 2018, –(6), 326–331.

Rieke, L., Schubert, R., Matheis, T., Muratori, L. M., Motlík, J., Schramke, S., Fels, M., Kemper, N., Schuldenzucker, V., Reilmann, R. Vocalisation as a Viable Assessment for Phenotyping Minipigs Transgenic for the Huntington Gene? Journal of Huntington´s Disease. 2018, 7(3), 269–278. ISSN 1879–6397.

Rovatsos, M., Altmanová, M., Johnson Pokorná, M., Augstenová, B., Kratochvíl, L. Cytogenetics of the Javan file snake (Acrochordus javanicus) and the evolution of snake sex chromosomes. Journal of Zoological Systematics and Evolutionary Research. 2018, 56(1), 117–125. ISSN 0947–5745.

Saenjundaeng, P., de Bello Cioffi, M., de Oliveira, E. A., Tanomtong, A., Supiwong, W., Phimphan, S., Collares-Pereira, M. J., Sember, A., Bertollo, L. A. C., Liehr, T., Yano, C. F., Hatanaka, T., Ráb, P. Chromosomes of Asian cyprinid fishes: cytogenetic analysis of two representatives of small paleotetraploid tribe Probarbini. Molecular Cytogenetics. 2018, 11(1), 51. ISSN 1755–8166.

Salmonová, H., Killer, J., Bunešová, V., Geigerová, M., Vlková, E. Cultivable bacteria from Pectinatella magnifica and the surrounding water in South Bohemia indicate potential new Gammaproteobacterial, Betaproteobacterial and Firmicutes taxa. FEMS Microbiology Letters. 2018, 365(13), fny118. ISSN 0378–1097.

Sember, A., Bertollo, L. A. C., Ráb, P., Yano, C. F., Hatanaka, T., de Oliveira, E. A., de Bello Cioffi, M. Sex Chromosome Evolution and Genomic Divergence in the Fish Hoplias malabaricus (Characiformes, Erythrinidae). Frontiers in genetics. 2018, 9(1), 71. ISSN 1664–8021.

Sember, A., Bohlen, J., Šlechtová, V., Altmanová, M., Pelikánová, Š., Ráb, P. Dynamics of tandemly repeated DNA sequences during evolution of diploid and tetraploid botiid loaches (Teleostei: Cobitoidea: Botiidae). PLoS ONE. 2018, 13(3), e0195054. E-ISSN 1932–6203.

Schuldenzucker, V., Schubert, R., Muratori, L. M., Freisfeld, F., Rieke, L., Matheis, T., Schramke, S., Motlík, J., Kemper, N., Radespiel, U., Reilmann, R. Behavioral assessment of stress compensation in minipigs transgenic for the huntington gene using cortisol levels: A proof-of-concept study. Journal of Huntington´s Disease. 2018, 7(2), 151–161. ISSN 1879–6397.

Schulz, D., Qablan, M. A., Profousová-Pšenková, I., Vallo, P., Fuh, T., Modrý, D., Piel, A. K., Stewart, F., Petrželková, K. J., Fliegerová, K. Anaerobic fungi in gorilla (Gorilla gorilla gorilla) Feces: an adaptation to a high-fiber diet? International Journal of Primatology. 2018, 39(4), 567–580. ISSN 0164–0291.

Sirotkin, A. V., Makarevich, A. V., Laurinčík, J., Alawasel, S., Harrath, A. H. Cow body condition affects the hormonal release of ovarian cells and their responses to gonadotropic and metabolic hormones. Theriogenelogy. 2018, 110(3), 142–147. ISSN 0093–691X.

Sirotkin, A. V., Benčo, A., Tandlmajerová, A., Lauková, M., Vašíček, D., Laurinčík, J., Kornhauser, J., Alwasel, S., Harrat, A. H. cAMP response element-binding protein 1 controls porcine ovarian cell proliferation, apoptosis, and FSH and insulin-like growth factor 1 response. Reproduction Fertility and Development. 2018, 30(8), 1145–1153. ISSN 1031–3613.

Smykla, J., Porazinska, D. L., Iakovenko, N., Devetter, M., Drewnik, M., Siang Hii, Y., Emslie, S. D. Geochemical and biotic factors influencing the diversity and distribution of soil microfauna across ice-free coastal habitats in Victoria Land, Antarctica. Soil Biology and Biochemistry. 2018, 116(1), 265–276. ISSN 0038–0717.

Stratil, A., Horák, P., Nesvadbová, M., Van Poucke, M., Dvořáková, V., Stupka, R., Čítek, J., Zadinová, K., Peelman, L. J., Knoll, A. Genomic Structure and Expression of the Porcine ACTC1 Gene. Czech Journal of Animal Science. 2018, 63(9), 371–378. ISSN 1212–1819.

Strážnická, M., Marková, S., Searle, J. B., Kotlík, P. Playing Hide-and-Seek in Beta-Globin Genes: Gene Conversion Transferring a Beneficial Mutation between Differentially Expressed Gene Duplicates. Genes. 2018, 9(10), 492. ISSN 2073–4425.

Strnádel, J., Carromeu, C., Bardy, C., Navarro, M., Platoshyn, O., Glud, A. N., Marsala, S., Kafka, J., Miyanohara, A., Kato, T., Tadokoro, T., Hefferan, M. P., Kamizato, K., Yoshizumi, T., Juhás, Š., Juhásová, J., Ho, C. S., Kheradmand, T., Chen, P., Bohaciakova, D., Hruška-Plocháň, M., Todd, J. A., Driscoll, S. P., Glenn, T. D., Pfaff, S. L., Klíma, J., Ciacci, J. D., Curtis, E., Gage, F. H., Bui, J. D., Yamada, K., Muotri, A., Marsala, M. Survival of syngeneic and allogeneic iPSC-derived neural precursors after spinal grafting in minipigs. Science Translational Medicine. 2018, 10(440), eaam6651. ISSN 1946–6234.

Šimůnek, J. J., Killer, J., Sechovcová, H., Šimůnek, J., Pechar, R., Rada, V., Švec, P., Sedláček, I. Characterization of a xylanolytic bacterial strain C10 isolated from the rumen of a red deer (Cervus elaphus) closely related of the recently described species Actinomyces succiniciruminis, A-glycerinitolerans, and A-ruminicola. Folia Microbiologica. 2018, 63(3), 391–399. ISSN 0015–5632.

Šumbera, R., Krásová, J., Lavrenchenko, L. A., Mengistu, S., Bekele, A., Mikula, O., Bryja, J. Ethiopian highlands as a cradle of the African fossorial root-rats (genus Tachyoryctes), the genetic evidence. Molecular Phylogenetics and Evolution. 2018, 126(1), 105–115. ISSN 1055–7903.

Švandová, E., Veselá, B., Tucker, A. S., Matalová, E. Activation of Pro-apoptotic Caspases in Non-apoptotic Cells During Odontogenesis and Related Osteogenesis. Frontiers in physiology. 2018, 9(1), 174. ISSN 1664–042X.

Švandová, E., Veselá, B., Lesot, H., Sadoine, J., Poliard, A., Matalová, E. FasL Modulates Expression of Mmp2 in Osteoblasts. Frontiers in physiology. 2018, 9(1), 1314. ISSN 1664–042X.

Švejstil, R., Salmonová, H.// Čížková, J. Analysis of cutaneous microbiota of piglets with hereditary melanoma. Scientia Agricultrurae Bohemica. 2018, 49 (4), 258–290.

Ürkmez, D., Ostrowska, M., Roszkowska, M., Gawlak, M., Zawierucha, K., Kristensen, R. M., Kaczmarek, Ł. Description of Megastygarctides sezginii sp nov (Tardigrada: Arthrotardigrada: Stygarctidae) from the Turkish Black Sea coast and a key to the genus Megastygarctides. Marine Biology Research. 2018, 14(1), 1–16. ISSN 1745–1000.

Vidinská, D., Vochozková, P., Šmatlíková, P., Ardan, T., Klíma, J., Juhás, Š., Juhásová, J., Bohuslavová, B., Baxa, M., Valeková, I., Motlík, J., Ellederová, Z. Gradual Phenotype Development in Huntington Disease Transgenic Minipig Model at 24 Months of Age. Neurodegenerative Diseases. 2018, 18(2–3), 107–119. ISSN 1660–2854.

Zawierucha, K., Buda, J., Pietryka, M., Richter, D., Lokas, D., Lehmann-Konera, S., Makowska, N., Bogdziewicz, M. Snapshot of micro-animals and associated biotic and abiotic environmental variables on the edge of the south-west Greenland ice sheet. LIMNOLOGY. 2018, 19(1), 141–150. ISSN 1439–8621.

Zawierucha, K., Stec, D., Lachowska-Cierlik, D., Takeuchi, N., Li, Z., Michalczyk, L. High mitochondrial diversity in a new water bear species (Tardigrada: Eutardigrada) from mountain glaciers in Central Asia, with the erection of a new genus Cryoconicus. Annales Zoologici. 2018, 68(1), 179–201. ISSN 0003–4541.

Zawierucha, K., Gasiorek, P., Buda, J., Uetake, J., Janko, K., Fontaneto, D. Tardigrada and Rotifera from moss microhabitats on a disappearing Ugandan glacier, with the description of a new species of water bear. Zootaxa. 2018, 4392(2), 311–328. ISSN 1175–5326.

Zeman, T., Loh, E. W., Čierný, D., Šerý, O. Penetration, distribution and brain toxicity of titanium nanoparticles in rodents' body: a review. IET Nanobiotechnology. 2018, 12(6), 695–700. ISSN 1751–8741.

Zikmund, T., Novotná, M., Kavková, M., Tesařová, M., Kaucká, M., Szarowská, B., Idameyko, I., Hrubá, E., Buchtová, M., Dražanová, E., Starčuk, Z., Kaiser, J. High-contrast differentiation resolution 3D imaging of rodent brain by X-ray computed. Journal of Instrumentation. 2018, 13(1), C02039. ISSN 1748–0221.

Monographs and chapters in monographs

Courtois, A., Šolc, P., Kitajima, T. Triple-Color Live Imaging of Mouse Oocytes. In: Verlhac, M. H., Terret, M. E., eds. Mouse Oocyte Development. Humana Press, New York, NY, 2018, s. 89–97. Methods in Molecular Biology, 1818. ISBN 978–1–4939–8602–6

Another results — application sphere

Killer, J., Mrázek, J. Sekvence variabilního úseku genu kódujícího aspartyl-tRNA syntázu vhodná pro klasifikaci a fylogenetické analýzy zástupců určitých rodů náležejících do řádu Lactobacillales. 2018. Certifikovaná metodika, ISBN 978–80–270–4240–1

Suchý, T., Šupová, M., Balík, K., Rýglová, Š., Sucharda, Z., Hubálek Kalbáčová, M., Sauerová, P., Juhás, Š., Juhásová, J., Klíma, J., Tonar, Z., Kubíková, T., Žaloudková, M., Braun, M. Degradovatelné kompozitní náhrady kostní tkáně s řízenou dobou degradace na bázi bioapatitu, kolagenu, poly (DL-laktidu) a hyaluronanu sodného. 2018. Praha. Užitný vzor.

2017 Papers

Anýz, J.; Vysloužilová, L.; Vaculovič, T.; Tvrdoňová, M.; Kanický, V.; Haase, H.; Horák, V.; Štěpánková, O.; Heger, Z.; Adam, V. Spatial mapping of metals in tissue-sections using combination of mass-spectrometry and histology through image registration. Scientific Reports 2017, roč. 7, č. 1, č. článku 40169. ISSN 2045–2322.

Bálek, L.; Gudernová, I.; Veselá, I.; Hampl, M.; Oralová, V.; Kunová Bosáková, M.; Vařecha, M.; Němec, P.; Hall, T.C.; Abbadessa, G.; Hatch, N.; Buchtová, M.; Krejčí, P. ARQ 087 inhibits FGFR signaling and rescues aberrant cell proliferation and differentiation in experimental models of craniosynostoses and chondrodysplasias caused by activating mutations in FGFR1, FGFR2 and FGFR3. Bone 2017, roč. 105, č. 1, s. 57–66. ISSN 8756–3282.

Blaha, M.; Procházka, R.; Adámková, K.; Nevoral, J.; Němcová, L. Prostaglandin E2 stimulates the expression of cumulus expansion-related genes in pigs: the role of protein kinase B. Prostaglandins & Other Lipid Mediators 2017, roč. 130, č. 2, s. 38–46. ISSN 1098–8823.

Bohlen, J.; Šlechtová, V. Leptobotia micra, a new species of loach (Teleostei: Botiidae) from Guilin, southern China. Zootaxa 2017, roč. 4250, č. 1, s. 90–100. ISSN 1175–5326.

Bonczek, O.; Balcar, V. J.; Šerý, O. PAX9 gene mutations and tooth agenesis: A review. Clinical Genetics 2017, roč. 92, č. 5, s. 467–476. ISSN 0009–9163.

Bryja, J.; Šumbera, R.; Kerbis Peterhans, J. C.; Aghová, T.; Bryjová, A.; Mikula, O.; Nicolas, V.; Denys, C.; Verheyen, E. Evolutionary history of the thicket rats (genus Grammomys) mirrors the evolution of African forests since late Miocene. Journal of Biogeography 2017, roč. 44, č. 1, s. 182–194. ISSN 0305–0270.

Budišová Švandová, E.; Veselá, B.; Lesot, H.; Poliard, A.; Matalová, E. Expression of Fas, FasL, caspase-8 and other factors of the extrinsic apoptotic pathway during the onset of interdigital tissue elimination. Histochemistry and Cell Biology 2017, roč. 147, č. 4, s. 497–510. ISSN 0948–6143.

Bunešová, V.; Killer, J.; Javůrková, B.; Vlková, E.; Tejnecký, V.; Musilová, S.; Rada, V. Diversity of the subspecies Bifidobacterium animalis subsp lactis. Anaerobe 2017, roč. 44, č. 1, s. 40–47. ISSN 1075–9964.

Celá, P.; Putnová, I.; Buchtová, M. Využití růstových faktorů v léčbě kostních defektů u domácích a hospodářských zvířat. Veterinářství 2017, roč. 67, č. 1, s. 28–33. ISSN 0506–8231.

Cioffi, M. d. B.; Yano, C. F.; Sember, A.; Bertollo, L.A.C. Chromosomal Evolution in Lower Vertebrates: Sex Chromosomes in Neotropical Fishes. Genes 2017, roč. 8, č. 10, č. článku 258. ISSN 2073–4425.

Červinková, M.; Kučerová, P.; Čížková, J. Spontaneous regression of malignant melanoma – is it based on the interplay between host immune system and melanoma antigens?. Anti-cancer Drugs 2017, roč. 28, č. 8, s. 819–830. ISSN 0959–4973.

Daniszová, K.; Mikula, O.; Macholán, M.; Pospíšilová, I.; Vošlajerová Bímová, B.; Hiadlovská, Z. Subspecies-specific response to ACTH challenge test in the house mouse (Mus musculus). General and Comparative Endocrinology 2017, roč. 252, October, s. 186–192. ISSN 0016–6480.

Dion-Cote, A. M.; Symonová, R.; Lamaze, F. C.; Pelikánová, Š.; Ráb, P.; Bernatchez, L. Standing chromosomal variation in Lake Whitefish species pairs: the role of historical contingency and relevance for speciation. Molecular Ecology 2017, roč. 26, č. 1, s. 178–192. ISSN 0962–1083.

Dumková, J.; Smutná, T.; Vrlíková, L.; Le Coustumer, P.; Večeřa, Z.; Dočekal, B.; Mikuška, P.; Čapka, L.; Fictum, P.; Hampl, A.; Buchtová, M. Sub-chronic inhalation of lead oxide nanoparticles revealed their broad distribution and tissue-specific subcellular localization in target organs. Particle and Fibre Toxicology 2017, roč. 14, č. 1, č. článku 55. ISSN 1743–8977.

Edwards, J.E.; Forster, R.; Callaghan, T. M.; Dollhofer, V.; Dagar, S. S.; Cheng, Y.; Chang, J.; Kittelmann, S.; Fliegerová, K.; Puniya, A. K.; Henske, J. K.; Gilmore, S.; O´Malley, M. A.; Griffith, G. W.; Smidt, H. PCR and Omics Based Techniques to Study the Diversity, Ecology and Biology of Anaerobic Fungi: Insights, Challenges and Opportunities. Frontiers in Microbiology 2017, roč. 8, č. 8, č. článku 1657. ISSN 1664–302X.

Fafílek, B.; Hampl, M.; Říčánková, N.; Veselá, I.; Bálek, L.; Kunová Bosáková, M.; Gudernová, I.; Vařecha, M.; Buchtová, M.; Krejčí, P. Statins do not inhibit the FGFR signaling in chondrocytes. Osteoarthritis and Cartilage 2017, roč. 25, č. 9, s. 1522–1530. ISSN 1063–4584.

Faktor, J.; Suchá, R.; Páralová, V.; Liu, Y.; Bouchal, P. Comparison of targeted proteomics approaches for detecting and quantifying proteins derived from human cancer tissues. Proteomics 2017, roč. 17, č. 5, č. článku 1600323. ISSN 1615–9853.

Ferencová, I.; Šolc, P. Auxínom indukovaná špecifická degradácia proteínov v cicavčích bunkách ako experimentálny nástroj pre štúdium funkcie proteínov. Bioprospect 2017, roč. 27, č. 4, s. 104–107. ISSN 1210–1737.

Grau, J. H.; Hilgers, L.; Altmüller, J.; Šlechtová, V.; Bohlen, J. The complete mitochondrial transcript of the red tail loach Yasuhikotakia modesta as assembled from RNAseq (Teleostei: Botiidae). Mitochondrial DNA part B 2017, roč. 2, č. 1, s. 46–47. ISSN 2380–2359.

Guran, R.; Vaníčková, L.; Horák, V.; Křížková, S.; Michálek, P.; Heger, Z.; Zítka, O.; Adam, V. MALDI MSI of MeLiM melanoma: Searching for differences in protein profiles. PLoS ONE 2017, roč. 12, č. 12, č. článku e0189305. E-ISSN 1932–6203.

Hampl, M.; Celá, P.; Szabo-Rogers, H. L.; Kunová Bosáková, M.; Dosedělová, H.; Krejčí, P.; Buchtová, M. Role of Primary Cilia in Odontogenesis. Journal of Dental Research 2017, roč. 96, č. 9, s. 965–974. ISSN 0022–0345.

Horák, P.; Kučerová, P.; Červinková, M. Potential markers for early diagnostics of Colorectal cancer and Inflammatory bowel disease in humans : intestinal microorganisms and immune system (teammates or rivals). Canadian Journal of Biotechnology 2017, roč. 1, č. 2, s. 59–64. E-ISSN 2560–8304.

Hyršl, P.; Dobeš, P.; Vojtek, L.; Hroncová, Z.; Tyl, J.; Killer, J. Plant alkaloid sanguinarine and novel potential probiotic strains Lactobacillus apis, Lactobacillus melliventris and Gilliamella apicola promote resistance of honey bees to nematobacterial infection. Bulletin of Insectology 2017, roč. 70, č. 1, s. 31–38. ISSN 1721–8861.

Chung, A. G.; Belone, P. M.; Vošlajerová Bímová, B.; Karn, R. C.; Laukaitis, C. M. Studies of an Androgen-Binding Protein Knockout Corroborate a Role for Salivary ABP in Mouse Communication. Genetics 2017, roč. 205, č. 4, s. 1517–1527. ISSN 0016–6731.

Jansová, D.; Končická, M.; Tětková, A.; Černá, R.; Malík, R.; del Llano, E.; Kubelka, M.; Šušor, A. Regulation of 4E-BP1 activity in the mammalian oocyte. Cell Cycle 2017, roč. 16, č. 10, s. 927–939. ISSN 1538–4101.

Jensen-Jarolim, E.; Bax, H. J.; Bianchini, R.; Capron, M.; Corrigan, C.; Castells, M.; Dombrowicz, D.; Daniels-Wells, T. R.; Fazekas, J.; Fiebiger, E.; Gatault, S.; Gould, H. J.; Janda, J.; Josephs, D. H.; Karagiannis, P.; Levi-Schaffer, F.; Meshcheryakova, A.; Mechtcheriakova, D.; Mekori, Y.; Mungenast, F.; Nigro, E. A.; Penichet, M. L.; Redegeld, F.; Saul, L.; Singer, J.; Spicer, J. F.; Siccardi, A. G.; Spillner, E.; Turner, M. C.; Untersmayr, E.; Vangelista, L.; Karagiannis, S. N. AllergoOncology – the impact of allergy in oncology: EAACI position paper. Allergy 2017, roč. 72, č. 6, s. 866–887. ISSN 0105–4538.

Kashem, M. A.; Lee, A.; Pow, D. W.; Šerý, O.; Balcar, J. V. Could ethanol-induced alterations in the expression of glutamate transporters in testes contribute to the effect of paternal drinking on the risk of abnormalities in the offspring?. Medical Hypotheses 2017, roč. 98, č. 1, s. 57–59. ISSN 0306–9877.

Killer, J.; Pechar, R.; Švec, P.; Salmonová, H.; Švejstil, R.; Geigerová, M.; Rada, V.; Vlková, E.; Mekadim, C. Lactobacillus caviae sp nov., an obligately heterofermentative bacterium isolated from the oral cavity of a guinea pig (Cavia aperea f. porcellus). International Journal of Systematic and Evolutionary Microbiology 2017, roč. 67, č. 7, s. 2903–2909. ISSN 1466–5026.

Kupcová Skalníková, H.; Čížková, J.; Červenka, J.; Vodička, P. Advances in Proteomic Techniques for Cytokine Analysis: Focus on Melanoma Research. International Journal of Molecular Sciences 2017, roč. 18, č. 12, č. článku 2697. E-ISSN 1422–0067.

Ledvina, V.; Janečková, E.; Matalová, E.; Klepárník, K. Parallel single-cell analysis of active caspase-3/7 in apoptotic and non-apoptotic cells. Analytical and Bioanalytical Chemistry 2017, roč. 409, č. 1, s. 269–274. ISSN 1618–2642.

Loponte, R.; Nizza, S.; Bovera, F.; De Riu, N.; Fliegerová, K.; Lombardi, P.; Vassalotti, G.; Mastellone, V.; Nizza, A.; Moniello, G. Growth performance, blood profiles and carcass traits of Barbary partridge (Alectoris barbara) fed two different insect larvae meals (Tenebrio molitor and Hermetia illucens). Research in Veterinary Science 2017, roč. 115, č. 3, s. 183–188. ISSN 0034–5288.

Majtánová, Z.; Symonová, R.; Arias-Rodriquez, L.; Sallan, L.; Ráb, P.; "Holostei versus Halecostomi" Problem: Insight from Cytogenetics of Ancient Nonteleost Actinopterygian Fish, B. A. c. "Holostei versus Halecostomi" Problem: Insight from Cytogenetics of Ancient Nonteleost Actinopterygian Fish, Bowfin Amia calva. Journal of Experimental Zoology Part B: Molecular and Developmental Evolution Additional Title Information 2017, roč. 328, č. 7, s. 620–628. ISSN 1552–5007.

Migalska, M.; Sebastian, A.; Konczal, M.; Kotlík, P.; Radwan, J. De novo transcriptome assembly facilitates characterisation of fast-evolving gene families, MHC class I in the bank vole (Myodes glareolus). Heredity 2017, roč. 118, č. 4, s. 348–357. ISSN 0018–067X.

Mináriková, A.; Buchtová, M.; Jekl, V. Anatomie a histologie zubů morčete domácího (Cavia aperea f. porcellus). Veterinární klinika 2017, roč. 14, č. 4, s. 175–179. ISSN 1214–6080.

Oralová, V.; Matalová, E.; Killinger, M.; Knopfová, L.; Šmarda, J.; Buchtová, M. Osteogenic Potential of the Transcription Factor c-MYB. Calcified Tissue International and Calcified Tissue Research 2017, roč. 100, č. 3, s. 311–322. ISSN 0171–967X.

Pajer, P.; Dresler, J.; Kabickova, H.; Píša, L.; Aganov, P.; Fucik, K.; Elleder, D.; Hron, T.; Kuželka, V.; Velemínský, P.; Klimentová, J.; Fučíková, A.; Pejchal, J.; Hrabáková, R.; Beneš, V.; Rausch, T.; Dundr, P.; Pilin, A.; Čabala, R.; Hubálek, M.; Stříbrný, J.; Antwerpen, M.H.; Meyer, H. Characterization of Two Historic Smallpox Specimens from a Czech Museum. Viruses 2017, roč. 9, č. 8, č.článku 200. ISSN 1999–4915.

Pechar, R.; Killer, J.; Švejstil, R.; Salmonová, H.; Geigerová, M.; Bunešová, V.; Rada, V.; Benada, O. Galliscardovia ingluviei gen. nov., sp nov., a thermophilic bacterium of the family Bifidobacteriaceae isolated from the crop of a laying hen (Gallus gallus f. domestica). International Journal of Systematic and Evolutionary Microbiology 2017, roč. 67, č. 7, s. 2403–2411. ISSN 1466–5026.

Pechar, R.; Killer, J.; Salmonová, H.; Geigerová, M.; Švejstil, R.; Švec, P.; Sedláček, I.; Rada, V.; Benada, O. Bifidobacterium apri sp nov., a thermophilic actinobacterium isolated from the digestive tract of wild pigs (Sus scrofa). International Journal of Systematic and Evolutionary Microbiology 2017, roč. 67, č. 7, s. 2349–2356. ISSN 1466–5026.

Pechar, R.; Killer, J.; Mekadim, C.; Geigerová, M.; Rada, V. Classification of Culturable Bifidobacterial Population from Colonic Samples of Wild Pigs (Sus scrofa) Based on Three Molecular Genetic Methods. Current Microbiology 2017, roč. 74, č. 11, s. 1324–1331. ISSN 0343–8651.

Procházka, R.; Blaha, M.; Němcová, L. Significance of epidermal growth factor receptor signaling for acquisition of meiotic and developmental competence in mammalian oocytes. Biology of Reproduction 2017, roč. 97, č. 4, s. 537–549. ISSN 0006–3363.

Putnová, I.; Doseděl ová, H.; Bryja, V.; Landová, M.; Buchtová, M.; Štembírek, J. Angled Growth of the Dental Lamina Is Accompanied by Asymmetrical Expression of the WNT Pathway Receptor Frizzled 6. Frontiers in physiology 2017, roč. 8, č. 1, č.článku 29. ISSN 1664–042X.

Roszkowska, M.; Ostrowska, M.; Stec, D.; Janko, K.; Kaczmarek, Ł. Macrobiotus polypiformis sp nov., a new tardigrade (Macrobiotidae; hufelandi group) from the Ecuadorian Pacific coast, with remarks on the claw abnormalities in eutardigrades. European Journal of Taxonomy 2017, roč. 327, č. 1, s. 1–19. ISSN 2118–9773.

Ryska, O.; Šerclová, Z.; Martínek, J.; Doležel, R.; Kalvach, J.; Juhás, Š.; Juhásová, J.; Bunganič, B.; Lasziková, E.; Ryska, M. A new experimental model of calculous cholecystitis suitable for the evaluation and training of minimally invasive approaches to cholecystectomy. Surgical Endoscopy and Other Interventional Techniques 2017, roč. 31, č. 2, s. 987–994. ISSN 0930–2794.

Ryska, O.; Šerclová, Z.; Měšťák, O.; Matoušková, E.; Veselý, P.; Mrázová, I. Local application of adipose-derived mesenchymal stem cells supports the healing of fistula: prospective randomised study on rat model of fistulising Crohn's disease. Scandinavian Journal of Gastroenterology 2017, roč. 52, č. 5, s. 543–550. ISSN 0036–5521.

Sechovcová, H.; Killer, J.; Pechar, R.; Geigerová, M.; Švejstil, R.; Salmonová, H.; Mekadim, C.; Rada, V.; Vlková, E.; Kofroňová, O.; Benada, O. Alloscardovia venturai sp nov., a fructose 6-phosphate phosphoketolase-positive species isolated from the oral cavity of a guinea-pig (Cavia aperea f. porcellus). International Journal of Systematic and Evolutionary Microbiology 2017, roč. 67, č. 7, s. 2842–2847. ISSN 1466–5026.

Stec, D.; Zawierucha, K.; Michalczyk, L. An integrative description of Ramazzottius subanomalus (Biserov, 1985) (Tardigrada) from Poland. Zootaxa 2017, roč. 4300, č. 3, s. 403–420. ISSN 1175–5326.

Symonová, R.; Havelka, M.; Amemiya, C. T.; Howell, M. W.; Kořínková, T.; Flajšhans, M.; Gela, D.; Ráb, P. Molecular cytogenetic differentiation of paralogs of Hox paralogs in duplicated and re-diploidized genome of the North American paddlefish (Polyodon spathula). B M C Genetics 2017, roč. 18, č. 1, č. článku 19. ISSN 1471–2156.

Symonová, R.; Majtánová, Z.; Arias-Rodriquez, L.; Mořkovský, L.; Kořínková, T.; Cavin, L.; Johnson Pokorná, M.; Doležálková, M.; Flajšhans, M.; Normandeau, E.; Ráb, P.; Meyer, A.; Bernatchez, L. Genome Compositional Organization in Gars Shows More Similarities to Mammals than to Other Ray-Finned Fish. Journal of Experimental Zoology Part B: Molecular and Developmental Evolution Additional Title Information 2017, roč. 328, č. 7, s. 607–619. ISSN 1552–5007.

Symonová, R.; Ocalewicz, K.; Kirtiklis, L.; Delmastro, G. B.; Pelikánová, Š.; Garcia, S.; Kovařík, A. Higher-order organisation of extremely amplified, potentially functional and massively methylated 5S rDNA in European pikes (Esox sp.). BMC Genomics 2017, roč. 18, č. 391, č. článku 391. ISSN 1471–2164.

Šerý, O.; Janoutová, J.; Ewerlingová, L.; Hálová, A.; Lochman, J.; Janout, V.; Khan, N. A.; Balcar, V. J. CD36 gene polymorphism is associated with Alzheimer's disease. Biochimie 2017, roč. 135, č. 1, s. 46–53. ISSN 0300–9084.

Tadokoro, T.; Miyanohara, A.; Navarro, M.; Kamizato, K.; Juhás, Š.; Juhásová, J.; Maršala, S.; Platoshyn, O.; Curtis, E.; Gabel, B.; Ciacci, J. D.; Lukáčová, N.; Bimbová, K.; Maršala, M. Subpial Adeno-associated Virus 9 (AAV9) Vector Delivery in Adult Mice. Jove-Journal of Visualized Experiments 2017, roč. 125, č. 13, č. článku e55770. ISSN 1940–087X.

Yano, C. F.; Bertollo, L.A.C.; Ezaz, T.; Trifonov, V.; Sember, A.; Liehr, T.; Cioffi, M.B. Highly conserved Z and molecularly diverged W chromosomes in the fish genus Triportheus (Characiformes, Triportheidae). Heredity 2017, roč. 118, č. 3, s. 276–283. ISSN 0018–067X.

Zadinová, K.; Stupka, R.; Stratil, A.; Čítek, J.; Vehovský, K.; Lebedová, N.; Šprysl, M.; Okrouhlá, M. Association analysis of SNPs in the porcine CYP2E1 gene with skatole, indole, and androstenone levels in backfat of a crossbred pig population. Meat Science 2017, roč. 131, č. 1, s. 68–73. ISSN 0309–1740.

Žváčková, I.; Matalová, E.; Lesot, H. Regulators of Collagen Fibrillogenesis during Molar Development in the Mouse. Frontiers in physiology 2017, roč. 8, č. 8, č. článku 554. ISSN 1664–042X.

Monographs and chapters in monographs

Rausová, P.; Vochozková, P.; Vidinská, D.; Hrnčiarová, E.; Bohuslavová, B.; Mačáková, M.; Valeková, I.; Juhás, Š.; Ardan, T.; Šolc, P.; Motlík, J.; Ellederová, Z. Porcine Model of Huntington´s Disease. In Tunah, N. E. (ed.). Huntington´s Disease – Molecular Pathogenesis and Current Models London: Intech, 2017, s. 75–94. ISBN 978–953–51–3050–5

Šušor, A.; Kubelka, M. Translational regulation in the mammalian oocyte. In Kloc, M. (ed.). Results and Problems in Cell Differentiation Wien: Springer Verlag, 2017, s. 257–295.

Another results — prototypes

Suchý, T.; Šupová, M.; Balík, K.; Rýglová, Š.; Sucharda, Z.; Žaloudková, M.; Braun, M.; Hubálek Kalbáčová, M.; Sauerová, P.; Juhás, Š.; Juhásová, J.; Klíma, J.; Tonar, Z.; Kubíková, T.; Bartoš, M. Degradovatelné kompozitní náhrady kostní tkáně s řízenou dobou degradace na bázi poly(DL-laktidu), kolagenu, bioapatitu a hyaluronanu sodného. 2017.

Suchý, T.; Šupová, M.; Balík, K.; Rýglová, Š.; Sucharda, Z.; Žaloudková, M.; Braun, M.; Hubálek Kalbáčová, M.; Sauerová, P.; Juhás, Š.; Juhásová, J.; Klíma, J.; Tonar, Z.; Kubíková, T.; Bartoš, M. Degradovatelné kompozitní náhrady kostní tkáně s řízenou dobou degradace na bázi bioapatitu, kolagenu, poly(DL-laktidu) a hyaluronanu sodného. 2017.

2016 Papers

Adamová, E.; Janečková, E.; Klepárník, K.; Matalová, E. Caspases and osteogenic markers-in vitro screening of inhibition impact. In Vitro – Cellular and Developmental Biology. Animal Section 2016, roč. 52, č. 2, s. 144–148. ISSN 1071–2690.

Altmanová, M.; Rovatsos, M.; Kratochvíl, L.; Johnson Pokorná, M. Minute Y chromosomes and karyotype evolution in Madagascan iguanas (Squamata: Iguania: Opluridae). Biological Journal of the Linnean Society 2016, roč. 118, č. 3, s. 618–633. ISSN 0024–4066.

Antal, L.; László, B.; Kotlík, P.; Mozsár, A.; Czeglédi, I.; Oldal, M.; Kemenesi, G.; Jakab, F.; Nagy, S. A. Phylogenetic evidence for a new species of Barbus in the Danube River basin. Molecular Phylogenetics and Evolution 2016, roč. 96, č. 2, s. 187–194. ISSN 1055–7903.

Antal, L.; László, B.; Kotlík, P.; Mozsár, A.; Czeglédi, I.; Oldal, M.; Kemenesi, G.; Jakab, F.; Nagy, S. A. A Kárpat-medence új halfaja: a bihari márna (Barbus biharius). Pisces Hungarici 2016, roč. 10, č. 1, s. 5–14. ISSN 1789–1329.

Ardan, T.; Němcová, L.; Bohuslavová, B.; Klezlová, A.; Popelka, Š.; Studenovská, H.; Hrnčiarová, E.; Čejková, J.; Motlík, J. Reduced Levels of Tissue Inhibitors of Metalloproteinases in UVB-Irradiated Corneal Epithelium. Photochemistry and Photobiology 2016, roč. 92, č. 5, s. 720–727. ISSN 0031–8655.

Balboula, A. Z.; Nguyen, A. L.; Gentilello, A. S.; Quartuccio, S. M.; Drutovič, D.; Šolc, P.; Schindler, K. Haspin kinase regulates microtubule-organizing center clustering and stability through Aurora kinase C in mouse oocytes. Journal of Cell Science 2016, roč. 129, č. 19, s. 3648–3660. ISSN 0021–9533.

Baran, V.; Brzáková, A.; Rehák, P.; Kovaříková, V.; Šolc, P. PLK1 regulates spindle formation kinetics and APC/C activation in mouse zygote. Zygote 2016, roč. 24, č. 3, s. 338–345. ISSN 0967–1994.

Bendová, K.; Marková, S.; Searle, J. B.; Kotlík, P. The complete mitochondrial genome of the bank vole Clethrionomys glareolus (Rodentia: Arvicolinae). Mitochondrial DNA 2016, roč. 27, č. 1, s. 111–112. ISSN 1940–1736.

Benešová, V.; Kinterová, V.; Kaňka, J.; Toralová, T. Characterization of SCF-Complex during Bovine Preimplantation Development. PLoS ONE 2016, roč. 11, č. 1, e0147096–e0147096. E-ISSN 1932–6203.

Bohlen, J.; Šlechtová, V.; Šlechta, V.; Šlechtová, V.; Sember, A.; Ráb, P. A Ploidy Difference Represents an Impassable Barrier for Hybridisation in Animals. Is There an Exception among Botiid Loaches (Teleostei: Botiidae)?. PLoS ONE 2016, roč. 11, č. 7, e0159311–e0159311. E-ISSN 1932–6203.

Bohlen, J.; Petrtýl, M.; Chaloupková, P.; Borin, C. Schistura kampucheensis, a new species of loach from Cambodia (Teleostei: Nemacheilidae). Ichthyological Exploration of Freshwaters 2016, roč. 26, č. 4, s. 353–362. ISSN 0936–9902.

Bohlen, J.; Šlechtová, V. Leptobotia bellacauda, a new species of loach from the lower Yangtze basin in China (Teleostei: Cypriniformes: Botiidae). Zootaxa 2016, roč. 4205, č. 1, s. 65–72. ISSN 1175–5326.

Celá, P.; Hampl, M.; Fu, K.; Kunová Bosáková, M.; Krejčí, P.; Richman, J. M.; Buchtová, M. MORN5 Expression during Craniofacial Development and Its Interaction with the BMP and TGF beta Pathways. Frontiers in physiology 2016, roč. 7, č. 378. ISSN 1664–042X.

Celá, P.; Buchtová, M.; Veselá, I.; Fu, K.; Bogardi, J. P.; Song, Y.; Barlow, A.; Buxton, P.; Medalová, J.; Francis-West, P.; Richman, J. M. BMP Signaling Regulates the Fate of Chondro-osteoprogenitor Cells in Facial Mesenchyme in a Stage-Specific Manner. Developmental Dynamics 2016, roč. 245, č. 9, s. 947–962. ISSN 1058–8388.

Doležálková, M.; Sember, A.; Marec, F.; Ráb, P.; Plötner, J.; Choleva, L. Is premeiotic genome elimination an exclusive mechanism for hemiclonal reproduction in hybrid males of the genus Pelophylax?. B M C Genetics 2016, roč. 17, č. 100. ISSN 1471–2156.

Doležel, R.; Ryska, O.; Kollár, M.; Juhásová, J.; Kalvach, J.; Ryska, M.; Martínek, J. A comparison of two endoscopic closures: over-the-scope clip (OTSC) versus KING closure (endoloop plus clips) in arandomized long-term experimental study. Surgical Endoscopy and Other Interventional Techniques 2016, roč. 30, č. 11, s.4910–4916. ISSN 0930–2794.

Dosedělová, H.; Štěpánková, K.; Zikmund, T.; Lesot, H.; Kaiser, J.; Novotný, K.; Štembírek, J.; Knotek, Z.; Zahradníček, O.; Buchtová, M. Age-related changes in the tooth-bone interface area of acrodont dentition in the chameleon. Journal of Anatomy 2016, roč. 229, č. 3, s. 356–368. ISSN 0021–8782.

Dumková, J.; Vrlíková, L.; Večeřa, Z.; Putnová, B.; Dočekal, B.; Mikuška, P.; Fictum, P.; Hampl, A.; Buchtová, M. Inhaled Cadmium Oxide Nanoparticles: Their in Vivo Fate and Effect on Target Organs. International Journal of Molecular Sciences 2016, roč. 17, č. 6, s. 874–893. E-ISSN 1422–0067.

Eisner, J.; Kučera, M.; Väth, M. A variational approach to bifurcation points of a reaction-diffusion system with obstacles and neumann boundary conditions. Applications of Mathematics 2016, roč. 61, č. 1, s. 1–25. ISSN 0862–7940.

Fliegerová, K.; Mura, B.; Mrázek, J.; Moniello, G. A comparison of microbial profiles of different regions of the equine hindgut. Livestock Science 2016, roč. 190, č. 1, s. 16–19. ISSN 1871–1413.

Gadher, S. J.; Marczak, L.; Luczak, M.; Stobiecki, M.; Widlak, P.; Kovářová, H. Proteomic landscape in Central and Eastern Europe: the 9th Central and Eastern European Proteomic Conference, Poznan, Poland. Expert Review of Proteomics 2016, roč. 13, č. 1, s.5–7. ISSN 1478–9450.

Grilli, D. J.; Mrázek, J.; Fliegerová, K.; Kopečný, J.; Lama, S. P.; Cucchi, M. E. C.; Sosa, M. A.; Arenas, G. N. Ruminal bacterial community changes during adaptation of goats to fresh alfalfa forage. Livestock Science 2016, roč. 191, č. 2, s. 191–195. ISSN 1871–1413.

Grilli, D. J.; Fliegerová, K.; Kopečný, J.; Lama, S. P.; Egea, V.; Sohaefer, N.; Pereyra, C.; Ruiz, M. J.; Sosa, M. A.; Arenas, G. N.; Mrázek, J. Analysis of the rumen bacterial diversity of goats during shift from forage to concentrate diet. Anaerobe 2016, roč. 42, č. 1, s. 17–26. ISSN 1075–9964.

Gudernová, I.; Veselá, I.; Balek, L.; Buchtová, M.; Dosedělová, H.; Kunová, M.; Pivnička, J.; Jelínková, I.; Roubalová, L.; Kozubík, A.; Krejčí, P. Multikinase activity of fibroblast growth factor receptor (FGFR) inhibitors SU5402, PD173074, AZD1480, AZD4547 and BGJ398 compromises the use of small chemicals targeting FGFR catalytic activity for therapy of short-stature syndromes. Human Molecular Genetics 2016, roč. 25, č. 1, s. 9–23. ISSN 0964–6906.

Harris, N.; Koppel, J.; Zsila, F.; Juhás, Š.; Ilková, G.; Kogan, F. Y.; Lahmy, O.; Wildbaum, G.; Karin, N.; Zhuk, R.; Gregor, P. Mechanism of action and efficacy of RX-111, a thieno[2,3-c]pyridine derivative and small molecule inhibitor of protein interaction with glycosaminoglycans (SMIGs), in delayed-type hypersensitivity, TNBS-induced colitis and experimental autoimmune encephalomyelitis. Inflammation Research 2016, roč. 65, č. 4, s. 285–294. ISSN 1023–3830.

Havelka, M.; Bytyutskyy, D.; Symonová, R.; Ráb, P.; Flajšhans, M. The second highest chromosome count among vertebrates is observed in cultured sturgeon and is associated with genome plasticity. Genetics Selection Evolution 2016, roč. 48, č. 12. ISSN 0999–193X.

Janoutová, J.; Janáčková, P.; Šerý, O.; Zeman, T.; Ambrož, P.; Kovalová, M.; Vařechová, K.; Hosák, L.; Jiřík, V.; Janout, V. Epidemiology and risk factors of schizophrenia. Neuroendocrinology Letters 2016, roč. 37, č. 1, s. 1–8. ISSN 0172–780X.

Johnson Pokorná, M.; Kratochvíl, L. What was the ancestral sex-determining mechanism in amniote vertebrates?. Biological Reviews 2016, roč. 91, č. 1, s. 1–12. ISSN 1464–7931.

Johnson Pokorná, M.; Altmanová, M.; Rovatsos, M.; Velenský, P.; Vodička, R.; Řehák, I.; Kratochvíl, L. First Description of the Karyotype and Sex Chromosomes in the Komodo Dragon (Varanus komodoensis). Cytogenetic and Genome Research 2016, roč. 148, č. 4, s. 284–291. ISSN 1424–8581.

Jozefovičová, M.; Herynek, V.; Jírů, F.; Dezortová, M.; Juhásová, J.; Juhás, Š.; Motlík, J.; Hájek, M. Minipig Model of Huntington's Disease: H-1 Magnetic Resonance Spectroscopy of the Brain. Physiological Research 2016, roč. 65, č. 1, s. 155–163. ISSN 0862–8408.

Kello, M.; Drutovič, D.; Bago Pilátová, M.; Tischlerová, V.; Perjesi, P.; Mojžíš, J. Chalcone derivatives cause accumulation of colon cancer cells in the G2/M phase and induce apoptosis. Life Sciences 2016, roč. 150, č. 1, s. 32–38. ISSN 0024–3205.

Kovaříková, V.; Burkus, J.; Rehák, P.; Brzáková, A.; Šolc, P.; Baran, V. Aurora kinase A is essential for correct chromosome segregation in mouse zygote. Zygote 2016, roč. 24, č. 3, s. 326–337. ISSN 0967–1994.

Kovářová, H.; Gadher, S. J. Tribute to Michael Dunn for his dedication and contribution to proteomics and stem cell focus. Proteomics 2016, roč. 16, č. 22, s. 2840–2841. ISSN 1615–9853.

Kučerová, P.; Červinková, M. Spontaneous regression of tumour and the role of microbial infection – possibilities for cancer treatment. Anti-cancer Drugs 2016, roč. 27, č. 4, s. 269–277. ISSN 0959–4973.

Kučerová, P.; Červinková, M. Toxoplasmosis in at-risk groups of patients. Reviews in Medical Microbiology 2016, roč. 27, č. 1, s. 13–19. ISSN 0954–139X.

Kvach, Y.; Dykyy, I.; Janko, K. First record of the Chinese sleeper, Perccottus glenii Dybowski, 1877 (Actinopterygii: Odontobutidae) in the Dnieper Estuary, southern Ukraine (Black Sea drainage). BioInvasions Records 2016, roč. 5, č. 4, s. 285–290. E-ISSN 2242–1300.

Kyllar, M.; Štembírek, J.; Daněk, Z.; Hodan, R.; Stránský, J.; Machoň, V.; Foltán, R. A porcine model: surgical anatomy of the orbit for maxillofacial surgery. Laboratory Animals 2016, roč. 50, č. 2, s. 125–136. ISSN 0023–6772.

Lebedová, J.; Bláhová, L.; Večeřa, Z.; Mikuška, P.; Dočekal, B.; Buchtová, M.; Míšek, I.; Dumková, J.; Hampl, A.; Hilscherová, K. Impact of acute and chronic inhalation exposure to CdO nanoparticles on mice. Environmental Science and Pollution Research 2016, roč. 23, č. 23, s. 24047–24060. ISSN 0944–1344.

Mačáková, M.; Bohuslavová, B.; Vochozková, P.; Pavlok, A.; Sedláčková, M.; Vidinská, D.; Vochyánová, K.; Lišková, I.; Valeková, I.; Baxa, M.; Ellederová, Z.; Klíma, J.; Juhás, Š.; Juhásová, J.; Kloučková, J.; Haluzík, M.; Klempíř, J.; Hansíková, H.; Spáčilová, J.; Collins, R.; Blumenthal, I.; Talkowski, M.; Gusella, J. F.; Howland, D. S.; DiFiglia, M.; Motlík, J. Mutated Huntingtin Causes Testicular Pathology in Transgenic Minipig Boars. Neurodegenerative Diseases 2016, roč. 16, 3–4, s. 245–259. ISSN 1660–2854.

Majtánová, Z.; Choleva, L.; Symonová, R.; Ráb, P.; Kotusz, J.; Pekárik, L.; Janko, K. Asexual Reproduction Does Not Apparently Increase the Rate of Chromosomal Evolution: Karyotype Stability in Diploid and Triploid Clonal Hybrid Fish (Cobitis, Cypriniformes, Teleostei). PLoS ONE 2016, roč. 11, č. 1, e0146872–e0146872. E-ISSN 1932–6203.

Marounek, M.; Mrázek, J.; Volek, Z.; Skřivanová, E.; Killer, J. Pregastric and caecal fermentation pattern in Syrian hamsters. Mammalia 2016, roč. 80, č. 1, s. 83–89. ISSN 0025–1461.

Mayer, A.; Baran, V.; Sakakibara, Y.; Brzáková, A.; Ferencová, I.; Motlík, J.; Kitajima, T.; Schultz, R. M.; Šolc, P. DNA damage response during mouse oocyte maturation. Cell Cycle 2016, roč. 15, č. 4, s. 546–558. ISSN 1538–4101.

Melicharová, J.; Slavík, M.; Červinková, M. Psychological Aspects in Celiac Disease: Step by Step from Symptoms to Daily Life with Celiac Disease. International Journal of Celiac Disease 2016, roč. 4, č. 2, s. 64–67. ISSN 2334–3486.

Mikula, O.; Šumbera, R.; Aghová, T.; Mbau, J. S.; Katakweba, A. S.; Sabuni, C. A.; Bryja, J. Evolutionary history and species diversity of African pouched mice (Rodentia: Nesomyidae: Saccostomus). Zoologica Scripta 2016, roč. 45, č. 6, s. 595–617. ISSN 0300–3256.

Miyanohara, A.; Kamizato, K.; Juhás, Š.; Juhásová, J.; Navarro, M.; Maršala, S.; Lukáčová, N.; Hruška-Plocháň, M.; Curtis, E.; Gabel, B.; Ciacci, J. D.; Ahrens, E. T.; Kaspar, B. K.; Cleveland, D.; Maršala, M. Potent spinal parenchymal AAV9-mediated gene delivery by subpial injection in adult rats and pigs. Molecular Therapy – Methods & Clinical Development 2016, roč. 3, č. 1, č. článku 16046. ISSN 2329–0501.

Mueller, R. S.; Janda, J.; Jensen-Jarolim, E.; Rhyner, C.; Marti, E. Allergens in veterinary medicine. Allergy-European Journal of Allergy and Clinical Immunology 2016, roč. 71, č. 1, s. 27–35. ISSN 0108–1675.

Nagyová, E.; Kalous, J.; Němcová, L. Increased expression of pentraxin 3 after in vivo and in vitro stimulation with gonadotropins in porcine oocyte-cumulus complexes and granulosa cells. Domestic Animal Endocrinology 2016, roč. 56, č. 1, s. 29–35. ISSN 0739–7240.

Němcová, L.; Jansová, D.; Vodičková Kepková, K.; Vodička, P.; Jeseta, M.; Machatková, M.; Kaňka, J. Detection of genes associated with developmental competence of bovine oocytes. Animal Reproduction Science 2016, roč. 166, č. 1, s. 58–71. ISSN 0378–4320.

Nováková, L.; Kovačovicová, K.; Dang-Nguyen, T.; Šodek, M.; Škultéty, M.; Anger, M. A Balance between Nuclear and Cytoplasmic Volumes Controls Spindle Length. PLoS ONE 2016, roč. 11, č. 2, e0149535–e0149535. E-ISSN 1932–6203.

Palánová, A. The genetics of inherited retinal disorders in dogs: implications for diagnosis and management. Veterinary Medicine: Research and Reports 2016, roč. 7, č. 1, s. 41–51. ISSN 2230–2034.

Percides, A.; Bohlen, J.; Šlechtová, V.; Doadrio, I. Molecular Evidence for Multiple Origins of the European Spined Loaches (Teleostei, Cobitidae). PLoS ONE 2016, roč. 11, č. 1, e0144628–e0144628. E-ISSN 1932–6203.

Ráb, P.; Yano, C. F.; Lavoué, S.; Jegede, O. I.; Bertollo, L.A.C.; Ezaz, T.; Majtánová, Z.; de Oliveira, E. A.; Cioffi, M.B. Karyotype and Mapping of Repetitive DNAs in the African Butterfly Fish Pantodon buchholzi, the Sole Species of the Family Pantodontidae. Cytogenetic and Genome Research 2016, roč. 149, č. 4, s. 312–320. ISSN 1424–8581.

Rosero, J.; Killer, J.; Sechovcová, H.; Mrázek, J.; Benada, O.; Fliegerová, K.; Havlík, J.; Kopečný, J. Reclassification of Eubacterium rectale (Hauduroy et al. 1937) Prevot 1938 in a new genus Agathobacter gen. nov as Agathobacter rectalis comb. nov., and description of Agathobacter ruminis sp nov., isolated from the rumen contents of sheep and cows. International Journal of Systematic and Evolutionary Microbiology 2016, roč. 66, č. 2, s. 768–773. ISSN 1466–5026.

Rovatsos, M.; Vukič, J.; Altmanová, M.; Johnson Pokorná, M.; Moravec, J.; Kratochvíl, L. Conservation of sex chromosomes in lacertid lizards. Molecular Ecology 2016, roč. 25, č. 13, s. 3120–3126. ISSN 0962–1083.

Rovatsos, M.; Johnson Pokorná, M.; Altmanová, M.; Kratochvíl, L. Mixed-Up Sex Chromosomes: Identification of Sex Chromosomes in the X1X1X2X2/X1X2Y System of the Legless Lizards of the Genus Lialis (Squamata: Gekkota: Pygopodidae). Cytogenetic and Genome Research 2016, roč. 149, č. 4, s. 282–289. ISSN 1424–8581.

Schramke, S.; Schuldenzucker, V.; Schubert, R.; Frank, F.; Wirsig, M.; Ott, S.; Motlík, J.; Fels, M.; Kemper, N.; Hölzner, E.; Reilmann, R. Behavioral phenotyping of minipigs transgenic for the Huntington gene. Journal of Neuroscience Methods 2016, roč. 265, S1, s. 34–45. ISSN 0165–0270.

Schubert, R.; Frank, F.; Nagelmann, N.; Liebsch, L.; Schuldenzucker, V.; Schramke, S.; Wirsig, M.; Johnson, H.; Young Kim, E.; Ott, S.; Hölzner, E.; Demokritov, S. O.; Motlík, J.; Faber, C.; Reilmann, R. Neuroimaging of a minipig model of Huntington's disease: Feasibility of volumetric, diffusion-weighted and spectroscopic assessments. Journal of Neuroscience Methods 2016, roč. 265, S1, s. 46–55. ISSN 0165–0270.

Šerý, O.; Hlinecká, L.; Povová, J.; Bonczek, O.; Zeman, T.; Janout, V.; Ambrož, P.; Khan, N. A.; Balcar, V. J. Arachidonate 5-lipoxygenase (ALOX5) gene polymorphism is associated with Alzheimer's disease and body mass index. Journal of the Neurological Sciences 2016, roč. 362, č. 1, s. 27–32. ISSN 0022–510X.

Šušor, A.; Jansová, D.; Anger, M.; Kubelka, M. Translation in the mammalian oocyte in space and time. Cell and Tissue Research 2016, roč. 363, č. 1, s. 69–84. ISSN 0302–766X.

Tylečková, J.; Valeková, I.; Žižková, M.; Rákocyová, M.; Maršala, S.; Maršala, M.; Gadher, S. J.; Kovářová, H. Surface N-glycoproteome patterns reveal key proteins of neuronal differentiation. Journal of Proteomics 2016, roč. 132, č. 1, s. 13–20. ISSN 1874–3919.

Valeková, I.; Jarkovská, K.; Kotrčová, E.; Bucci, J.; Ellederová, Z.; Juhás, Š.; Motlík, J.; Gadher, S. J.; Kovářová, H. Revelation of the IFN alpha, IL-10, IL-8 and IL-1 beta as promising biomarkers reflecting immuno-pathological mechanisms in porcine Huntington's disease model. Journal of Neuroimmunology 2016, roč. 293, č. 2, s. 71–81. ISSN 0165–5728.

Vodičková Kepková, K.; Vodička, P.; Motlík, J. Buňky s velkým potenciálem 1. Historie indukované pluripotence a metody přípravy iPS buněk. Živa 2016, roč. 16, č. 4, s. 150–154. ISSN 0044–4812.

Vošlajerová Bímová, B.; Mikula, O.; Macholán, M.; Janotová, K.; Hiadlovská, Z. Female House Mice do not Differ in Their Exploratory Behaviour from Males. Ethology 2016, roč. 122, č. 4, s. 298–307. ISSN 0179–1613.

Zadinová, K.; Stupka, R.; Stratil, A.; Čítek, J.; Vehovský, K.; Urbanová, D. Boar taint – the effects of selected candidate genes associated with androstenone and skatole levels – a review. Animal Science Papers Reports 2016, roč. 34, č. 2, s. 107–128. ISSN 0860–4037.

Zámostná, K.; Nevoral, J.; Kott, T.; Procházka, R.; Orsák, M.; Šulc, M.; Pajkošová, V.; Pavlík, V.; Žalmanová, T.; Hošková, K.; Jílek, F.; Klein, P. A simple method for assessing hyaluronic acid production by cumulus-oocyte complexes. Czech Journal of Animal Science 2016, roč. 61, č. 6, s. 251–261. ISSN 1212–1819.

Monographs and chapters in monographs

Černý, V.; Macholán, M. Evoluce anatomicky moderních lidí v Africe pohledem archeogenetiky. In Pokorný, P. (ed.). Afrika zevnitř. Kontinentem sucha a věčných proměn Praha: Academia, 2016, s. 245–263. ISBN 978–80–200–2627–9.

2015 Papers

Alfaqeeh, S.; Oralová, V.; Foxworthy, M.; Matalová, E.; Grigoriadis, A. E.; Tucker, A. S. Root and Eruption Defects in c-Fos Mice Are Driven by Loss of Osteoclasts. Journal of Dental Research 2015, roč. 94, č. 12, s. 1724–1731. ISSN 0022–0345.

Ariyawansa et. al. Fungal diversity notes 111-252-taxonomic and phylogenetic contributions to fungal taxa. Fungal Diversity 2015, roč. 75, č. 1, s. 27–274. ISSN 1560–2745.

Blaha, M.; Němcová, L.; Procházka, R. Cyclic guanosine monophosphate does not inhibit gonadotropin-induced activation of mitogen-activated protein kinase 3/1 in pig cumulus-oocyte complexes. Reproductive Biology and Endocrinology 2015, roč. 13, č. 1. ISSN 1477–7827.

Blaha, M.; Němcová, L.; Vodičková Kepková, K.; Vodička, P.; Procházka, R. Gene expression analysis of pig cumulus-oocyte complexes stimulated in vitro with follicle stimulating hormone or epidermal growth factor-like peptides. Reproductive Biology and Endocrinology 2015, roč. 13, č. 113. ISSN 1477–7827.

Bohuslavová, B.; Mačáková, M. Testikulárna degenerácia pri Huntingtonovej chorobe. Bioprospect 2015, roč. 25, č. 1, s. 8–10. ISSN 1210–1737.

Bonczek, O.; Žákovská, A.; Vargová, L.; Šerý, O. Identification of Borrelia burgdorferi genospecies isolated from Ixodes ricinus ticks in the South Moravian region of the Czech Republic. Annals of Agricultural and Environmental Medicine 2015, roč. 22, č. 4, s. 642–646. ISSN 1232–1966.

Buchtová, M.; Chaloupková, R.; Zakrzewska, M.; Veselá, I.; Celá, P.; Barathová, J.; Gudernová, I.; Zajíčková, R.; Trantírek, L.; Martin, J.; Kostas, M.; Otlewski, J.; Damborský, J.; Kozubík, A.; Wiedlocha, A.; Krejčí, P. Instability restricts signaling of multiple fibroblast growth factors. Cellular and Molecular Life Sciences 2015, roč. 72, č. 12, s. 2445–2459. ISSN 1420–682X.

Buchtová, M.; Oralová, V.; Aklian, A.; Mašek, J.; Veselá, I.; Ouyang, Z.; Obadalová, T.; Konečná, Ž.; Spoustová, T.; Pospíšilová, T.; Matula, P.; Vařecha, M.; Balek, L.; Gudernová, I.; Jelínková, I.; Ďuran, I.; Krejčí, P. Červenková, I.; Murakami, S.; Kozubík, A.; Dvořák, P.; Bryja, V.; Fibroblast growth factor and canonical WNT/beta-catenin signaling cooperate in suppression of chondrocyte differentiation in experimental models of FGFR signaling in cartilage. Biochimica Et Biophysica Acta 2015, roč. 1852, č. 5, s. 839–850. ISSN 0925–4439.

Čaja, F.; Vannucci, L. TGF beta: A player on multiple fronts in the tumor microenvironment. Journal of Immunotoxicology 2015, roč. 12, č. 3, s. 300–307. ISSN 1547–691X.

Čopíková, J.; Taubner, T.; Tůma, J.; Synytsya, A.; Dušková, D.; Marounek, M. Cholesterol and fat lowering with hydrophobic polysaccharide derivatives. Carbohydrate Polymers 2015, roč. 116, č. 1, s. 207–214. ISSN 0144–8617.

Daoudi, A.; Plesník, J.; Sayed, A.; Šerý, O.; Rouabah, A.; Rouabah, L.; Khan, N. A. Oral Fat Sensing and CD36 Gene Polymorphism in Algerian Lean and Obese Teenagers. Nutrients 2015, roč. 7, č. 11, s. 9096–9104. ISSN 2072–6643.

Dion-Cote, A. M.; Symonová, R.; Ráb, P.; Bernatchez, L. Reproductive isolation in a nascent species pair is associated with aneuploidy in hybrid offspring. Proceedings of the Royal Society. B – Biological Sciences 2015, roč. 282, č. 1802. ISSN 0962–8452.

Dollhofer, V.; Podmirseg, S.M.; Callaghan, T. M.; Griffith, G.W.; Fliegerová, K. Anaerobic Fungi and Their Potential for Biogas Production. Advances in Biochemical Engineering / Biotechnology 2015, roč. 151, č. 1, s. 41–61. ISSN 0724–6145.

Dosedělová, H.; Dumková, J.; Lesot, H.; Glocová, K.; Kunová, M.; Tucker, A. S.; Veselá, I.; Krejčí, P.; Tichý, F.; Hampl, A.; Buchtová, M. Fate of the Molar Dental Lamina in the Monophyodont Mouse. PLoS ONE 2015, roč. 10, č. 5, e0127543. E-ISSN 1932–6203.

Du, Z.; Hudcovic, T.; Mrázek, J.; Kozáková, H.; Šrůtková, D.; Schwarzer, M.; Tlaskalová, H.; Kostovčík, M.; Kverka, M. Development of gut inflammation in mice colonized with mucosa-associated bacteria from patients with ulcerative colitis. Gut Pathogens 2015, roč. 7, č. 32. ISSN 1757–4749.

Ferencová, I.; Šolc, P. Úloha cyklín-dependentnej kinázy 1 pri meiotickom dozrievaní oocytov. Bioprospect 2015, roč. 25, č. 3, s. 65–67. ISSN 1210–1737.

Filipi, K.; Marková, S.; Searle, J. B.; Kotlík, P. Mitogenomic phylogenetics of the bank vole Clethrionomys glareolus, a model system for studying end-glacial colonization of Europe. Molecular Phylogenetics and Evolution 2015, roč. 82, PA, s. 245–257. ISSN 1055–7903.

Gadher, S. J.; Marchetti-Deschmann, M.; Allmaier, G.; Kovářová, H. Tremendous progress in proteomics and metabolomics in Central and Eastern Europe. Expert Review of Proteomics 2015, roč. 12, č. 1, s. 9–11. ISSN 1478–9450.

Gomez, A.; Petrželková, K. J.; Yeoman, C. J.; Vlčková, K.; Mrázek, J.; Koppová, I.; Carbonero, F.; Ulanov, A.; Modrý, D.; Todd, A.; Torralba, M.; Nelson, K.; Gaskins, H. R.; Wilson, B.; Stumpf, R. M.; White, B. A.; Leigh, S. R. Gut microbiome composition and metabolomic profiles of wild western lowland gorillas (Gorilla gorilla gorilla) reflect host ecology. Molecular Ecology 2015, roč. 24, č. 10, s. 2551–2565. ISSN 0962–1083.

Gvoždík, V.; Canestrelli, D.; García-París, M.; Moravec, J.; Nascetti, G.; Recuero, E.; Teixeira, J.; Kotlík, P. Speciation history and widespread introgression in the European short-call tree frogs (Hyla arborea sensu lato, H. intermedia and H. sarda). Molecular Phylogenetics and Evolution 2015, roč. 83, č. 1, s. 143–155. ISSN 1055–7903.

Henderson et. al. Rumen microbial community composition varies with diet and host, but a core microbiome is found across a wide geographical range. Scientific Reports 2015, roč. 5, č. 14567. ISSN 2045–2322.

Hiadlovská, Z.; Mikula, O.; Macholán, M.; Hamplová, P.; Vošlajerová Bímová, B.; Daniszová, K. Shaking the myth: Body mass, aggression, steroid hormones, and social dominance in wild house mouse. General and Comparative Endocrinology 2015, roč. 223, č. 1, s. 16–26. ISSN 0016–6480.

Hloušková, A.; Bonczek, O.; Izakovičová Hollá, L.; Lochman, J.; Šoukalová, J.; Štembírek, J.; Míšek, I.; Černochová, P.; Krejčí, P.; Vaněk, J.; Šerý, O. Novel PAX9 gene polymorphisms and mutations and susceptibility to tooth agenesis in the Czech population. Neuroendocrinology Letters 2015, roč. 36, č. 5, s. 101–106. ISSN 0172–780X.

Hodanová, J.; Juhásová, J.; Valeková, I.; Rausová, P.; Jozefovičová, M.; Juhás, Š. Transgenní miniprasata pro Huntingtonovu nemoc. Veterinářství 2015, roč. 198, č. 3, s. 198–205. ISSN 0506–8231.

Hoffmann, A.; Plötner, J.; Pruvost, N. B. M.; Christiansen, D. G.; Röthlisberger, S.; Choleva, L.; Mikulíček, P.; Cogalniceanu, D.; Sas-Kovács, I.; Shabanov, D.; Morozov-Leonov, S.; Reyer, H. U. Genetic diversity and distribution patterns of diploid and polyploid hybrid water frog populations (Pelophylax esculentus complex) across Europe. Molecular Ecology 2015, roč. 24, č. 17, s. 4371–4391. ISSN 0962–1083.

Hroncová, Z.; Havlík, J.; Killer, J.; Doskočil, I.; Tyl, J.; Kamler, M.; Titěra, D.; Hakl, J.; Mrázek, J.; Bunešová, V.; Rada, V. Variation in Honey Bee Gut Microbial Diversity Affected by Ontogenetic Stage, Age and Geographic Location. PLoS ONE 2015, roč. 10, č. 3, e0118707–e0118707. E-ISSN 1932–6203.

Iakovenko, N. S.; Smykla, J.; Convey, P.; Kašparová, E.; Kozeretska, I. A.; Trokhymets, V.; Dykyy, I.; Plewka, M.; Devetter, M.; Duriš, Z.; Janko, K. Antarctic bdelloid rotifers: diversity, endemism and evolution. Hydrobiologia 2015, roč. 761, č. 1, s. 5–43. ISSN 0018–8158.

Janda, J.; Lehmann, M.; Luttmann, W.; Marti, E. Cloning and expression of recombinant equine interleukin-3 and its effect on sulfidoleukotriene and cytokine production by equine peripheral blood leukocytes. Veterinary Immunology and Immunopathology 2015, roč. 163, 3–4, s. 202–209. ISSN 0165–2427.

Janoutová, J.; Šerý, O.; Hosák, L.; Janout, V. Is mild cognitive impairment a precursor of Alzheimer´s disease? Short review. Central European Journal of Public Health 2015, roč. 23, č. 4, s. 365–367. ISSN 1210–7778.

Johnson Pokorná, M.; Trifonov, V. A.; Rens, W.; Ferguson-Smith, M. A.; Kratochvíl, L. Low rate of interchromosomal rearrangements during old radiation of gekkotan lizards (Squamata: Gekkota). Chromosome Research 2015, roč. 23, č. 2, s. 299–309. ISSN 0967–3849.

Jozefovičová, M.; Herynek, V.; Jírů, F.; Dezortová, M.; Juhásová, J.; Juhás, Š.; Klíma, J.; Bohuslavová, B.; Motlík, J.; Hájek, M. 31P MR Spectroscopy of the Testes and Immunohistochemical Analysis of Sperm of Transgenic Boars Carried N terminal Part of Human Mutated Huntingtin. Česká a Slovenská neurologie a neurochirurgie 2015, roč. 78, Suppl 2, s. 28–33. ISSN 1210–7859.

Juhásová, J.; Juhás, Š.; Hruška-Plocháň, M.; Doležalová, D.; Holubová, M.; Strnádel, J.; Marsala, S.; Motlík, J.; Marsala, M. Time Course of Spinal Doublecortin Expression in Developing Rat and Porcine Spinal Cord: Implication in In Vivo Neural Precursor Grafting Studies. Cellular and Molecular Neurobiology 2015, roč. 35, č. 1, s. 57–70. ISSN 0272–4340.

Kašparová, E.; Van de Putte, A. P.; Marshall, C.; Janko, K. Lifestyle and Ice: The Relationship between Ecological Specialization and Response to Pleistocene Climate Change. PLoS ONE 2015, roč. 10, č. 11, e0138766–e0138766. E-ISSN 1932–6203.

Killer, J.; Skřivanová, E.; Hochel, I.; Marounek, M. Multilocus Sequence Typing of Cronobacter Strains Isolated from Retail Foods and Environmental Samples. Foodborne pathogens and disease 2015, roč. 12, č. 6, s. 514–521. ISSN 1535–3141.

Kocurová, G.; Pallová, D.; Bohuslavová, B.; Ardan, T.; Motlík, J. Huntingtonova nemoc. Bioprospect 2015, roč. 25, č. 1, s. 5–8. ISSN 1210–1737.

Kocurová, G.; Ardan, T. Proteolytické enzymy v patogenezi Huntingtonovy nemoci. Bioprospect 2015, roč. 25, č. 1, s. 23–27. ISSN 1210–1737.

Kotlík, P.; Marková, S.; Filipi, K.; Strážnická, M.; Searle, J. B. Adaptivní fylogeografie: od molekulárních markerů k funkčním genům. Živa 2015, –, č. 2, s. 53–58. ISSN 0044–4812.

Kotrčová, E.; Jarkovská, K.; Valeková, I.; Žižková, M.; Motlík, J.; Gadher, S. J.; Kovářová, H. Challenges of Huntington's disease and quest for therapeutic biomarkers. Proteomics Clinical Applications 2015, roč. 9, 1–2, s. 147–158. ISSN 1862–8346.

Kovalská, J.; Mishra, R.; Jebavý, L.; Makovický, P.; Janda, J.; Plánská, D.; Červinková, M.; Horák, V. Tumour Progression and Spontaneous Regression in the Lewis Rat Sarcoma Model. Anticancer Research 2015, roč. 35, č. 12, s. 6539–6549. ISSN 0250–7005.

Kratochvílová, H.; Rodinová, M.; Sládková, J.; Klempíř, J.; Lišková, I.; Motlík, J.; Zeman, J.; Hansíková, H.; Tesařová, M. Acyl CoA Binding Domain Containing 3 (ACBD3) Protein in Huntington's Disease Human Skin Fibroblasts. Česká a Slovenská neurologie a neurochirurgie 2015, roč. 78, Suppl. 2, s. 34–38. ISSN 1210–7859.

Kudělová, J.; Fleischmannová, J.; Adamová, E.; Matalová, E. Pharmacological caspase inhibitors: Research towards therapeutic perspectives. Journal of Physiology and Pharmacology 2015, roč. 66, č. 4, s. 473–482. ISSN 0867–5910.

Langová, P.; Štembírek, J.; Matalová, E.; Buchtová, M. Tooth autotransplantations – lessons from animal models: a review. Veterinární medicína 2015, roč. 60, č. 6, s. 293–300. ISSN 0375–8427.

Lukeš, P.; Zeman, J.; Horák, V.; Hoffer, P.; Poučková, P.; Holubová, M.; Hosseini, S.H.R.; Akiyama, H.; Šunka, P.; Beneš, J. In vivo effects of focused shock waves on tumor tissue visualized by fluorescence staining techniques. Bioelectrochemistry 2015, roč. 103, June, s. 103–110. ISSN 1567–5394.

Marková, S.; Filipi, K.; Searle, J. B.; Kotlík, P. Mapping 3 ' transcript ends in the bank vole (Clethrionomys glareolus) mitochondrial genome with RNA-Seq. BMC Genomics 2015, roč. 16, č. 870. ISSN 1471–2164.

Mayer, A.; Šolc, P. Odpověď na poškození DNA v oocytech. Bioprospect 2015, roč. 25, č. 2, s. 41–43. ISSN 1210–1737.

Mishra, R.; Kovalská, J.; Janda, J.; Vannucci, L.; Rajmon, R.; Horák, V. Tumor Progression Is Associated with Increasing CD11b(+) Cells and CCL2 in Lewis Rat Sarcoma. Anticancer Research 2015, roč. 35, č. 2, s. 703–712. ISSN 0250–7005.

Möst, M.; Oexle, S.; Marková, S.; Aidukaite, D.; Baumgartner, L.; Stich, H. B.; Wessels, M.; Martin-Creuzburg, D.; Spaak, P. Population genetic dynamics of an invasion reconstructed from the sediment egg bank. Molecular Ecology 2015, roč. 24, č. 16, s. 4074–4093. ISSN 0962–1083.

Mrizak, I.; Šerý, O.; Plesník, J.; Arfa, A.; Fekih, M.; Bouslema, A.; Zaouali, M.; Tabka, Z.; Khan, N. A. The A allele of cluster of differentiation 36 (CD36) SNP 1761667 associates with decreased lipid taste perception in obese Tunisian women. British Journal of Nutrition 2015, roč. 113, č. 8, s. 1330–1337. ISSN 0007–1145.

Musilová, Z.; Říčan, O.; Říčanová, Š.; Janšta, P.; Gahura, O.; Novák, J. Phylogeny and historical biogeography of trans-Andean cichlid fishes (Teleostei: Cichlidae). Vertebrate zoology 2015, roč. 65, č. 3, s. 333–350. ISSN 1864–5755.

Nagyová, E. Organization of the expanded cumulus-extracellular matrix in preovulatory follicles: arole for inter-alpha-trypsin inhibitor. Endocrine Regulations 2015, roč. 49, č. 1, s. 37–45. ISSN 1210–0668.

Nevoral, J.; Žalmanová, T.; Zámostná, K.; Kott, T.; Kučerová-Chrpová, K.; Bodart, J. F.; Gelaude, A.; Procházka, R.; Orsák, M.; Šulc, M.; Klein, P.; Dvořáková, M.; Weingartová, I.; Víghová, A.; Hošková, K.; Krejčová, T.; Jílek, F.; Petr, J. Endogenously produced hydrogen sulfide is involved in porcine oocyte maturation in vitro. Nitric Oxide-Biology and Chemistry 2015, roč. 51, č. 1, s. 24–35. ISSN 1089–8603.

Oralová, V.; Matalová, E.; Janečková, E.; Drobná Krejčí, E.; Knopfová, L.; Šnajdr, P.; Tucker, A. S.; Veselá, I.; Šmarda, J.; Buchtová, M. Role of c-Myb in chondrogenesis. Bone 2015, roč. 76, č. 1, s. 97–106. ISSN 8756–3282.

Palánová, A. Collie eye anomaly: a review. Veterinární medicína 2015, roč. 60, č. 7, s. 345–350. ISSN 0375–8427.

Pallová, D.; Ellederová, Z. Zvířecí modely Huntingtonovy nemoci. Bioprospect 2015, roč. 25, č. 1, s. 11–13. ISSN 1210–1737.

Pereira, C. S.; Pazian, M. F.; Ráb, P.; Collares-Pereira, M. J. Dynamics of Rex3 in the genomes of endangered Iberian Leuciscinae (Teleostei, Cyprinidae) and their natural hybrids. Molecular Cytogenetics 2015, roč. 8, č. 81. ISSN 1755–8166.

Plánská, D.; Burocziová, M.; Strnádel, J.; Horák, V. Immunohistochemical Analysis of Collagen IV and Laminin Expression in Spontaneous Melanoma Regression in the Melanoma-Bearing Libechov Minipig. Acta histochemica et cytochemica 2015, roč. 48, č. 1, s. 15–26. ISSN 0044–5991.

Pokorný, M.; Juhás, Š.; Juhásová, J.; Klíma, J.; Motlík, J.; Klempíř, J.; Havlík, J. Telemetry Physical Activity Monitoring in Minipig's Model of Huntington's Disease. Česká a Slovenská neurologie a neurochirurgie 2015, roč. 78, Suppl 2, s. 39–42. ISSN 1210–7859.

Popelka, Š.; Studenovská, H.; Abelová, L.; Ardan, T.; Studený, P.; Straňák, Z.; Klíma, J.; Dvořánková, B.; Kotek, J.; Hodan, J.; Rypáček, F. A frame-supported ultrathin electrospun polymer membrane for transplantation of retinal pigment epithelial cells. Biomedical Materials 2015, roč. 10, č. 4, 045022_1–045022_15. ISSN 1748–6041.

Procházka, R.; Blaha, M. Regulation of mitogen-activated protein kinase 3/1 activity during meiosis resumption in mammals. Journal of Reproduction and Development 2015, roč. 61, č. 6, s. 495–502. ISSN 0916–8818.

Pruvost, N. B. M.; Mikulíček, P.; Choleva, L.; Reyer, H. U. Contrasting reproductive strategies of triploid hybrid males in vertebrate mating systems. Journal of Evolutionary Biology 2015, roč. 28, č. 1, s. 189–204. ISSN 1010–061X.

Rausová, P. Melatonín a jeho funkcie v huntingtonovej chorobe. Bioprospect 2015, roč. 25, č. 1, s. 13–16. ISSN 1210–1737.

Rausová, P.; Valášek, J.; Ellederová, Z.; Motlík, J. The Effect of Melatonin on Proliferation of Primary Porcine Cells Expressing Mutated Huntingtin. Česká a Slovenská neurologie a neurochirurgie 2015, roč. 78, Suppl. 2, s. 43–48. ISSN 1210–7859.

Rodinová, M.; Trefilová, E.; Lišková, I.; Klempíř, J.; Ellederová, Z.; Vidinská, D.; Motlík, J.; Zeman, J.; Hansíková, H. Buccal Epithelial Cells as Potential Non-invasive Materials for the Monitoring of Mitochondrial Disturbances to Track Huntington's Disease Progression. A Pilot Study. Česká a Slovenská neurologie a neurochirurgie 2015, roč. 78, Suppl 2, s. 49–54. ISSN 1210–7859.

Rossi, V.; Maurone, C.; Benassi, G.; Marková, S.; Kotlík, P.; Bellin, N.; Ferrari, I. Phenology of Daphnia in a Northern Italy pond during the weather anomalous 2014. Journal of Limnology 2015, roč. 74, č. 3, s. 631–638. ISSN 1129–5767.

Rovatsos, M.; Kratochvíl, L.; Altmanová, M.; Johnson Pokorná, M. Interstitial Telomeric Motifs in Squamate Reptiles: When the Exceptions Outnumber the Rule. PLoS ONE 2015, roč. 10, č. 8, e0134985–e0134985. E-ISSN 1932–6203.

Rovatsos, M.; Johnson Pokorná, M.; Altmanová, M.; Kratochvíl, L. Female heterogamety in Madagascar chameleons (Squamata: Chamaeleonidae: Furcifer): differentiation of sex and neo-sex chromosomes. Scientific Reports 2015, roč. 5, č. 13196. ISSN 2045–2322.

Rovatsos, M.; Johnson Pokorná, M.; Kratochvíl, L. Differentiation of Sex Chromosomes and Karyotype Characterisation in the Dragonsnake Xenodermus javanicus (Squamata: Xenodermatidae). Cytogenetic and Genome Research 2015, roč. 147, č. 1, s. 48–54. ISSN 1424–8581.

Sayed, A.; Šerý, O.; Plesník, J.; Daoudi, A.; Rouabah, A.; Rouabah, L.; Khan, N. A. CD36 AA genotype is associated with decreased lipid taste perception in young obese, but not lean, children. International Journal of Obesity 2015, roč. 39, č. 6, s. 920–924. ISSN 0307–0565.

Sember, A.; Bohlen, J.; Šlechtová, V.; Altmanová, M.; Symonová, R.; Ráb, P. Karyotype differentiation in 19 species of river loach fishes (Nemacheilidae, Teleostei): extensive variability associated with rDNA and heterochromatin distribution and its phylogenetic and ecological interpretation. BMC Evolutionary Biology 2015, roč. 15, č. 251. ISSN 1471–2148.

Skaličková, S.; Heger, Z.; Krejčová, L.; Pekárik, V.; Bastl, K.; Janda, J.; Kostolanský, F.; Varečková, E.; Zítka, O.; Adam, V.; Kizek, R. Perspective of Use of Antiviral Peptides against Influenza Virus. Viruses 2015, roč. 7, č. 10, s. 5428–5442. ISSN 1999–4915.

Svobodová, K.; Horák, P.; Stratil, A.; Bartenschlager, H.; Van Poucke, M.; Chalupová, P.; Dvořáková, V.; Knorr, C.; Stupka, R.; Čítek, J.; Šprysl, M.; Palánová, A.; Peelman, L. J.; Geldermann, H.; Knoll, A. Porcine EEF1A1 and EEF1A2 genes: genomic structure, polymorphism, mapping and expression. Molecular Biology Reports 2015, roč. 42, č. 8, s. 1257–1264. ISSN 0301–4851.

Šerý, O.; Bonczek, O.; Hloušková, A.; Černochová, P.; Vaněk, J.; Míšek, I.; Krejčí, J.; Izakovičová Hollá, L. A screen of a large Czech cohort of oligodontia patients implicates a novel mutation in the PAX9 gene. European Journal of Oral Sciences 2015, roč. 123, č. 2, s. 65–71. ISSN 0909–8836.

Šerý, O.; Lochman, J.; Povová, J.; Janout, V.; Plesník, J.; Balcar, V.J. Association between 5q23.2-located polymorphism of CTXN3 gene (Cortexin 3) and schizophrenia in European-Caucasian males; implications for the aetiology of schizophrenia. Behavioral and Brain Functions 2015, roč. 11, č. 10. ISSN 1744–9081.

Šerý, O.; Paclt, I.; Drtílková, I.; Theiner, P.; Kopečková, M.; Zvolský, P.; Balcar, V. J. A 40-bp VNTR polymorphism in the 3′-untranslated region of DAT1/SLC6A3 is associated with ADHD but not with alcoholism. Behavioral and Brain Functions 2015, roč. 11, č. 1, s. 21–28. ISSN 1744–9081.

Šerý, O.; Sultana, N.; Kashem, M. A.; Pow, D. W.; Balcar, V. J. GLAST But Not Least—Distribution, Function, Genetics and Epigenetics of l-Glutamate Transport in Brain—Focus on GLAST/EAAT1. Neurochemical Research 2015, roč. 40, č. 12, s. 2461–2472. ISSN 0364–3190.

Šolc, P.; Kitajima, T.; Yoshida, S.; Brzáková, A.; Kaido, M.; Baran, V.; Mayer, A.; Šámalová, P.; Motlík, J.; Ellenberg, J. Multiple Requirements of PLK1 during Mouse Oocyte Maturation. PLoS ONE 2015, roč. 10, č. 2. E-ISSN 1932–6203.

Šušor, A.; Jansová, D.; Černá, R.; Danylevska, A.; Anger, M.; Toralová, T.; Malík, R.; Šupolíková, J.; Cook, M. S.; Oh, J. S.; Kubelka, M. Temporal and spatial regulation of translation in the mammalian oocyte via the mTOR-eIF4F pathway. Nature Communications 2015, roč. 6, č. 6078. ISSN 2041–1723.

Švandová, E.; Veselá, B.; Šmarda, J.; Hampl, A.; Radlanski, R.J.; Matalová, E. Mouse Incisor Stem Cell Niche and Myb Transcription Factors. Anatomia Histologia Embryologia-Journal of Veterinary Medicine Series C 2015, roč. 44, č. 5, s. 338–344. ISSN 0340–2096.

Tykalová, T.; Hlavnička, J.; Mačáková, M.; Baxa, M.; Cmejla, R.; Motlík, J.; Klempíř, J.; Rusz, J. Grunting in a Genetically Modified Minipig Animal Model for Huntington's Disease – Pilot Experiments. Česká a Slovenská neurologie a neurochirurgie 2015, roč. 78, Suppl 2, s. 61–65. ISSN 1210–7859.

Valášek, J. Vliv mutantního huntingtinu na mechanismus signalizace odpovědi buňky na poškození DNA a opravy poškozené DNA. Bioprospect 2015, roč. 25, č. 1, s. 17–19. ISSN 1210–1737.

Valeková, I.; Kupcová Skalníková, H.; Jarkovská, K.; Motlík, J.; Kovářová, H. Multiplex immunoassays for quantification of cytokines, growth factors, and other proteins in stem cell communication. Methods in molecular biology 2015, –, č. 1212, s. 39–63. ISSN 1940–6029.

Veselá, B.; Švandová, E.; Vanden Berghe, T.; Tucker, A. S.; Vandenabeele, P.; Matalová, E. Non-apoptotic role for caspase-7 in hair follicles and the surrounding tissue. Journal of Molecular Histology 2015, roč. 46, 4–5, s. 443–455. ISSN 1567–2379.

Veselá, B.; Matalová, E. Expression of apoptosis-related genes in the mouse skin during the first postnatal catagen stage, focused on localization of Bnip3L and caspase-12. Connective Tissue Research 2015, roč. 56, č. 4, s. 326–335. ISSN 0300–8207.

Veselá, B.; Matalová, E. Detection of Bim and Puma in mouse hair follicles using immunofluorescence and TUNEL assay double staining. Biotechnic-Histochemistry 2015, roč. 90, č. 8, s. 587–593. ISSN 1052–0295.

Vidinská, D.; Motlík, J.; Ellederová, Z. Different Forms of Huntingtin in the Most Affected Organs; Brain and Testes of Transgenic Minipigs. Česká a Slovenská neurologie neurochirurgie 2015, roč. 78, Suppl 2, s. 66–69. ISSN 1210–7859.

Vlková, E.; Killer, J.; Kmeť, V.; Rada, V.; Musilová, Š.; Bunešová, V.; Hovorková, P.; Božik, M.; Salmonová, H.; Rajchard, J. Identification of microbiota associated with Pectinatella magnifica in South Bohemia. Biologia 2015, roč. 70, č. 3, s. 365–371. ISSN 0006–3088.

Vochozková, P.; Valeková, I. Role imunitního systému při Huntingtonově nemoci. Bioprospect 2015, roč. 25, č. 1, s. 19–23. ISSN 1210–1737.

Závorka, L.; Horký, P.; Kohout, J.; Kalous, L.; Slavík, O. Demogenetic structure of brown trout Salmo trutta Linnaeus, 1758 populations in mountain headwaters: implications for conservation management. Journal of Applied Ichthyology 2015, roč. 31, č. 3, s. 501–508. ISSN 0175–8659.

Zeman, T.; Buchtová, M.; Dočekal, B.; Míšek, I.; Navrátil, J.; Mikuška, P.; Šerý, O.; Večeřa, Z. Organ weight changes in mice after long-term inhalation exposure to manganese oxides nanoparticles. Journal of Physics: Conference Series 2015, roč. 617, č. 012018, s. 1–6. ISSN 1742–6588.

Žižková, M.; Suchá, R.; Tylečková, J.; Jarkovská, K.; Mairychová, K.; Kotrčová, E.; Marsala, M.; Gadher, S. J.; Kovářová, H. Proteome-wide analysis of neural stem cell differentiation to facilitate transition to cell replacement therapies. Expert Review of Proteomics 2015, roč. 12, č. 1, s. 83–95. ISSN 1478–9450.

Monographs and chapters in monographs

Fliegerová, K.; Kaerger, K.; Kirk, P.; Voigt, K. Rumen Fungi. In Puniya, A. K; Singh, R.; Kamra, D. N. (ed.). Rumen Microbiology: From Evolution to Revolution India: Springer India, 2015, s. 97–112. ISBN 978–81–322–2400–6.

Musilová, R.; Zavadil, V.; Kotlík, P.; Moravec, J. Zamenis longissimus (Laurenti, 1768) – užovka stromová. In Moravec, Jiří (ed.). Fauna ČR. Plazi = Reptilia Praha: Academia, 2015, s. 304– 333. ISBN 978–80–200–2416–9.

Rábová, M.; Monteiro, R.; Collares-Pereira, M. J.; Ráb, P. Rapid fibroblast culture for teleost fish karyotyping. In Fish Cytogenetic Techniques: Ray-Fin Fishes and Chondrichthyans Enfield: CRC Press, 2015, s. 66–73. ISBN 9781482211986.

Rábová, M.; Völker, M.; Pelikánová, Š.; Ráb, P. Sequential chromosome banding in fishes. In Fish Cytogenetic Techniques: Ray-Fin Fishes and Chondrichthyans Enfield: CRC Press, 2015, s. 92–102. ISBN 9781482211986.

Symonová, R.; Sember, A.; Majtánová, Z.; Ráb, P. Characterization of fish genomes by GISH and CGH. In Fish Cytogenetic Techniques: Ray-Fin Fishes and Chondrichthyans Enfield: CRC Press, 2015, s. 118–131. ISBN 9781482211986.

Völker, M.; Ráb, P. Direct chromosome preparation from regenerating fin tissue. In Fish Cytogenetic Techniques: Ray-Fin Fishes and Chondrichthyans Enfield: CRC Press, 2015, s. 37–41. ISBN 9781482211986.

Völker, M.; Ráb, P. Direct chromosome preparations from embryos and larvae. In Fish Cytogenetic Techniques: Ray-Fin Fishes and Chondrichthyans Enfield: CRC Press, 2015, s. 42–48. ISBN 9781482211986.

2014 Papers

Adamová, E.; Lišková, M.; Matalová, E.; Klepárník, K. A miniaturized device for bioluminescence analysis of caspase-3/7 activity in a single apoptotic cell. Analytical and Bioanalytical Chemistry 2014, roč. 406, č. 22, s. 5389–5394. ISSN 1618–2642.

Bláhová, L.; Kohoutek, J.; Lebedová, J.; Bláha, L.; Večeřa, Z.; Buchtová, M.; Míšek, I.; Hilscherová, K. Simultaneous determination of reduced and oxidized glutathione in tissues by a novel liquid chromatography-mass spectrometry method: application in an inhalation study of Cd nanoparticles. Analytical and Bioanalytical Chemistry 2014, roč. 406, č. 24, s. 5867–5876. ISSN 1618–2642.

Bohlen, J.; Šlechtová, V. Schistura shuensis, a new species of loach from Myanmar (Teleostei: Nemacheilidae). Ichthyological Exploration of Freshwaters 2014, roč. 24, č. 3, s. 217–223. ISSN 0936–9902.

Bohlen, J.; Šlechtová, V.; Udomritthiruj, K. Schistura hypsiura, a new species of loach (Cobitoidea: Nemacheilidae) from South-West Myanmar. Raffles Bulletin of Zoology 2014, roč. 62, č. 1, s. 21–27. ISSN 0217–2445.

Bryja, J.; Mikula, O.; Patzenhauerová, H.; Oguge, N. O.; Šumbera, R.; Verheyen, E. The role of dispersal and vicariance in the Pleistocene history of an East African mountain rodent, Praomys delectorum. Journal of Biogeography 2014, roč. 41, č. 1, s. 196–208. ISSN 0305–0270.

Bryja, J.; Mikula, O.; Šumbera, R.; Meheretu, Y.; Aghová, T.; Lavrenchenko, L. A.; Mazoch, V.; Oguge, N.; Mbau, J. S.; Welegerima, K.; Amundala, N.; Colyn, M.; Leirs, H.; Verheyen, E. Pan-African phylogeny of Mus (subgenus Nannomys) reveals one of the most successful mammal radiations in Africa. BMC Evolutionary Biology 2014, roč. 14, č. 256. ISSN 1471–2148.

Bunešová, V.; Vlková, E.; Rada, V.; Killer, J.; Musilová, S. Bifidobacteria from the gastrointestinal tract of animals: differences and similarities. Beneficial Microbes 2014, roč. 5, č. 4, s. 377–388. ISSN 1876–2883.

Bunešová, V.; Killer, J.; Vlková, E.; Musilová, S.; Tomáška, M.; Rada, V.; Kmeť, V. Isolation and characterization of bifidobacteria from ovine cheese. International Journal of Food Microbiology 2014, roč. 188, č. 1, s. 26–30. ISSN 0168–1605.

Celá, P.; Veselá, B.; Matalová, E.; Večeřa, Z.; Buchtová, M. Embryonic Toxicity of Nanoparticles. Cells Tissues Organs 2014, roč. 199, č. 1, s. 1–23. ISSN 1422–6405.

Doležalová, D.; Hruška-Plocháň, M.; Bjarkam, C. R.; Sorensen, J. C. H.; Cunningham, M.; Weingarten, D.; Ciacci, J. D.; Juhás, Š.; Juhásová, J.; Motlík, J.; Hefferan, M. P.; Hazel, T.; Johe, K.; Carromeu, C.; Muotri, A.; Bui, J. D.; Strnádel, J.; Marsala, M. Pig Models of Neurodegenerative Disorders: Utilization in Cell Replacement-Based Preclinical Safety and Efficacy Studies. Journal of Comparative Neurology 2014, roč. 522, č. 12, s. 2784–2801. ISSN 0021–9967.

Doležel, R.; Martínek, J.; Švecová, H.; Špičák, J.; Juhásová, J. Efekt učení perorální endoskopické myotomie (POEM) během prvního roku ověřování metody v České republice. Gastroenterologie a hepatologie 2014, roč. 68, č. 4, s. 294–298. ISSN 1804–7874.

Fliegerová, K.; Tapio, I.; Bonin, A.; Mrázek, J.; Callegari, M. L.; Bani, P.; Bayat, A.; Vilkki, J.; Kopečný, J.; Shingfield, K.; Boyer, F.; Coissac, E.; Taberlet, P.; Wallace, R. J. Effect of DNA extraction and sample preservation method on rumen bacterial population. Anaerobe 2014, roč. 29, č. 1, s. 80–84. ISSN 1075–9964.

Fornůsková, A.; Bryja, J.; Vinkler, M.; Macholán, M.; Piálek, J. Contrasting patterns of polymorphism and selection in bacterial-sensing toll-like receptor 4 in two house mouse subspecies. Ecology and Evolution 2014, roč. 4, č. 14, s. 2931–2944. ISSN 2045–7758.

Gadher, S. J.; Kovářová, H. Proteomics without boundaries across Central and Eastern Europe. Expert Review of Proteomics 2014, roč. 11, č. 3, s. 255–257. ISSN 1478–9450.

Geiger, M. F.; Herder, F.; Monaghan, M. T.; Almada, V.; Barbieri, R.; Bariche, M.; Berrebi, P.; Bohlen, J.; Casal-Lopez, M.; Delmastro, G. B.; Denys, G. P. J.; Dettai, A.; Doadrio, I.; Kalogianni, E.; Kärst, H.; Kottelat, M.; Kovačič, M.; Laporte, M.; Lorenzoni, M.; Marčič, Z.; Özulug, M.; Percides, A.; Perea, S.; Persat, H.; Porcelotti, S.; Puzzi, C.; Robalo, J.; Šanda, R.; Schneider, M.; Šlechtová, V.; Stoumboudi, M.; Walter, S.; Freyhof, J. Spatial heterogeneity in the Mediterranean Biodiversity Hotspot affects barcoding accuracy of its freshwater fishes. Molecular Ecology Resources 2014, roč. 14, č. 6, s. 1210–1221. ISSN 1755–098X.

Grilli, D. J.; Kopečný, J.; Mrázek, J.; Marinšek-Logar, R.; Paez Lama, S.; Sosa Escudero, M.; Arenas, G. N. Identification of GH10 xylanases in strains 2 and Mz5 of Pseudobutyrivibrio xylanivorans. Folia Microbiologica 2014, roč. 59, č. 6, s. 507–514. ISSN 0015–5632.

Gruninger, R. J.; Puniya, A. K.; Callaghan, T. M.; Edwards, J.E.; Youssef, N.; Dagar, S. S.; Fliegerová, K.; Griffith, G. W.; Forster, R.; Tsang, A.; McAllister, T.; Elshahed, M. S. Anaerobic fungi (phylum Neocallimastigomycota): advances in understanding their taxonomy, life cycle, ecology, role and biotechnological potential. FEMS Microbiology Ecology 2014, roč. 90, č. 1, s. 1–17. ISSN 0168–6496.

Gvoždík, V.; Tillack, F.; Menegon, M.; Loader, S. P. The status of Leptopelis barbouri Ahl, 1929 and eleven other nomina of the current tree-frog genus Leptopelis (Arthroleptidae) described from East Africa, with a redescription of Leptopelis grandiceps Ahl, 1929. Zootaxa 2014, roč. 3793, č. 1, s. 165–187. ISSN 1175–5326.

Harris, N.; Kogan, F. Y.; Ilková, G.; Juhás, Š.; Lahmy, O.; Gregor, Y. I.; Koppel, J.; Zhuk, R.; Gregor, P. Small molecule inhibitors of protein interaction with glycosaminoglycans (SMIGs), a novel class of bioactive agents with anti-inflammatory properties. Biochimica et Biophysica Acta. General Subjects 2014, roč. 1840, č. 1, s. 245–254. ISSN 0304–4165.

Havelka, M.; Hulák, M.; Ráb, P.; Rábová, M.; Lieckfeldt, D.; Ludwig, A.; Rodina, M.; Gela, D.; Pšenička, M.; Bytyutskyy, D.; Flajšhans, M. Fertility of a spontaneous hexaploid male Siberian sturgeon, Acipenser baerii. B M C Genetics 2014, roč. 15, č. 5. ISSN 1471–2156.

Hiadlovská, Z.; Macholán, M.; Mikula, O.; Vošlajerová, B. The meek inherit the earth: less aggressive wild mice are more successful in challenging situations. Biological Journal of the Linnean Society 2014, roč. 113, č. 1, s. 310–319. ISSN 0024–4066.

Horáková, D.; Celá, P.; Krejčí, P.; Balek, L.; Moravcová Balková, S.; Matalová, E.; Buchtová, M. Effect of FGFR inhibitors on chicken limb development. Development Growth & Differentiation 2014, roč. 56, č. 8, s. 555–572. ISSN 0012–1592.

Chalupníková, K.; Šolc, P.; Sulimenko, V.; Sedláček, R.; Svoboda, P. An oocyte-specific ELAVL2 isoform is a translational repressor ablated from meiotically competent antral oocytes. Cell Cycle 2014, roč. 13, č. 7, s. 1187–1200. ISSN 1538–4101.

Chalupová, P.; Dvořáková, V.; Knoll, A.; Stratil, A.; Bartenschlager, H.; Stupka, R.; Čítek, J.; Šprysl, M.; Palánová, A.; Horák, P.; Geldermann, H. Polymorphism, linkage mapping, and association analysis with carcass traits of four porcine candidate genes selected from gene-expression profiles of Czech Large White and Wild Boar muscles. Czech Journal of Animal Science 2014, roč. 59, č. 3, s. 116–127. ISSN 1212–1819.

Choleva, L.; Musilová, Z.; Kohoutová-Šedivá, A.; Pačes, J.; Ráb, P.; Janko, K. Distinguishing between Incomplete Lineage Sorting and Genomic Introgressions: Complete Fixation of Allospecific Mitochondrial DNA in a Sexually Reproducing Fish (Cobitis; Teleostei), despite Clonal Reproduction of Hybrids. PLoS ONE 2014, roč. 9, č. 6, e80641–e80641. E-ISSN 1932–6203.

Janko, K. Let us not be unfair to asexuals: their ephemerality may be explained by neutral models without invoking any evolutionary constraints of asexuality. Evolution 2014, roč. 68, č. 2, s. 569–576. ISSN 0014–3820.

Jarkovská, K.; Dvořánková, B.; Halada, P.; Kodet, O.; Szabo, P.; Gadher, S. J.; Motlík, J.; Kovářová, H.; Smetana, K. Revelation of fibroblast protein commonalities and differences and their possible roles in wound healing and tumourigenesis using co-culture models of cells. Biology of the Cell 2014, roč. 106, č. 7, s. 203–218. ISSN 0248–4900.

Javůrková, V.; Albrecht, T.; Mrázek, J.; Kreisinger, J. Effect of intermittent incubation and clutch covering on the probability of bacterial trans-shell infection. Ibis 2014, roč. 156, č. 2, s. 374–386. ISSN 0019–1019.

Jeseta, M.; Čtvrtlíková Knitlová, D.; Hanzalová, K.; Hulínská, P.; Hanuláková, S.; Milakovič, I.; Němcová, L.; Kaňka, J.; Machatková, M. Mitochondrial Patterns in Bovine Oocytes with Different Meiotic Competence Related to Their in vitro Maturation. Reproduction of Domestical Animals 2014, roč. 49, č. 3, s. 469–475. ISSN 0936–6768.

Johnson Pokorná, M.; Rovatsos, M.; Kratochvíl, L. Sex Chromosomes and Karyotype of the (Nearly) Mythical Creature, the Gila Monster, Heloderma suspectum (Squamata: Helodermatidae). PLoS ONE 2014, roč. 9, č. 8, e104716. E-ISSN 1932–6203.

Kaczmarek, Ł.; Janko, K.; Smykla, J.; Michalczyk, L. Soil tardigrades from the Antarctic Peninsula with a description of a new species and some remarks on the genus Ramajendas (Eutardigrada: Isohypsibiidae). Polar Record 2014, roč. 50, č. 2, s. 176–182. ISSN 0032–2474.

Killer, J.; Dubná, S.; Sedláček, I.; Švec, P. Lactobacillus apis sp. nov., from the stomach of honeybees (Apis mellifera), having an in vitro inhibitory effect on the causative agents of American and European foulbrood. International Journal of Systematic and Evolutionary Microbiology 2014, roč. 64, č. 1, s. 152–157. ISSN 1466–5026.

Killer, J.; Švec, P.; Sedláček, I.; Černohlávková, J.; Benada, O.; Hroncová, Z.; Havlík, J.; Vlková, E.; Rada, V.; Kopečný, J.; Kofroňová, O. Vagococcus entomophilus sp nov., from the digestive tract of a wasp (Vespula vulgaris). International Journal of Systematic and Evolutionary Microbiology 2014, roč. 64, č. 3, s. 731–737. ISSN 1466–5026.

Killer, J.; Havlík, J.; Vlková, E.; Rada, V.; Pechar, R.; Benada, O.; Kopečný, J.; Kofroňová, O.; Sechovcová, H. Lactobacillus rodentium sp nov., from the digestive tract of wild rodents. International Journal of Systematic and Evolutionary Microbiology 2014, roč. 64, č. 5, 1526–1533. ISSN 1466–5026.

Killer, J.; Votavová, A.; Valterová, I.; Vlková, E.; Rada, V.; Hroncová, Z. Lactobacillus bombi sp. nov., from the digestive tract of laboratory-reared bumblebee queens (Bombus terrestris). International Journal of Systematic and Evolutionary Microbiology 2014, roč. 64, č. 8, s. 2611–2617. ISSN 1466–5026.

Killer, J.; Havlík, J.; Bunešová, V.; Vlková, E.; Benada, O. Pseudoscardovia radai sp. nov., A representative of the family Bifidobacteriaceae isolated from the digestive tract of a wild pig (Sus scrofa scrofa). International Journal of Systematic and Evolutionary Microbiology 2014, roč. 64, č. 9, s. 2932–2938. ISSN 1466–5026.

Komrsková, P.; Šušor, A.; Malík, R.; Procházková, B.; Lišková, L.; Šupolíková, J.; Hladký, Š.; Kubelka, M. Aurora Kinase A Is Not Involved in CPEB1 Phosphorylation and cyclin B1 mRNA Polyadenylation during Meiotic Maturation of Porcine Oocytes. PLoS ONE 2014, roč. 9, č. 7, e101222–e101222. E-ISSN 1932–6203.

Kotlík, P.; Marková, S.; Vojtek, L.; Stratil, A.; Šlechta, V.; Hyršl, P.; Searle, J. B. Adaptive phylogeography: functional divergence between haemoglobins derived from different glacial refugia in the bank vole. Proceedings of the Royal Society. B – Biological Sciences 2014, roč. 281, č. 1786. ISSN 0962–8452.

Kotusz, J.; Popiolek, M.; Drozd, P.; de Gelas, K.; Šlechtová, V.; Janko, K. Role of parasite load and differential habitat preferences in maintaining the coexistence of sexual and asexual competitors in fish of the Cobitis taenia hybrid complex. Biological Journal of the Linnean Society 2014, roč. 113, č. 1, s. 220–235. ISSN 0024–4066.

Koubová, M.; Johnson Pokorná, M.; Rovatsos, M.; Farkačová, K.; Altmanová, M.; Kratochvíl, L. Sex determination in Madagascar geckos of the genus Paroedura (Squamata: Gekkonidae): are differentiated sex chromosomes indeed so evolutionary stable?. Chromosome Research 2014, roč. 22, č. 4, s. 441–452. ISSN 0967–3849.

Křivánek, J.; Švandová, E.; Králik, J.; Hajda, S.; Fedr, R.; Vinařský, V.; Jaroš, J.; Souček, K. Properties of Neural Crest-Like Cells Differentiated from Human Embryonic Stem Cells. Folia Biologica 2014, roč. 60, č. 2014, s. 30–38. ISSN 0015–5500.

Kyllar, M.; Štembírek, J.; Putnová, I.; Stehlík, L.; Odehnalová, S.; Buchtová, M. Radiography, Computed Tomography and Magnetic Resonance Imaging of Craniofacial Structures in Pig. Anatomia Histologia Embryologia-Journal of Veterinary Medicine Series C 2014, roč. 43, č. 6, s. 435–452. ISSN 0340–2096.

Laiblová Kadlecová, I.; Ráb, P. Jak jsem potkal ryby – rozhovor s prof. Petrem Rábem. Informace 2014, č. 4. E-ISSN 1805–2800.

Leis, S.; Dresch, P.; Peintner, U.; Fliegerová, K.; Sandbichler, A. M.; Insam, H.; Podmirseg, S.M. Finding a robust strain for biomethanation: Anaerobic fungi (Neocallimastigomycota) from the Alpine ibex (Capra ibex) and their associated methanogens. Anaerobe 2014, roč. 29, č. 1, s. 34–43. ISSN 1075–9964.

Marková, S.; Searle, J. B.; Kotlík, P. Relaxed functional constraints on triplicate α-globin gene in the bank vole suggest a different evolutionary history from other rodents. Heredity 2014, roč. 113, č. 1, s. 64–73. ISSN 0018–067X.

Masopust, M.; Weisz, F.; Bartenschlager, H.; Knoll, A.; Vykoukalová, Z.; Geldermann, H.; Čepica, S. Porcine ubiquitin-like 5 (UBL5) gene: genomic organization, polymorphisms, mRNA cloning, splicing variants and association study. Molecular Biology Reports 2014, roč. 41, č. 4, s. 2353–2362. ISSN 0301–4851.

Mikulíček, P.; Kautman, M.; Demovič, B.; Janko, K. When a clonal genome finds its way back to a sexual species: evidence from ongoing but rare introgression in the hybridogenetic water frog complex. Journal of Evolutionary Biology 2014, roč. 27, č. 3, s. 628–642. ISSN 1010–061X.

Mozrová, V.; Břeňová, N.; Mrázek, J.; Lukešová, D.; Marounek, M. Surveillance and characterisation of Cronobacter spp. in Czech retail food and environmental samples. Folia Microbiologica 2014, roč. 59, č. 1, s. 63–68. ISSN 0015–5632.

Nagyová, E.; Scsuková, S.; Kalous, J.; Mlynarčíková, A. Effects of RU486 and indomethacin on meiotic maturation, formation of extracellular matrix, and progesterone production by porcine oocyte-cumulus complexes. Domestic Animal Endocrinology 2014, roč. 48, č. 1, s. 7–14. ISSN 0739–7240.

Oralová, V.; Chlastáková, I.; Radlanski, R.J.; Matalová, E. Distribution of BMP6 in the alveolar bone during mouse mandibular molar eruption. Connective Tissue Research 2014, roč. 55, 5–6, s. 357–366. ISSN 0300–8207.

Ozdener, M. H.; Subramanian, S.; Sundaresan, S.; Šerý, O.; Hashimoto, T.; Asakawa, Y.; Besnard, P.; Abumrad, N. A.; Khan, N. A. CD36-and GPR120-Mediated Ca2+ Signaling in Human Taste Bud Cells Mediates Differential Responses to Fatty Acids and Is Altered in Obese Mice. Gastroenterology 2014, roč. 146, č. 4, s. 995–1005. ISSN 0016–5085.

Palánová, A.; Schröffelová, D.; Přibáňová, M.; Dvořáková, V.; Stratil, A. Analysis of a deletion in the nephronophthisis 4 gene in different dog breeds. Veterinary Ophthalmology 2014, roč. 17, č. 1, s. 76–78. ISSN 1463–5216.

Pechar, R.; Rada, V.; Parafati, L.; Musilová, S.; Bunešová, V.; Vlková, E.; Killer, J.; Mrázek, J.; Kmeť, V.; Svejštil, R. Mupirocin-mucin agar for selective enumeration of Bifidobacterium bifidum. International Journal of Food Microbiology 2014, roč. 191, č. 1, s. 32–35. ISSN 0168–1605.

Pereira, C. S.; Aboim, M. A.; Ráb, P.; Collares-Pereira, M. J. Introgressive hybridization as a promoter of genome reshuffling in natural homoploid fish hybrids (Cyprinidae, Leuciscinae). Heredity 2014, roč. 112, č. 3, s. 343–350. ISSN 0018–067X.

Pokorná, M.; Altmanová, M.; Kratochvíl, L. Multiple sex chromosomes in the light of female meiotic drive in amniote vertebrates. Chromosome Research 2014, roč. 22, č. 1, s. 35–44. ISSN 0967–3849.

Pokorná, M.; Rens, W.; Rovatsos, M.; Kratochvíl, L. A ZZ/ZW Sex Chromosome System in the Thick-Tailed Gecko (Underwoodisaurus milii; Squamata: Gekkota: Carphodactylidae), a Member of the Ancient Gecko Lineage. Cytogenetic and Genome Research 2014, roč. 142, č. 3, s. 190–196. ISSN 1424–8581.

Rovatsos, M.; Altmanová, M.; Pokorná, M.; Kratochvíl, L. Conserved sex chromosomes across adaptively radiated anolis lizards. Evolution 2014, roč. 68, č. 7, s. 2079–2085. ISSN 0014–3820.

Rovatsos, M.; Pokorná, M.; Altmanová, M.; Kratochvíl, L. Cretaceous park of sex determination: sex chromosomes are conserved across iguanas. Biology Letters 2014, roč. 10, č. 3, s. 20131093. ISSN 1744–9561.

Rovatsos, M.; Altmanová, M.; Johnson Pokorná, M.; Kratochvíl, L. Novel X-Linked Genes Revealed by Quantitative Polymerase Chain Reaction in the Green Anole, Anolis carolinensis. Genes, Genomes, Genetics 2014, roč. 4, č. 11, s. 2107–2113. ISSN 2160–1836.

Ryska, O.; Martinek, J.; Doležel, R.; Šerclová, Z.; Juhás, Š.; Juhásová, J.; Lasziková, E.; Henlín, T.; Kalvach, J.; Ryska, M. Efektivní techniky uzávěru transrektálního přístupu NOTES – výsledky experimentální studie. Gastroenterologie a hepatologie 2014, roč. 68, č. 4, s. 299–304. ISSN 1804–7874.

Schoch et. al. Finding needles in haystacks: linking scientific names, reference specimens and molecular data for Fungi. Database 2014, –, bau061. E-ISSN 1758–0463.

Soste, M.; Hrabáková, R.; Wanka, S.; Melnik, A.; Boersema, P.; Maiolica, A.; Wernas, T.; Tognetti, M.; von Mering, C.; Picotti, P. A sentinel protein assay for simultaneously quantifying cellular processes. Nature Methods 2014, roč. 11, č. 10, s. 1045–1048. ISSN 1548–7091.

Šerý, O.; Povová, J.; Balcar, V. J. Perspectives in genetic prediction of Alzheimer's disease. Neuroendocrinology Letters 2014, roč. 35, č. 5, s. 359–366. ISSN 0172–780X.

Šerý, O.; Hlinecká, L.; Balcar, V.J.; Janout, V.; Povová, J. Diabetes, hypertension and stroke – does Alzheimer protect you?. Neuroendocrinology Letters 2014, roč. 35, č. 8, s. 691–696. ISSN 0172–780X.

Švandová, E.; Lesot, H.; Vanden Berghe, T.; Tucker, A.S.; Sharpe, P. T.; Vandenabeele, P.; Matalová, E. Non-apoptotic functions of caspase-7 during osteogenesis. Cell Death & Disease 2014, roč. 5, e1366. ISSN 2041–4889.

Švandová, E.; Veselá, B.; Křivánek, J.; Hampl, A.; Matalová, E. Recent Approaches in Tooth Engineering Research. Folia Biologica 2014, roč. 60, Suppl 1, s. 21–29. ISSN 0015–5500.

Veselá, B.; Švandová, E.; Šmarda, J.; Matalová, E. Mybs in mouse hair follicle development. Tissue & Cell 2014, roč. 46, č. 5, s. 352–355. ISSN 0040–8166.

Walterová, B.; Doležel, R.; Ryska, O.; Juhásová, J.; Juhás, Š.; Stefanová, M.; Špičák, J.; Martínek, J. Pohled laiků, lékařů a pacientů na novou metodu léčby achalázie (POEM) – dotazníková studie. Gastroenterologie a hepatologie 2014, roč. 68, č. 4, s. 288–293. ISSN 1804–7874.

Zahradníček, O.; Buchtová, M.; Dosedělová, H.; Tucker, A. S. The development of complex tooth shape in reptiles. Frontiers in physiology 2014, roč. 5, FEB 25, UNSP 74. ISSN 1664–042X.

Monographs and chapters in monographs

Berrebi, P.; Chenuil, A.; Kotlík, P.; Machordom, A.; Tsigenopoulos, C. S. Disentangling the evolutionary history of the genus Barbus Sensu Lato, a twenty years adventure. In Professor Carlos Almaca (1934–2010) – Estado da Arte em Áreas Científicas do Seu Interesse Lisboa: MUHNAC, 2014, s. 29–55. ISBN 978–972–98196–6–7.

Doubek, J.; Matalová, E.; Uhríková, I. Přehled fyziologie I pro VFU Brno Brno: Tisk Print Active s. r. o, 2014. 145 s. ISBN 978–80–260–6291–2.

Doubek, J.; Matalová, E.; Uhríková, I. Přehled fyziologie II pro VFU Brno Brno: Tribun EU, s. r. o, 2014. 229 s. ISBN 978–80–263–0799–0.

Macholán, M. Základy fylogenetické analýzy Brno: Masarykova univerzita, 2014. 289 s. ISBN 978–80–210–6363–1.

Svoboda, J.; Macholán, M. Předkové. Evoluce člověka Praha: Academia, 2014. 479 s. ISBN 978–80–200–2324–7.






IAPG is engaged in a wide range of popularization activities. Perhaps the biggest event is The Open Days. All three locations (Liběchov, Prague, Brno) are ready for a rich program for visitos of all ages in selected days. For the youngest one, the play of A Curious Scientist is prepared, as well as the presentation of one of the scientific themes of the institute, games and competitions on knowledge of animal kingdom, demonstration of laboratory work, and an exploration of experimental animal breeding. For older ones are prepared excursions in laboratories with commentary of scientists. The events meet with great interest mainly from schools and with a very positive response. Our Institute also release our own promotional items (bookmarks with the most interesting discoveries of our workplace and leaflet for the general public).
The Institute has also participated in the largest science festival, the Science Fair, which takes place every year at the Letňany Exhibition Center, and its exposition enjoyed the great interest of a wide range of visitors.
In addition, the Institute's labs are attended by high school students within the framework of the Open Science project (Project Open Science is offering annual possibility for talented secondary school students to get involved in basic research in all locations of the IAPG. Some of them became successful MS or PhD students later on.

IAPG Popularization Activities






The advantage of these activities is in long lasting contact with the students and stimulating their interests) and they are preparing many disseminating lectures, whether at secondary schools or universities. At our Brno workplace, the popularization activities are connected with the Mendelianum project. This project Mendelianum – Attractive World of Genetics, creation of Centrum Mendelianum is a modern bases for popularization of science, education and research established on 50 year tradition in development and propagation of Mendel's heritage. Institute of Animal Physiology and Genetics is the major partner of the Moravian Museum, the Centrum activities run under auspices of the Academy of Sciences of the Czech Republic.

Employees of the Institute also regularly publish and comment on the results of their work in popularizing journals, participate in textbooks and scripts, and publish scholarly books for the public.

IAPG Collaboration with Application Sphere

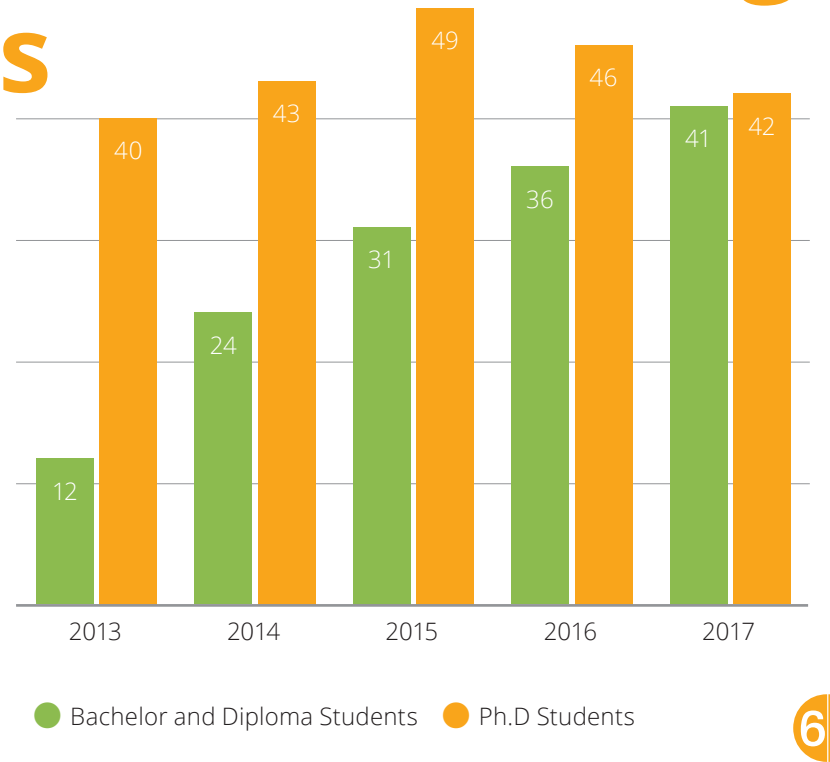
Much of the Institute's research has been translated into solutions, methods and results that are a benefit to both general and academic society. A constant exchange of ideas and cooperation between the IAPG researchers and companies in Czech Republic and worldwide is one of the characteristics that make the IAPG research successful.

Application and commercialization of research mostly in the field of neurology and molecular biology was sped up by realization of the ExAM project in 2013 – 2015 and by building a new, competitive IAPG infrastructure perfect for partnering with private, commercial sector, applying for translational funding grants and facilitating the IAPG consultancy activity.

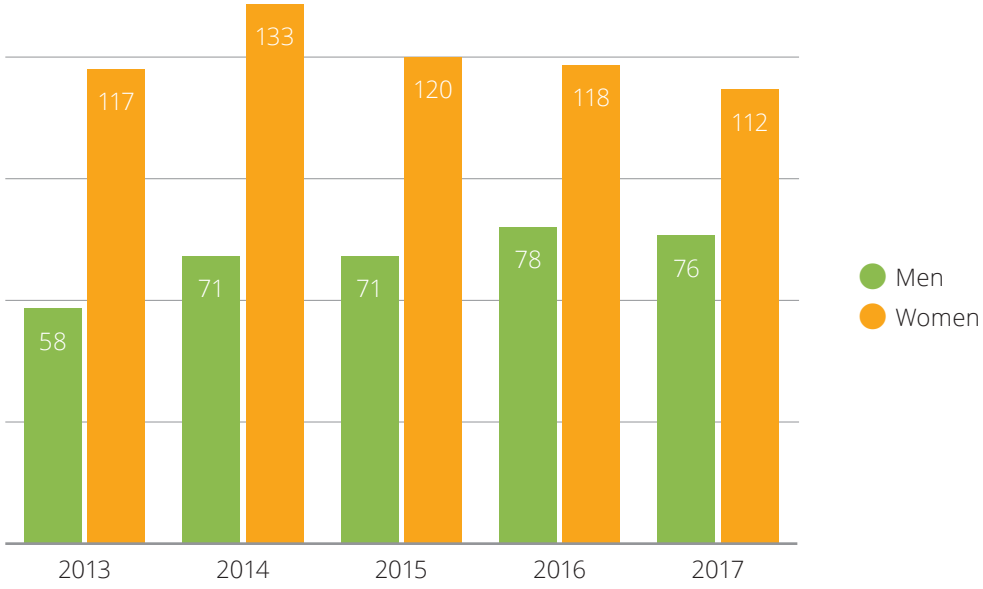
The IAPG's PIGMOD Centre (Pig Models of Diseases) has since extensively partnered with businesses worldwide, incl. top US companies and foundations (e.g. CHDI Foundation, Neuralstem Inc.), in the EU (e.g. Synovo GmbH, uniQure NV) as well as with Czech progressive companies (e.g. MediTox s.r.o.). Other forms of translational research consist of cooperation with hospitals and clinical centers in Czech Republic and EU (Motol Hospital, FNUSA-ICRC etc.) where the expertise of IAPG lies in providing analytical services, expert consultations, creating novel animal models, forming research concepts and coordinating research projects. Since 2013 the IAPG runs simultaneously 5 to 10 projects a year with different partners from applied sector. A yearly financing in the applied research field climbs up to 1 million EUR with half being from private companies and half from public sector translational projects.

IAPG Education and Teaching Activities

Employees of IAPG are active in lecturing at 10 universities (the most important partners are Charles Univeristy in Prague, Masaryk University in Brno, University of Veterinary and Pharmaceutical Sciences in Brno, Czech University of Life Sciences in Prague and Univerity of South Bohemia in České Budějovice) around the country and some of them also abroad. The level of collaboration is documented by many common publications and defended thesis and lectures presented at universities. There are always ongoing several grant projects. Many gradual students are also involved in research programs as you can see below.



INSTITUTE EMPLOYEES, SIZE AND STRUCTURE

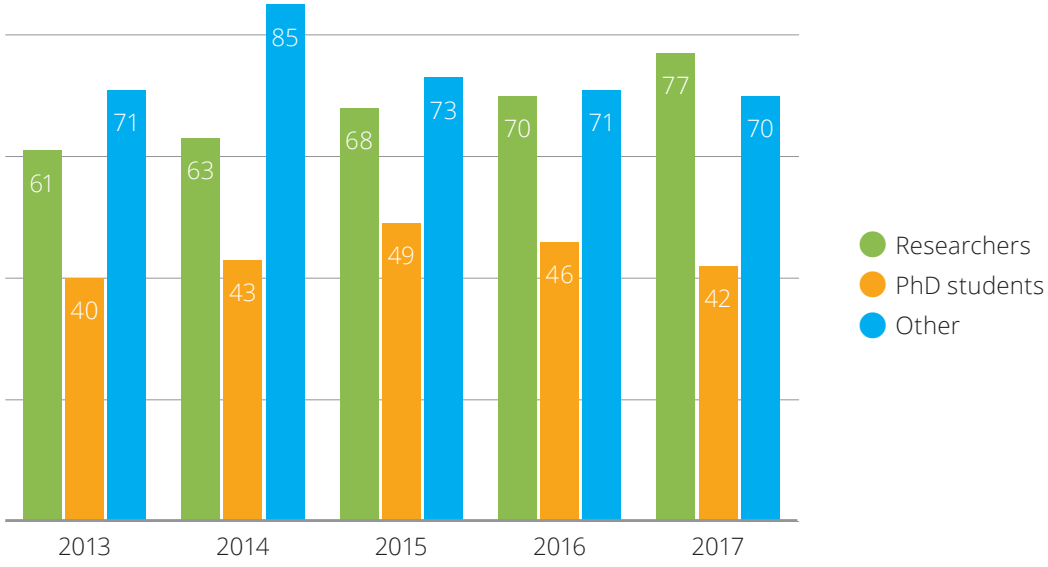


IAPG

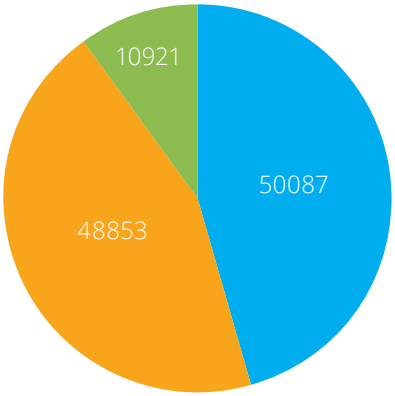
Staff and Budget

Number of employees covers both full time and part time positions. In a long time interval, the total counts of employees is slowly increasing but depends on actual funding structure. Increasing are primarily research positions. Institute budget in 2017 was covered by 58% from grant funding and contract research. The institutional funding decreased from 44.2% in 2013 to 41.7% in 2017.

INSTITUTE STAFF INVOLVED IN RESEARCH



TOTAL RESOURCES 2016
(in thousands of CZK)



Contract research
Subsidies from funds
Institutional subsidies

TOTAL RESOURCES 2017
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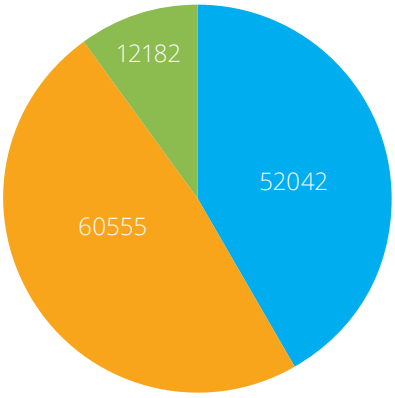
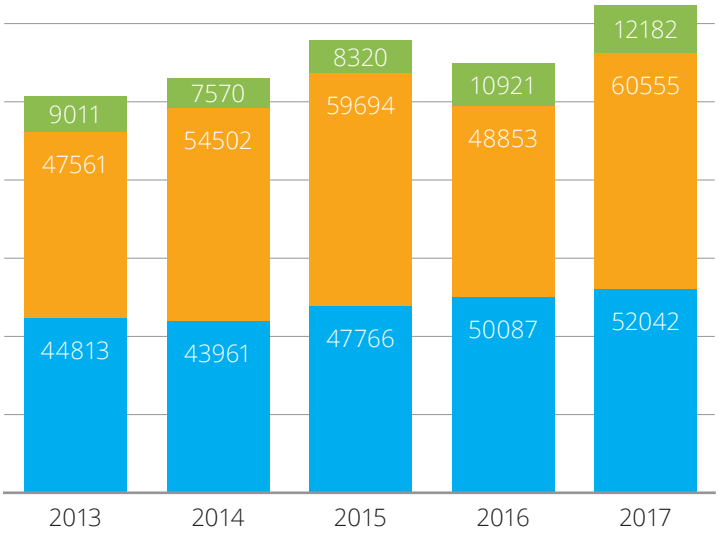


Contract research
Subsidies from funds
Institutional subsidies

TOTAL RESOURCES FOR THE MAIN ACTIVITY
(in thousands of CZK)



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