Participating Faculties and Institutes:

1. Center for Economic Research and Graduate Education
2. Faculty of Arts
3. Faculty of Education
4. Faculty of Mathematics and Physics
5. Faculty of Medicine in Plzeň
6. Faculty of Social Sciences
7. Faculty of Science
8. First Faculty of Medicine
9. French Research Center in Humanities and Social Sciences
10. Protestant Theological Faculty

Center for Economic Research and Graduate Education

*Environmental Economics, Economics of Development, Empirical Microeconomics, and Impact Evaluation*

CERGE UK seeks a postdoctoral candidate with focus on empirically oriented research in microeconomics, environmental economics, development economics, or impact evaluation. Preference will be given to candidates pursuing research spanning across the above fields. Applicants should demonstrate the capacity to pursue a research project at the frontier of current knowledge as well as the ability to achieve a strong publication record in leading scholarly journals.

Faculty of Arts

*Ethodology and Concrete Applications in Egyptian Lexical Semantics: From Archaeological Sources to Digital Corpora*

Supervisor:
Mgr. Renata Landgráfová, Ph.D., Vice-Dean for Study Affairs

Faculty of Education

1. Department of Germanic Studies
   contact person: doc. PhDr. Viera Glosiková, CSc. (viera.glosikova@pedf.cuni.cz)
   *The Czech and German culture relations (chronicle of Ottocarus of Styria)*

2. Department of Psychology
   contact person: PhDr. Gabriela Seidlová Máliková, Ph.D. (gabriela.malkova@pedf.cuni.cz)
   *The development of an intervention program to facilitate natural mentoring relationships of socially disadvantaged children and youth: Explorative phenomenological study within the participative action research approach*

3. Department of Education
   contact person: PhDr. Hana Voňková, Ph.D. (hana.vonkova@pedf.cuni.cz)
   *The anchoring vignette method in educational research*

4. Institute for Research and Development of Education (IRDE)
   contact person: PhDr. David Greger, Ph.D. (david.greger@pedf.cuni.cz)
   *Value-added assessment in education, longitudinal data analysis and structural equation modelling*
   *Test development, psychometric analysis and IRT*
   *Early tracking and transition between school levels in comparative perspective*
   *Social justice, social stratification and education, multicultural education*
   *Accountability, assessment and school inspections - its mechanisms and (side)effects*

5. Department of Information Technology and Technical Education
Faculty of Mathematics and Physics

1. **Predictive rendering for appearance fabrication**
Post-doc position for one-year period from 1st January 2018

**Research Project**
The proposed postdoc position is part of a research program with the long term goal of establishing and eventually standardizing an end-to-end material appearance (i.e. color, glossiness, translucency, etc.) reproduction pipeline for 3D physical fabrication processes such as 3D printing. This involves, among other, predictive simulation of the fabrication process, compensation of unwanted effects of fabrication on the resulting appearance, or modeling the perception of material appearance by the Human Visual System. Furthermore, this requires development of new and accurate standardized appearance descriptors as well as appearance reproduction profiles for various fabrication devices, media and materials.

While this long-term vision necessitates a large scale research program that goes well beyond one postdoc position, we do have a specific plan tailored for the position in question, in which we directly capitalize on our accumulated expertise and research infrastructure in the area of predictive rendering. This shorter term goal is to build a predictive rendering system for various 3D printing technologies that would be capable of providing a faithful rendition of the final appearance of a planned 3D print before the actual physical fabrication. This will involve developing new fast algorithms for simulating light scattering in the 3D prints a well as measuring and modeling the scattering parameters of the printer materials. The resulting system will enable designers to preview the appearance of the planned 3D prints before the actual fabrication, saving printing material and hours of 3D printing time. Even more importantly, such a system will be the core and any follow-up research on the topic. For example, it will enable developing optimization algorithms with the goal of reaching a specific appearance, where the predictive system will serve as the predictor of the 3D prints’ appearance in each step of the optimization process.

**Expert group:** The computer graphics group co-lead by prof. Jaroslav Křivánek and prof. Alexander Wilkie is internationally renowned for its research on realistic image synthesis. This covers in particular physically-based, Monte Carlo light transport simulation, atmospheric rendering, and material appearance modeling (including color science). The technologies co-developed by the members of the group have been published in the most prestigious venues of the field (ACM SIGGRAPH) and are used, among others, by the major visual effect production houses such as Weta Digital, PIXAR Animation Studios, and Sony Pictures Imageworks. One of the most significant recent contributions is the Vertex Connection and Merging (VCM) algorithm (Georgiev, Křivánek et al., ACM SIGGRAPH Asia 2012) which is currently considered the most robust solution for rendering scenes with complex specular materials. The acronym VCM has become widely known both in the rendering research and the industry. A follow-up work on light transport in participating media (Křivánek et al., ACM SIGGRAPH 2014) has received extended press coverage and has been integrated into PIXAR’s RenderMan product. The atmospheric model developed by Hošek and Wilkie (ACM SIGGRAPH 2011) has immediately become a de-facto industry standard for modeling of illumination from clear skies. Prof. Křivánek is also involved with the commercial product Corona Renderer, which - within 16 months from its commercial release - has become the second most used light transport software for architectural visualization, and is considered a disruptive product in the field due to its novel focus on usability and accessibility.

**Contact person:** doc. Ing. Jaroslav Křivánek, Ph.D., Charles University, Faculty of Mathematics and Physics, Department of Software and Computer Science Education
e-mail: Jaroslav.Krivanek@mff.cuni.cz

**Applicants should submit:**
- Application form
2. **Autonomous Robotics**

Post-doc position for one-year period from 1st January 2018

**Research Project**

Department of Theoretical Computer Science and Mathematical Logic, Faculty of Mathematics and Physics, Charles University solicits applications for postdoctoral research positions. The objective of the work consists in developing software technology for autonomous robots, in particular UGV/UAV (i.e., mobile robots including autonomous cars and flying drones). Relevant topics cover sensor fusion, pattern recognition, localization and mapping, path finding, goal reasoning, and activity planning, among others. The research shall be focused on artificial intelligence techniques to control the activities of the robots and to increase their autonomy. Standard hardware platforms are expected to be used. The applicant should be a highly motivated scholar with PhD in computer science, preferably artificial intelligence or robotics. She/he will be collaborating on problems solved by members of our AI group (Roman Barták, Iveta Mrázová, David Obdržálek, Martin Pláň, Marta Vomlelová). Experience with real life projects is of advantage.

Contact person: prof. Roman Barták, Charles University, Faculty of Mathematics and Physics, Department of Theoretical Computer Science and Mathematical Logic

e-mail: bartak@ktiml.mff.cuni.cz

Applicants should submit:

- Application form
- Letters of Reference
- Detailed CV
- List of publications
- Copy of university diploma

**Deadline date: July 21, 2017**

3. **Neutral Machine Translation**

Post-doc position for one-year period from 1st January 2018

**Research Project**

The Institute of Formal and Applied Linguistics (UFAL) is seeking a candidate for a one-year post-doc position in the area of neural machine translation (NMT). The exact topic will be determined based on the candidate's interests, e.g. multi-lingual or multi-modal translation, employing linguistic resources in neural MT, MT evaluation or quality estimation, interactive MT and incremental learning.

A PhD degree in computational linguistic, artificial intelligence or a related field is required. Experience with neural MT, Linux and cluster environment (SGE), and/or general deep learning and GPU computation is a bonus.

Contact person: RNDr. Ondřej Bojar, Ph.D., Charles University, Faculty of Mathematics and Physics, Institute of Formal and Applied Linguistics

e-mail: Ondrej.Bojar@mff.cuni.cz

Applicants should submit:

- Application form
- Letters of Reference
- Detailed CV
- List of publications
- Copy of university diploma

**Deadline date: July 21, 2017**

4. **Ultra-fast scintillation materials**

Post-doc position for one-year period from 1st January 2018

**Research Project**

Inorganic scintillators are used in detection of high energy radiation in many sectors of fundamental and applied research, in medical diagnostic systems that use X-rays or gamma rays, for detection of high energy particles, and in many industrial systems. The research project is focusing on a new class of ultra-fast scintillation materials and development of novel systems designed particularly for fast electron detection and medical diagnostic. In novel high resolution 2D-imaging scintillation systems, high quality epitaxial films are the key issue.

A post-doctoral research fellow will join existing projects focusing on scintillation properties of epitaxial layers of complex oxide systems. In this work optical, luminescence, scintillation, and kinetic properties will be studied in single crystalline films of scintillation materials doped with rare earth and transition metal ions. The program will be particularly oriented to:

- Development of technology strategies for preparation of ultra-fast scintillation materials
- Synthesis and growth of epitaxial films of rare-earth doped garnets, perovskites, or orthosilicates, development of novel material systems designed for scintillation applications
- The research includes analysis of experimental data using numerical analysis software, modeling of experimental data
An applicant should have PhD. in physics, material science, optoelectronics, or related discipline. Previous experience with scintillators and/or luminescence spectroscopy, luminescence kinetics is advantage. Informal inquiries concerning the position and detailed program are welcome.

Contact person: Doc. Miroslav Kučera, Charles University, Faculty of Mathematics and Physics
e-mail:  miroslav.kucera@mff.cuni.cz

Applicants should submit:
• Application form
• Letters of Reference
• Detailed CV
• List of publications
• Copy of university diploma

Deadline date: July 21, 2017

Faculty of Medicine in Plzeň

1. Regeneration of liver parenchyma in experimental models of severe pathological states

Department: Biomedical Center, Faculty of Medicine in Pilsen, Charles University
Laboratory: Laboratory of Cancer Treatment and Tissue Regeneration Laboratory of Quantitative Histology
Supervisor: Vaclav Liska, M.D., Ph.D., Associate Professor of Surgery
E-mail:  vena.liska@skaut.cz
Phone: +420 377 593 800

Input premise
Over the recent years, hepatic surgery has been subject to an extensive development originating from the advancements in medical technology, intensive care, and imaging methods. As a result, it is now possible to conduct relatively large resections associated with considerable loss of functional liver parenchyma. Such resections are, however, limited by the quality of liver parenchyma, its regeneration capacity as well as by the occurrence of diffuse impairment – liver cirrhosis, steatohepatitis and steatofibrosis. Some of these states are associated with previous administration of oncological treatment. These include sinusoidal obstruction syndrome (blue liver syndrome) or chemotherapy-associated steatofibrosis (yellow liver syndrome). Such states bring a high risk of post-surgery liver failure in relation to the reduced regeneration capacity. The possibilities of clinical surgery can be extended through large-animal experiments, employing e.g. pigs, whose anatomy and physiology are very close to those of humans. One of the long-term focuses of our centre is development of experimental models of liver parenchyma impairments and of the methods of their treatment using e.g. mesenchymal stem cells or application of growth factors and cytokines (Liska V et al., 2009, Anticancer Res. 29: 2371–2377; Liska V et al., 2012, Hepatogastroenterology 59: 235–240).

The goal of this project will be histological and immunohistochemical analysis of liver tissue samples collected in both our previous and current experiments. This analysis will take into account also pathophysiological mechanisms taking place during liver regeneration and it will identify individual cellular elements involved in this interaction. These will comprise not only parenchymal cells (hepatocytes and cholangiocytes), but also non-parenchymal cells (endothelial cells, fibroblasts, myofibroblasts) and inflammation related cell types (macrophages, lymphocytes, etc.). Another goal of the project will be to evaluate the relationships among these cellular elements in particular phases of liver regeneration, including the formation of extracellular matrix and connective tissue.

Qualifications:
• Ph.D. (or equivalent) degree in biology or medicine recently graduated
• Technical skills in quantitative histology, liver pathology, immunohistochemistry, experimental work– advanced experience
• High motivation, ability to conduct collaborative research
• Excellent English communication skills in both written and oral form
• Track record of publications in peer-reviewed journals: at least 5 publications in IF journals, two as a first author

The applicants should submit:
• Letter of Reference
• Curriculum vitae
• List of publications
• Copy of university diploma
• Brief description of prior research, skills and experiences

2. Impact of diabetes mellitus to nervous system innervating the heart

Position available from: January 2018
Department: Biomedical Center, Faculty of Medicine in Plzen, Charles University in Prague
Laboratory: Laboratory of Laser Microdissection
Supervisor: Magdaléna Chottová Dvořáková, M.D., Ph.D.
Associate Professor of Physiology
E-mail:  magdalena.dvorakova@lfp.cuni.cz
Phone: +420 377 593 343
Diabetes mellitus is a disease with high incidence and high socio-economic relevance. The prevalence of diabetes mellitus is an alarming global health issue. The heart is among those organs whose functional and structural impairment during progression of this disease are limiting for life quality and survival. Diabetic cardiomyopathy involves both the contractile cardiomyocytes and the sensory and autonomic innervation of the heart.

Scientific activities of Laboratory of Laser Microdissection are mainly focused on study of effects of different physiological and pathological states on the heart innervation. The research projects aim to find mediators or their receptors responsible for symptoms of diabetic or cirrhotic cardiomyopathies. Methodological approaches, also, include analysis of gene expression and protein tissue distribution by means of RT-qPCR and immunofluorescence in separate heart compartments. Additionally, laser microdissection is used in order to analyze effect of mentioned pathologies to cardiac ganglia.

The research will be focused on intracardiac nervous system and autonomic and sensory ganglia innervating the heart. Effect of type I and type II diabetes mellitus on these structures will be studied in animal models by means of real time PCR, immunohistochemistry and Western blotting.

Qualifications:
- Ph.D. (or equivalent) degree in physiology/biology/medicine
- Technical skills in molecular biology (e.g., reverse transcription-qPCR, tissue sectioning, immunohistochemistry, western blotting) – advanced experience
- High motivation, ability to conduct collaborative research
- Excellent English communication skills both in written and oral form
- Track record of publications in peer-reviewed journals: at least 3 publications in IF journals (IF>1.5), one as a first author

The applicants should submit:
- Letter of Reference
- Curriculum vitae
- List of publications
- Copy of university diploma
- Brief description of prior research, skills and experiences

3. Impact of valproic acid on stem cell differentiation

Position available from: January 2018
Department: Department of Medical Chemistry and Biochemistry
Supervisor: Mgr. Kolaja Dobrá Jana Ph.D.
E-mail: Jana.Dobra@lfp.cuni.cz
Phone: +420 377 593 285

Valproic acid (VPA, 2-propylpentanoic acid) is a chemical compound, which has been used for a long time as an anticonvulsant and mood-stabilizing drug for treatment of epilepsy and bipolar disorder. These effects are explained by influencing the metabolism of the GABA inhibitory neurotransmitter. Recently was revealed that VPA is also a histone deacetylase inhibitor. Histone modifications (such as acetylation) belong to epigenetic mechanisms, which seem to play essential role in stem cell differentiation. However, the detailed molecular mechanism is still unclear.

The research project aims to follow up the recent study focusing on the effect of VPA on neuronal differentiation of EC P19 cells induced by retinoic acid. Our preliminary study indicated that VPA slows down the retinoic acid-induced neurodifferentiation process. Now we are characterizing the course of the differentiation on transcriptomic level. We are monitoring the gene expression changes of pluripotency markers, markers of neuronal progenitors as well as markers for various finally differentiated neuronal cell types. The next step could be studying the process also on proteomic level. Our current goal is to elucidate the mechanism by which the VPA modifies the retinoic acid-induced differentiation of EC P19 cells.

Qualifications:
- Ph.D. (or equivalent) degree in biochemistry/biology/medicine recently graduated
- Technical skills in biochemistry, molecular biology and cell biology (e.g. cell cultures, biochemical assays, immunocytochemistry, real time quantitative PCR, RT-PCR and related molecular biology methods) – advanced experience
- High motivation, ability to conduct collaborative research
- Excellent English communication skills both in written and oral form
- Track record of publications in peer-reviewed journals: at least 5 publications in IF journals, two as a first author

The applicants should submit:
- Letter of Reference
- Curriculum vitae
- List of publications
Faculty of Social Sciences

1. **Media in Life and Education of Culturally Disadvantaged Children**
   Contact: Mgr. Markéta Zezulková, Ph.D., MA, PGCE
   marketa.zezulkova@fsv.cuni.cz
   The Institute of Communication Studies and Journalism invites applications for a post-doctoral research position crossing the fields of children’s media experience and learning and children’s cultural rights. The candidate must have a PhD. from any social or humanity sciences, but he/she will have a track record of research focused on children (ideally pre-school and primary school aged). Researchers interested in Romani Studies, cultural rights, and/or digital and media literacy are especially encouraged to apply. The degree should be obtained in 2017 or earlier.

   The successful candidate will become an essential part of a team researching role of media in life and education of Roma children whose cultural rights are being continuously violated across Europe. Much research has so far focused on questions related to Roma children’s education and life situations, whereas the current and potential role of media and culture, and by extension also of media and digital literacy and cultural rights, in these areas remains neglected. The candidate will be expected to act as an expert in his/her field throughout all stages of this interdisciplinary research, from its design, through implication, to dissemination.

2. **Postdoc in Macroeconomics and Finance**
   Contact:  doc. PhDr. Martin Gregor, Ph.D.
   martin.gregor@fsv.cuni.cz
   We are looking to hire a postdoc in the fields of macroeconomics and finance to carry on research activities in some of the following topics: financial institutions, financial intermediation, financial regulation, household finance, and public finance. The postdoc will be part of the Institute of Economic Studies at Faculty of Social Sciences, Charles University and will become an active member of the Institute, including attending seminars, and a member of the economics and finance community at Charles University. In addition, the postdoc will support teaching and research activities of the department.

   Starting date: January 1, 2018
   The candidate should hold a Ph.D. in Economics or Finance, or at least have a scheduled graduation date. The funding is competitive, and in principle for 2 years. It is expected to lead to a full-time Assistant Professor placement after the postdoc period.

   Applications include CV, a job market paper, a short research statement, two letters of references, and a copy of your PhD diploma (if available). Deadline for applications is July 20, 2017. Candidates should be available for a Skype interview. Charles University carries out an equal opportunity policy.

3. **Dynamics of sports journalism in Central and Eastern Europe**
   Contact:  PhDr. Alice Němcová Tejkalová, Ph.D.
   alice.tejkalova@fsv.cuni.cz
   The Institute of Communication Studies and Journalism invites international post-docs to apply for a vacancy in the field of sports journalism research. The candidate must have PhD. in Media/Communication Studies (or equivalent field); the degree should be obtained in 2017 or earlier.

   The successful post-doc candidate will be a part of a team interested in sports journalism studies. The project would focus on dynamics of sports journalism within the Central and Eastern Europe (CEE). Sports myths and stereotypes (in relation to nationalism), celebritization and comercialization of sports journalism, especially connections between sports journalism and sports business are going to be analysed. All those topics strongly resonate within sports journalism studies in broader European context, but have not been very much mapped within CEE region.

4. **Postdoc in Industrial Organization**
   Contact:  doc. PhDr. Martin Gregor, Ph.D.
   martin.gregor@fsv.cuni.cz
   We are looking to hire a postdoc to carry empirical and theoretical research in the field of industrial organization, including but not limited to the following topics: technology-intensive industries, innovations, consumer protection, online pricing, and certifications. The postdoc will be part of the Institute of Economic Studies at Faculty of Social Sciences, Charles University and will become an active member of the Institute, including attending seminars, and a member of the economics and finance community at Charles University. In addition, the postdoc will support teaching and research activities of the department.

   Starting date: January 1, 2018
   The candidate should hold a Ph.D. in Economics, or at least have a scheduled graduation date. The funding is competitive, and in principle for 2 years. It is expected to lead to a full-time Assistant Professor placement after the postdoc period.
Monitoring of detrimental organic xenobiotic compounds in the environment and in simple clinical samples is one of the most important tasks of modern analytical chemistry. Electrochemical techniques are especially suitable for large-scale monitoring of these compounds.

Relevant team publications since 2015:


Electrochemical Bio(sensors) for Sensitive Detection of Organic Xenobiotic Compounds

Monitoring of detrimental organic xenobiotic compounds in the environment and in simple clinical samples is one of the most important tasks of modern analytical chemistry. Electrochemical techniques are especially suitable for large-scale monitoring of these compounds.

Faculty of Science

1. Epigenomics and evolution of sex determination in vertebrates
Supervisors: doc. Mgr. Lukáš Kratochvíl, Ph.D. and Michail Rovatsos, Ph.D.

Sex chromosomes represent an outstanding example of the convergence at the genomic level. They evolved likely more than 40-times independently just in amniote vertebrates (mammals, reptiles and birds), in many cases probably from the ancestral environmental sex determination, where sex chromosomes are not present. In many cases, the same pair of ancestral autosomes started playing the role of sex chromosomes, e.g. the XX/XY sex chromosomes of viviparous mammals including humans share gene content with ZZ/ZW sex chromosomes in lacertid lizards. The project aims to uncover sex chromosomes and to determine their gene content in yet unstudied vertebrate lineages, to test homology of sex chromosomes across and within particular lineages using cytogenetic and molecular approaches. Also, it will focus on the convergent evolution during differentiation of sex chromosomes with the respect of gene content, particularly loss of genes from degenerated Y and W chromosomes and the effect of sex chromosome differentiation on the expression of sex-linked genes, in order to uncover how particular lineages cope with the loss of gene copies during degeneration of unpaired sex chromosomes. The project has also a practical aspect: to find a reliable technique for molecular identification of sex of individuals in endangered or commercially valuable species of vertebrates.

Relevant team publications since 2015:


2. Electrochemical Bio(sensors) for Sensitive Detection of Organic Xenobiotic Compounds

Monitoring of detrimental organic xenobiotic compounds in the environment and in simple clinical samples is one of the most important tasks of modern analytical chemistry. Electrochemical techniques are especially suitable for large-scale monitoring of these compounds.
scale environmental and clinical monitoring of electrochemically active xenobiotics because they are inexpensive, extremely sensitive, and they present an independent alternative to so far prevalent spectrometric and separation techniques. Development of sufficiently sensitive and selective electrochemical methods for determination of various environmentally and clinically important biologically active organic substances is the main task of our UNESCO Laboratory of Environmental Electrochemistry.

In current electroanalytical chemistry, there is an ever-increasing need for new electrode materials characterized by broader potential window, higher signal-to-noise ratio, biocompatibility, mechanical stability enabling their application in flowing systems, and resistance toward passivation. The last requirement is especially important because electrode fouling is probably the biggest obstacle to more frequent applications of electroanalytical techniques in environmental/clinical analysis.

In consequences to the above-mentioned facts, the proposed post-doc project should be focused on following innovative strategies:

– application of non-traditional electrode materials (silver amalgam, boron-doped diamond, micro-structured forms of carbon) in combination with modern extraction techniques (micro solid-phase extraction, single-drop micro-extraction, gas-diffusion micro-extraction, hollow-fiber extraction) for increasing the sensitivity of the analyte determination
– testing of new electrode materials (boron-doped diamond powder, diamond-like carbon, nano-structured forms of carbon and gold) as perspective alternatives to the traditional ones
– development of miniaturized smart sensors and devices for field measurements and/or measurements in microliter-volume samples
– application of DNA biosensors utilizing the DNA–analyte interaction for increasing the sensitivity of the analyte determination

The candidate will be expected to carry out the development and testing of novel electrochemical bio(sensors) and strategies for sensitive determination of selected organic xenobiotic compounds. Special emphasis will also be placed on the investigation of mutual interactions between DNA and the studied xenobiotics. The investigated analytes will be (but not limited to) pesticides, anticancer drugs, tumor biomarkers, and chemical carcinogens. The project involves active collaboration with the research groups of Assoc. Prof. Miroslav Foťa (Institute of Biophysics of the CAS, Brno), Assoc. Prof. Tomáš Navrátil (J. Heyrovský Institute of Physical Chemistry of the CAS, Prague), and Assoc. Prof. Alexander Kromka (Institute of Physics of the CAS, Prague).

Contact person and supervisor of the project:
Assoc. Prof. RNDr. Vlastimil Vyskočil, Ph.D.
Head of the Group of Electrochemical Biosensors and Bioelectrochemistry
UNESCO Laboratory of Environmental Electrochemistry
Department of Analytical Chemistry
Faculty of Science
Charles University
Hlavova 8, 128 43 Prague 2, Czech Republic
tel.: +420-221 951 599, fax: +420-224 913 538, e-mail: vlastimil.vyskocil@natur.cuni.cz
web: https://www.natur.cuni.cz/chemistry/analchem/research-and-science/groups/laboratory-of-environmental-electrochemistry

3. **Tethering complex exocyst in plant morphogenesis and defence**

Supervisor: Viktor Žárský, Department of Experimental Plant Biology at the Faculty of Science, Charles University

Plant morphogenesis is based essentially on the regulation of cell division plane and orientation or localization of cell elongation – i.e. on processes of polarized secretion, where along with the cytoskeleton, regulators of membrane vesicles traffic play a crucial role. Our laboratory at the Department of Experimental Plant Biology contributes decisively to the characterization of the exocyst vesicles tethering complex involved in the secretion pathway localization by mediating first phase of specific contact between the vesicle and target membrane. Localized secretion is also one of the basic plant defence mechanisms after the microbial pathogen attack and not surprising also in this context exocyst plays important roles. Based on the best candidate interests we will specify details of the experimental program together. In any case the project will have to do with the characterization of functions of specific isoforms of exocyst subunits EXO70 – a very plant specific feature of the complex.

Topic relevant papers of last two years (2016 and 2017):


4. **Modeling of nanoparticle diffusion and transport in macromolecular environment**

Diffusion of nanoparticles in an environment containing macromolecules is much more complicated process than simple diffusion in pure solvents which is commonly described in textbooks. Examples of such environments are synthetic polymer gels or a crowded environment of proteins inside a cell. Friction experienced by the diffusing molecules in such environment does not follow the well-known Stokes-Einstein relation: small diffusants are more faster, while sticky diffusants are slower than what could be calculated from macroscopic viscosity. Therefore the term **nanoviscosity** has been coined in the last decade. Many experimental works addressing nanoviscosity are available in literature but suitable theoretical models are still scarce. The goal of this project is to design simplified (coarse-grained) models of nanoparticle diffusants in macromolecular environments, and to use computer simulations as a theoretical tool to study their spatial distribution and diffusion properties. The project is a part of a larger research project focused on modeling of partitioning and diffusion of small molecules in polymeric gels.

The applicant's task will be to design the simulation models, to carry out the simulations and to analyze the simulation data. The results will be used for fundamental understanding of the physical process, as well as for interpretation of experimental results from collaborating teams.

Profile of an ideal candidate:

- Completed PhD at the time of application, but not more than 10 years since its completion, fulfilment of other conditions prescribed by the University (required)
- Good knowledge of English (FCE equivalent or better)
- Strong background in soft matter and statistical mechanics
- Experience with molecular simulation, programming and Linux OS

Project supervisor: Dr. Peter Košovan
Contact: peter.kosovan@natur.cuni.cz , +420-221-591-290

Department of Physical and Macromolecular Chemistry
Faculty of Science, Charles University, Prague
Hlavova 8, 128 43 Prague, Czech Republic

5. **Determining the cascade of cell loss in Alzheimer’s disease**

Project supervisor:
Mgr. Petr Telenský, PhD
Department of physiology
Contact: telep@centrum.cz , +420 221 951 772

Annotation:
Despite decades of effort, clinical trials for treatment strategies aimed at reducing amyloid burden in patients suffering from Alzheimer’s disease did not result in an effective cure. This prompted the necessity to re-evaluate the dominant hypothesis that accumulation of beta-amyloid in the brain is the initiating cause of Alzheimer’s disease. A major obstacle in determining the cause of neurodegenerative process in Alzheimer’s disease is the lack of knowledge on the cascade of cellular loss in specific brain structures and neuronal subpopulations. Furthermore, quantitative description of the changes in specific glial subpopulations in the course of the neurodegenerative process is completely lacking. Filling this knowledge gap became practically possible only recently with the development of the Isotropic Fractionator technique and with the discoveries of novel neuronal and glial nuclear markers. Therefore, the goal of this project is to validate novel nuclear markers for the isotropic fractionator technique and to map the cascade
of loss of specific brain cell subpopulations during the course of the neurodegenerative process in the novel transgenic rat model strain Tgf-344AD. This project is expected to have a substantial impact on our understanding of Alzheimer’s disease etiology.

First Faculty of Medicine

Analytical and biological aspects of bilirubin photochemistry

Supervisor: Prof. MUDr. Libor Vítek, Ph.D.
Institute of Medical Biochemistry and Laboratory Medicine, First Faculty of Medicine CU and The General University Hospital in Prague

French Research Center in Humanities and Social Sciences

Deadline for submission: 23 August 2017
Period: 1 January 2018—31 December 2019
Application Language: English only
Address for submission: clararoyer@cefres.cz
URL: http://www.cefres.cz/en/6214

TWO POST-DOCTORAL POSITIONS AT CEFRES COFUNDED BY THE CHARLES UNIVERSITY AND CEFRES WITHIN THE FRAME OF SPECIFIC RESEARCH PROJECTS

Framework of the Charles University and CEFRES post-doctoral position

As a partner of CEFRES Platform, Charles University recruits two high-quality post-doctoral research fellows from abroad, to become researchers at CEFRES, within the frame of the Charles University’s International Post-Doc Research Fund. The gross monthly salary is 32 000 CZK and a fixed-term contract will be signed between each post-doctoral researcher and CEFRES. UK-CEFRES post-doctoral researchers will be affiliated to both CEFRES and a relevant department of one of the faculties in social sciences and humanities of the Charles University according to their main discipline.

Research project 1: Archives and Interculturality

Description: Candidates should be trained on and familiar with research on autograph manuscripts, notably on archives relevant to philosophy and the history of thought. We encourage applicants whose approach emphasizes the historical, textual and intercultural value of those documents, focusing on multilingual corpus inspired by or dealing with different traditions, both in space and time. An interdisciplinary approach is preferred, as well as some experience in the field of the edition of unpublished texts and in the methodology of genetic criticism.

Research project 2: TANDEM post-doctoral position at CEFRES

A specific competition to recruit a second post-doctoral researcher is open for competition on one out of three possible topics as listed below. He/She will work in association with a researcher from the Czech Academy of Sciences within the frame of the TANDEM program. Applicants must choose one among the three topics listed above and send the full application package by 23 August 2017. Each topic is associated to a Czech Academy of Sciences – CAS researcher within the frame of the above research projects.

Topic 1: Cosmopolitics of Hunt: Bringing Europe into Perspective
Associated CAS researcher: Luděk Brož (Institute of Ethnology)

Description: Candidates across social sciences and humanities are invited to explore how “wild species” have featured in human lives, and vice versa, in dynamically changing socio-environmental contexts. Successful applicants are expected to develop their own field of empirical inquiry and, using methodology aligned with their respective disciplines, focus on the relationship between “wild species” and humans as both a topic in its own right, and a strategic viewpoint on other issues of social and academic relevance. The supported candidate should be ready to engage in reflexive interdisciplinary collaboration.

Applicants should contact CAS researcher Luděk Brož before applying for any relevant questions on their application. Please write to: broz@eu.cas.cz

Topic 2: Denaturalisation and Refugees in Europe in the First Half of the 20th Century
Associated CAS researcher: Michal Frankl (Masaryk Institute, History)

Description: The project aims to develop a comparative perspective on large-scale denaturalisations in Europe in the first half of the 20th century and to probe the intrinsic connection between the status of the citizen and the position of the refugee. The applicant will show interest into research on citizenship, statelessness and/or refugees and should have background in historical and archival research (but an interdisciplinary combination with related disciplines is also possible and encouraged). Within the project s/he will be tasked with assessing existing body of research, working with the PI to develop the project methodology and conducting original research on mass revocations of citizenship and refugee policies. S/he should demonstrate interest in comparative history and explain his/her ability to contribute to a European comparative project (for instance, but not limited to, knowledge of the French and/or other national/regional contexts and languages).
Applicants should contact CAS researcher Michal Frankl before applying for any relevant questions on their application. Please write to: frankl@mua.cas.cz

Topic 3: Islamic Activists in Exile: Europe, Middle East and South-Asia

Associated CAS researcher: Giedre Sabaseviciute (Institute of Oriental Studies)

Description: Candidates will be expected to contribute to the project on the contemporary exiled Islamic activists in European, Middle Eastern and South-Asian cities. The project aims to research the ways in which the experience of exile affect the trajectories of activism, focusing on how different national context influence their career choices, which vary between the continuation of activism, involvement into different causes, or disengagement. Possible research topics include but are not restricted to 1- circulation of ideas, norms and activism through human networks; 2- patterns of activist network formation; 3- relationship between the exiled activists and their host countries; 4- continuities and ruptures in individual trajectories of activism. Candidates are expected to have conducted their doctoral research in one of the regions covered by the project (The Gulf, Turkey, South-Asia), to be proficient of one of its languages (Turkish, Arabic, Malay), and have an important knowledge of the fieldwork. Interdisciplinary approach is preferred, as well as some experience in ethnographic and biographical research, media studies, and discourse analysis. Applicants may contact CAS researcher Giedre Sabaseviciute before applying for any relevant questions on their application. Please write to: saba@orient.cas.cz

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Protestant Theological Faculty

Biblical and Ecumenical Hermeneutics in Conversation: Interpretation of Difficult Biblical Texts against Varied Historical, Cultural, Confessional, and (Post)Secular Backgrounds

Period: January 1st, 2018 to December 31st, 2019
The deadline for the application submissions: July 15th, 2017

Researchers interested in the fellowship are advised to contact the Ecumenical Institute:

Contact:
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