List of Post-Doctoral Fellowships

Faculty of Social Sciences

Title of the research project:

From war to peace. Transnational perspectives on establishing order in post-war Central and Eastern Europe, 1944-1949

The 70th anniversary of the German capitulation has led to an increasing interest in the events and developments surrounding the end of World War II and the postwar disorder in Europe. Although the number of country studies and syntheses of the years 1944-49 grows, there is still a lack of systematic, comparative studies on how order in Central and Eastern Europe was reestablished and how visions of order were used to create public consent. Comparing the cases of Czechoslovakia, Poland, East and West Germany after World War II in the general framework of the emerging Cold War, it is useful to employ a transnational perspective on ending postwar disorder and establishing postwar regimes. The proposed project should ask for interdependencies of the four cases and examine two areas: a) short-term measures of the (military) authorities intended to end violence and secure supplies of food and raw materials, b) mid- and long-term measures of the different actors (military and civil authorities, emerging parties, etc.) intended to win the loyalty of the people. In respect to the latter the focus will be on social policy and welfare-state offers.
Contact person:
Doc. PhDr. Ota Konrád, CSc.

Title of the research project:

The challenges of the changing global order

The global order, established after the end of the Cold War, is rapidly changing. New powers, such as the BRICS countries, are on the rise. At the same time, the traditional powers, led by the United States and partly the European Union, do not intend to give their dominance away easily. In addition, transnational actors, multinational corporations, and global civil society groups, constantly challenge the supremacy of nation states as such. In sum, the global order is much less orderly, and messier, than what is seemed only ten years ago. The purpose of this project is to explore the various aspects of this dramatic change of the global order, especially of the non-security realms. It focuses on the role international institutions and international law play in its maintenance, and on the foreign policies of the major powers. One hundred years ago, the landscape of international politics has been redefined by the breakup of the First World War. This project seeks to contribute to our understanding of what the global order of the 21st century will look like.

Contact person:
Michal Parízek, M.Sc., Ph.D.

Title of the research project:

Dynamics of sports journalism in Central and Eastern Europe

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 2015 or earlier.
The successful post-doc candidate will be a part of quite newly formed team interested in sports journalism studies. The project would focus on dynamics of sports journalism within the Central and Eastern Europe. Sports myths and stereotypes (in relation to nationalism), celebritization and commercionalization 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.

Contact person:
PhDr. Alice Němcová Tejkalová, Ph.D.

Title of the research project:

Europeanization of Czech research policy in the Central European context

European Union membership of Central European countries, including the Czech Republic, has impacted (Europeanized) all areas of public policies, be it through the channels of legislative obligation, financial motivation or ideational inspiration. Research policy is no exception in this respect. Czech Republic and other Central European countries participate in the creation of the European Research Area, which aims at higher mobility, exchange of ideas and support of excellence across the European Union. Research policies, research institutions and individual researchers need to reflect the European-wide definition of priorities, objectives and key concepts, such as excellence and interdisciplinarity. At the same time, the Central European countries have, so far, not been able to use the opportunities offered by the ERA to full extent and lag behind in many indicators. The project should contribute to better understanding of the mechanisms and results of the Central European (and particularly Czech) participation in the European Research Area. It should identify the root causes of the current situation, the main obstacles and room for possible improvement in Central European context. It should answer specific questions, such as Who decides about what gets researched? How and by what criteria is that decision made? How does that transform the research environment, economy and society? What are the examples of good practice in individual researchers' and institutions' involvement in ERA?

Contact person:
Tomáš Weiss, M.A., Ph.D.

Title of the research project:

Social media and transformation of citizen participation

Institute of Communication Studies and Journalism invites international post-docs to apply for a vacancy in the field of political communication. The candidate must have PhD. in Media/Communication Studies (or equivalent field); the degree should be obtained in 2015 or earlier.
The successful post-doc candidate will become a member of the established Political Communication Research Group (PolCoRe), working on the topic "Social media and transformation of citizen participation".
The project is focused on the study of the role of social media as instruments of political communication and citizen participation in the Czech and broader European contexts. After the completion of research on the utilization of social media during European (2014) and Czech national (2013) election campaigns, the project is planning to focus on the analyses of citizen engagement with political content via the Internet and social network sites in the middle of the election cycle. One of the project's main aims in this phase is the enhancement of its methodological repertoire and the incorporation of analysis of data from large European databases, such as the Eurobarometer or European Social Survey. The utilization of the EU-wide data sources will enrich the project's comparative perspective and enable to shed more light on the particularities of the use of online media for political participation and citizen engagement in the Czech Republic, and on the relationship between online and offline forms of participation, which belongs to one of the core questions currently examined by the PolCoRe group.

Contact person:
PhDr. Václav Štětka, Ph.D.

Title of the research project:

Post-socialist memory cultures and media audiences

Institute of Communication Studies and Journalism invites international post-docs to apply for a vacancy in the field of cultural studies. The candidate must have PhD. in Media/Communication Studies (or equivalent field); the degree should be obtained in 2015 or earlier.
The proposed field of research invites enquiry into the issues of post-socialism as a specific cultural formation which co-determines meaning-making processes by the struggles over the memory of the problematic totalitarian past. The project focusing on the convergence between memory cultures and media audiences will focus on the ways media representations of the past are used for the purposes of sedimentation of memory and securing its continuity.
Distortions and reconstitutions of memory are by and large accepted as indisputable facets of the memory work which apply to all remembering subjects in all circumstances. Nonetheless, this project is grounded in an assumption that reconstructive tendency is crucially connected to dis/continuity of memory. The discontinued memory which has to handle a transformative rupture, dividing the life course into incompatible parts, is necessarily even more reconstructive and certainly it reconstructs the past in a specific way. This project will be concerned with the question what are the transformative specificities of media-initiated memory of the socialist past in the current post-socialist presence.

Contact person:

PhDr. Irena Reifová, Ph.D.

Title of the research project:

Political Leadership and Conflict Resolution in Contemporary World – politological perspective

Role of political leadership in conflict resolution has made a comeback. Political leadership was studied intensively by political scientists as well by scholars in comparative and development studies from the 1940s to the 1970s. Recently, however, political science have returned to studying the role of individual leaders and the exercise of leadership to explain political outcomes.
The post-doc. research at the Dept. of Political Science put stress on analysis and methodology of research of political leadership in conflict, governance networks (political parties' leadership), state integrity or disintegrity in contemporary world.

Contact person:
prof. PhDr. Blanka Říchová, CSc.

First Faculty of Medicine

Title of the research project:

Study of potential role of extracellular microRNA in tumor biogenesis and dissemination

Background: MicroRNAs are short non-coding RNAs (19-23nt) that negatively regulate gene expression by translational repression and/or mRNA of up to 60% of genes. MicroRNAs are often deregulated in tumors, wherein the individual types of tumors are characterized by a specific profile of microRNA expression.

Revolutionary was the discovery of so called extracellular or secreted microRNAs. This is an extracellular form of microRNA which is in contrast to the longer species of RNA surprisingly stable and thus detectable in body fluids including serum/plasma, and cerebrospinal fluid. Due to their stability microRNA are widely used as the biomarkers of disease and tumors.

It is well documented that tumor-associated microRNAs are released from the tumor into the circulation, where they exhibit extraordinary stability. However, the biological function of these circulating microRNAs in tumor biogenesis, reprogramming gene expression within target cells or intracellular communication remaining largely enigmatic. Any knowledge is lacking whether these microRNAs can enter the organs and tissues, and whether they can aide in tumor progression and/or dissemination.

Project: In proposed study in vivo and in vitro assays answering these questions of role of extracellular microRNAS in tumor biogenesis and metastasis are being developed. We will use xenotransplantation mouse model of human CNS lymhomas. The trafficking of microRNAs, their functionality and distribution of their protein binding partners in body fluids will be studied and characterized.

Methods: microRNA isolation and quantification, qRT PCR, molecular cloning and mutagenesis, luciferase reporter assays, cell culturing and transfections, RNA sequencing, ChIP and ChIP sequencing, WB, immunoassays and fluorescent microscopy.

Significance: This project will enlarge an understanding of yet enigmatic role of microRNAs in biogenesis and spreading.

Candidate should be familiar with the basic cell and molecular biology methods. Bioinformatic data analysis skills are appreciated.
Contact: Vit Pospisil, Msc, PhD.

Institute of Pathophysiology
First Faculty of Medicine, Charles University in Prague
U Nemocnice 5, 128 53 Praha 2, Czech Republic
Tel: (+420) 224965864
Fax: (+420) 224912834
Mob: (+420) 732 953372
http://patofyziologie.lf1.cuni.cz/microrna-and-transcription-factors
http://stopka-lab.lf1.cuni.cz

Title of the research project:

Molecular imaging for preclinical research.

Two positions:
1) Preclinical MPI/MRI research /Výzkum v oblasti preklinického MPI/MRI
2) Image reconstruction in preclinical imaging /Rekonstrukce obrazu v preklinickém zobrazovaní
We are seeking for two postdoctoral fellows to be involved in small animal in-vivo pharmacology and imaging. The positions are open in the newly established multimodal Center for Advanced Preclinical Imaging (CAPI) at the First Faculty of Medicine, Charles University in Prague. The center is equipped with Micro-CT (Computed Tomography)/ PET (Positron Emission Tomography)/ SPECT (Single-Photon Emission Computed Tomography) trimodal machine, MRI (Magnetic Resonance Imager), Optical Imager (fluorescence, luminescence on X-ray background), and with the brand new technology - MPI (Magnetic Particle Imager) that allows a rapid and accurate tracking of superparamagnetic particles on MRI background. The other planned instrument acquisitions for 2016 - 2017 are high-frequency ultrasound (US) with photoacustic mode, and confocal endoscope. The aim of the research is development and evaluation of novel treatments and diagnostic techniques with high potential for translation to the clinic. Tracer methods will be used that rely on the introduction of a magnetically labeled molecule in very small concentrations into cells or compounds of interest, application to laboratory animal (mouse or rat) and noninvasive tracking of signal in the body. Current research topics include: 1. Hematopoietic stem cell tracking after transplantation and during migration after mobilization. 2. Distribution of muscarinic receptors in mice with acetylcholine esterase deficiency in CNS. 3. Mesenchymal stem cell tracking in plastic surgery. 4. Photosensitizer kinetics in photodynamically treated tumors.
Following positions are offered:

- One position for MPI/MRI technique. The successful candidate should have good background in use of MRI for preclinical or clinical imaging. It is expected involvement in the development, application, and evaluation of the new molecular imaging approaches, and in SPIO tracer optimization.
- One position for image reconstruction from different imaging modalities. The successful candidate should have good background in preclinical/clinical image processing. It is expected involvement in reconstruction of images obtained from CT, MRI, MPI, in SW evaluation and improvement.

Contact: RNDr. Ludek Sefc, CSc.
Institute of Pathophysiology
First Faculty of Medicine, Charles University in Prague
U Nemocnice 5, 128 53 Praha 2, Czech Republic

Tel: (+420) 224965930
sefc@cesnet.cz

CEFRES - Centre français de recherche en sciences sociales supported by the Charles University in Prague

www.cefres.cz

CEFRES's scientific policy revolves around three cross-cutting research areas. Each calls for a conceptual approach, both methodological and topical, without restriction to a specific cultural region. In each research area interdisciplinary dialogues may emerge between jurists, political scholars, historians, sociologists, anthropologists, theologians, literary historians, geographers, art historians, musicologists and philosophers. Specific programs revolving around these various research areas will be settled upon as the CEFRES researchers commit to precise projects, whether individual or collective. We intend to support European and international research projects that include digital humanities (digital resources, mapping, publishing). Individual research and cooperative projects may fit in one or several areas.

Application packages must be submitted by 28 August 2015 electronically in an email entitled "Application to UK Post-Doctoral Positions at CEFRES" at: clararoyer@cefres.cz .
Contacts

CEFRES
Štěpánská 35
CZ-111 21 Prague 1
Phone: +420 224 921 400
E-mail: clararoyer@cefres.cz
www.cefres.cz

Research Area 1 – Displacements, *DépaysementS* and DISCREPANCIES: PEOPLE, Knowledge and Practices

Research in this area aims at further developing understandings of displacements that impact people, knowledge and practices by exploring the ways they are transformed as they pass through space and time. The term 'displacement' covers the whole scope of mobilities, flows and circulations related to people, to material and cultural goods and to ideas. Displacement entails renegotiating and reshaping the content it affects. Indeed, it involves crossing borders, whether symbolic or concrete, where interactions, exchanges, contacts and frictions can occur.
Therefore *dépaysement* and "discrepancy" seem key notions for the analysis of this phenomenon. Dépaysement (which the English phrase 'change of landscape' poorly translates) is understood as both a move elsewhere and as an intellectual approach. It implies a survey of adaptations, cultural translations and the analysis of contexts of reception.
The discrepancies inherent to the different forms of displacements shall be explored through their diverse and intersecting chronologies as well as with respect to the modifications of the contents themselves. To take an example from the history of ideas, the term 'naturalism' refers to different meanings in France and in Central Europe that cannot be grasped without examining its refashioning.
This focus of this research theme puts it at the crossroads between several disciplines, including: philosophy, anthropology, economy, geography, political science, sociology, history, the history of literature and sciences, art history and musicology.
Potential research topics may include:

- displacements of persons: travels, migratory flows and tourism, professional trajectories, commuter displacements, wanderings, and so forth.
- circulations of intellectual and cultural practices: writings, cultural and/or economical, scientific goods, concepts and so forth.
- networks: institutional, commercial networks, sociabilities (such as learned societies, artistic networks, diasporas, and so forth)
- reception contexts and the discrepancies between social representations impacting the various modes of appropriation, translation, adaptation.

Research Area 2 – Norms & transgressions

Contemporary discourses on freedom of expression, multiculturality, emigration or sexuality persistently toy with the notion of transgression. Transgression can be viewed as a strategy adopted by various actors–be they religious, cultural, social–to claim and legitimate such norms they deem alternative to the established hierarchies, conventions, traditions, canons and laws. As a discourse, transgression contests the absolute authority of the existing norms, and questions their performative power with its own. As a practice though, it leans on a repertoire of actions (violence, humour, silence, and so forth), which do not necessarily imply any assertion nor self-awareness, for social practices of transgression cannot be reduced to their moral comment.
The purpose of this research is to understand the relationship between norm and transgression, and to question the overlaps and interactions between competing spaces and actors, as well as the inclusion of anti-canonical aspects into mainstream discourses and customs.
Agents of transgressions and enforcers of norms do not merely engage in dynamics of competition and antagonism. They can also demonstrate ties of complicity and coproduction. Our hunch is that there are enough points of contact between these agencies. The relation between norm, transgression and the law should therefore be taken into account.
Based on an interdisciplinary approach (law, politics, theology, philosophy, sociology, psychology, anthropology, history, art history, literary history), this research focus endeavors to study:

- strategies of monopoly and competition in norm assertion–the analysis of controversies can be a port of entry, as well as security discourses and practices;
- social practices of transgressions (such as marginality, commitment, resistance, and so forth) and their management (through violence, negotiation, inclusiveness, and so forth);
- agents at the core of such phenomena (minorities, outcasts, and so forth)–with particular attention to the variety of sociological profiles and life trajectories in the case of individual actors.

Last but not least, we would like to open within this research a reflection on a practice both transgressive and canonical: interdisciplinarity.

Faculty of Humanities

Title of the research project:

Phenomenological Theories of Social Experience

Phenomenological philosophy is one of the most influential 20th century philosophical traditions in the Czech Republic, and in Central and Eastern Europe more generally. In Czech philosophy, this tradition was initiated by Jan Patočka (1907–1977) whose work continues to attract the interest of scholars all around the world, including those from the younger generation.

Post-doc project “Phenomenological Theories of Social Experience” intends to promote the historical and problematical study of the specific way in which phenomenology addressed the problem of sociality in the history of philosophy. This study should also intend to distinguish different phenomenological perspectives from which the other’s phenomenon has been described in the history of phenomenology. Social experience and the other’s specific mode of appearance are not approached in the same way in theories of empathy, in theories of intersubjective communities, or else, in an ethical theory of alterity. The project should contribute to new developments of these issues in the context of contemporary debates.

This post-doc research program “Phenomenological Theories of Social Experience” is proposed by the Department of the German and French Philosophy (EuroPhilosophie) at the Faculty of Humanities of Charles University in Prague. It is situated in the broader framework of the classical German and new French phenomenology research in general, developed by the members of this Department since its creation in 2007, and in the context of their actual research project “Life and Environment” in particular that is supported by Czech Science Foundation (nr. 15-10832S) for three years between 2015 and 2017.

These research programs are, at the same time, open to other currents and figures in the contemporary continental philosophy. Since 2007, the cooperation with visiting international scholars interested in phenomenological philosophy is closely connected with the Erasmus Master Mundus study program “German and French Philosophy in Europe (EuroPhilosophie)”, in which the Faculty of Humanities participates as one of the partner institutions. This study program offers visiting academics a possibility to teach and supervise highly motivated international students.

Contact: doc. Karel Novotný, M.A., Ph.D.

Faculty of Science

Title of the research project:

Metabolism of host glycogen by human pathogen *Trichomonas vaginalis*

Trichomonas vaginalis is the causal agent of the most prevalent non-viral sexually transmitted disease in humans worldwide and it affects about 170 million people annually, concentrated particularly in developing countries. *Trichomonas vaginalis* infection is primarily considered as a women disease, although it occurs also in men. The symptoms in women mainly include vaginal discharge, malodour, edema and colpitis, known as strawberry cervix. In addition, trichomoniasis has been associated with adverse pregnancy outcome including low birth weight, premature rupture of membranes, and preterm delivery. Accumulating number of studies report an increased risk of HIV infection associated with trichomoniasis. Trichomonosis in men is largely asymptomatic, which naturally favours the transmission of the parasite.

Glycogen in vaginal fluid is believed to be the main carbohydrate substrate for energy metabolism of *T. vaginalis*. Glycogen content increases in vaginal epithelial cells upon stimulation with estrogen and its level undergoes cyclic changes during the menstrual cycle, while glycogen content is low during childhood and menopause. This is consistent with female susceptibility to *T. vaginalis* infection during ontogenesis, as trichomoniasis appears in individuals during reproductive years, rarely in newborn infants of infected mothers. It was also observed that the amount of glycogen in vaginal liquids decreases when trichomonads are present. Moreover, relationship between glycogen content stimulated by estradiol and susceptibility to T. vaginalis infection was suggested based on experimental infections of animals. Alternatively, T. vaginalis can utilize arginine for ATP synthesis by mean of arginine dehydrolase pathways, which led to the production of polyamines.

Although mechanisms of intracellular glycogen synthesis as well as catabolism are well known, little information is available concerning the mechanisms of external glycogen acquisition and degradation by pathogens such as trichomonads. We hypothesize that free glycogen is first degraded by isoamylases producing disacharide maltose, subsequently maltose is metabolized by ?-glucosidases producing glucose, which is then imported by facilitated diffusion across T. vaginalis membrane. This hypothesis is supported by identification of multiple genes coding for isoamylases and ?-glucosidases in T. vaginalis genome, identification of isoamylase in the proteome of *T. vaginalis* surface, and

by observation that glucosidase activity is exported by *T. vaginalis* to its environment. In this project we would like to investigate (i) mechanisms of external glycogen degradation, (ii) whether enzymes involved in glycogen degradation are exported to the cell surface, released to the cell environment or targeted to lysosomes (as observed in the case of isoamylases of *Entamoeba histolytica*), and (iii) to investigate expression of genes coding for isoamylases and ?-glucosidases when alternative sources of energy such as arginine are present.

Methods that will be employed in the proposed project include measurements of corresponding enzymatic activities, expression of tagged recombinant enzymes in T. vaginalis to investigate the mechanisms of their transport within *T. vaginalis* cell to their final destinations using advance bioimaging methods (fluorescence lifetime imaging, fluorescence confocal super-resolution microscope based on STED) and proteomic analysis of cellular fractions (particularly isolated lysozomes), and investigation of changes in transcriptome of *T. vaginalis* grown with various sources for their energy metabolism. The knowledge gained by this study will uncover one of the key steps that are required for establishment of T. vaginalis infection: utilization of host glycogen as a main source of energy for the parasite. The unique pathways for glycogen degradation by *T. vaginalis* may represent interesting target for development of new therapies against this important but underestimated pathogen.

Research group: Laboratory of Molecular and Biochemical Parasitology, Department of Parasitology, Faculty of Science, Charles University in Prague.

Contact: Prof. Jan Tachezy, Ph.D.
jan.tachezy@natur.cuni.cz
https://web.natur.cuni.cz/~tachezy/nova_webpage7/main.html

Title of the research project:

Computational modelling of weak polyelectrolytes

¨The core of the project is the study of acid-base equilibria in solutions of weak polyelectrolytes - charged polymers whose ionization depends on external conditions, such as pH. Their behaviour is a result of complex interplay of ionization of the polymer, its conformation and external conditions, such as pH and the presence of other ions. This stimuli-responsive behaviour has promising potential applications. In the proposed project we use simulations to gain molecular-level understanding of the involved processes, which should enable better exploitation of the application potential.

The candidate will be expected to carry out coarse-grained simulations of weak polyelectrolytes in solution or polyelectrolyte networks (hydrogels) in various environments (pH, salt, other ions of complex structure). For this purpose, the group provides a specialized in-house software. Alternatively, an open-source package ESPResSo can be used. Optionally, the candidate may also participate in method and software development. The project involves international collaboration with the group of prof. C. Holm (University of Stuttgart, DE), and Dr. O. Borisov (University of Pau, FR).

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)
- Background in soft matter and statistical mechanics
- Experience with molecular simulation, programming and Linux OS

Contact: Dr. Peter Košovan
Department of Physical and Macromolecular Chemistry
Soft Matter research group
Faculty of Science, Charles University in Prague
Hlavova 8, 128 43 Prague, Czech Republic

Title of the research project:

Genomics of speciation in nightingales

Research group: Population and evolutionary genetics
http://web.natur.cuni.cz/~radkas/

Funding of the project: Czech Science Foundation (15-10884Y). Evolution of reproductive isolation in two songbird species, The Common Nightingale and the Thrush nightingale: genomic and ecological perspective (2015-2017, PI – R. Reifová)

Understanding the mechanisms of species origin is a major goal of evolutionary biology. Until recently, studies of genetic basis of species formation has been restricted to model organisms amenable to laboratory crosses. Development of

next-generation sequencing methods along with the emergence of novel population genomic approaches brings a great opportunity to study genetic underpinnings of speciation even in wild populations. This can broaden our knowledge of mechanisms of speciation and allow us to make more general conclusions about selective forces driving the origins of biodiversity.

The aim of this project is to elucidate the genetic architecture of reproductive isolation between two closely related and still hybridizing song bird species, the Common Nightingale (*Luscinia megarhynchos*) and the Thrush Nightingale (L. luscinia). Using novel genotyping approaches based on next generation sequencing we will genotype several hundreds of DNA samples from naturally occurring hybrid populations, already collected during our previous research. The obtained data will allow us to use two complementary approaches for studying genetic basis of reproductive isolation. First, we will use genomic cline analysis to identify candidate reproductive isolation loci with low levels of introgression relative to most of the genome. Second, we will use admixture mapping to examine genetic basis of traits that contribute to reproductive isolation. Combination of both approaches will enable us to infer the importance of different reproductive barriers in nightingale speciation, identify candidate speciation genes and elucidate the mechanisms responsible for the large effect of the Z chromosome in reproductive isolation, a hallmark of avian speciation. We are looking for a post-doc trained in bioinformatics and/or population genetics.

Supervisor: RNDr. Radka Reifová, Ph.D.
Department of Zoology, Faculty of Science, Charles University in Prague
radka.reifová@natur.cuni.cz

Title of the research project:

Analysis of Src kinase activation using a novel FRET-based biosensor (Analýza aktivace kinázy Src pomocí nového FRET biosenzoru)

Research group: Laboratory of cancer cell invasion

Src kinase is a well-known proto?oncogene that plays crucial roles in migration, mechanotransduction, mitogenic and anti-apoptotic signaling, and is often found deregulated in tumors. One of the most evident phenotypes of Src-transformed cells is the formation of invadopodia, the actin-rich protrusive structures of cancer cells that mediate extracellular matrix degradation, allowing cancer cells to invade surrounding tissue.

We have prepared a novel genetically encoded FRET?based Src biosensor and have shown that the biosensor is sensitive to various physiological and artificial stimuli. The project will cover three aims: i) analysis of Src activation mechanisms; ii) analysis of Src activation in mechanotransduction; iii) analysis of Src activation in invadopodia.

The novel FRET-based biosensor represents a unique tool for unravelling the mechanisms of Src proto-oncogene activation and will help us to ascertain the role of Src in mechanotransduction and cancer cell invasiveness and invadopodia formation. Better understanding of Src activation could ultimately lead to increased effectiveness of anti-metastatic treatment.

The project expenses and in part (50%) the applicant salary will be covered by Czech Science Foundation grant 15-07321S (2015-2017).

Supervisor: Doc. RNDr. Daniel Rösel, PhD.

Faculty of Mathematics and Physics

Title of the research project:

Call for PostDoc Positions in the area of Material Research and Quantum Biology

Post-doc positions for one-year period from 1st January 2016

The remarkable quantum efficiency of photosynthetic antenna complexes has inspired recent surge in interest in investigation of the design principles of natural light-harvesting systems. Despite many details still under active debate, main principles behind organization of chromophores into efficient energy funneling systems are well-known. In this project we aim at designing artificial light-harvesting and energy transferring systems based on fluorographene – a new two-dimensional material - a derivative of graphene. Graphene-like defects in fluorographene will be studied for their potential to mimic the behavior of photosynthetic chromophores. These isles of graphene act in a conceptually similar way to impurities in semiconducters. They provide states within the band gap of the unperturbed fluorographene. Tuning the interaction between the impurities of different size and shape, one can mimic the functional organization of natural photosynthetic antennae. The aim of the project is to establish efficient effective methods of quantum mechanical

treatment of large structures involving these impurities. By using quantum chemical methods, we want to parameterize an effective Frenkel exciton model of energy transfer through these systems. We want to verify the applicability of the design principles of natural photosynthetic systems to the 2D materials based on graphene, and to suggest particular optimal structures for light-harvesting to stimulate experimental research into realization of such materials. The research will be conducted in the Quantum Biology and Open Quantum Systems group of Dr. Tomáš Mančal at the Institute of Physics and will be co-funded by the Neuron Fund for Support of Science through a 2014 Neuron Impulse grant in Physics.
Applicants should have a PhD. in condensed-matter, chemical or biological physics or theoretical chemistry with a strong background in computational quantum chemistry or solid state theory.

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

Deadline: 14th August 2015
Contact: Dr. Tomáš Mančal
mancal@karlov.mff.cuni.cz
Charles University in Prague, Faculty of Mathematics and Physics
Institute of Physics

Title of the research project:

Call for PostDoc Positions in the area randon graphs and hypergraphs, extremal combinatorics, inequalities for sums of random variables, concentration of measure

Post-doc positions for one-year period from 1st January 2016
Department of Applied Mathematics and Computer Science Institute (Faculty of Mathematics and Physics of the Charles University invites applications for a one-year postdoctoral position in the area of random graphs and hypergraphs, extremal combinatorics, inequalities for sums of random variables, concentration of measure. Candidates from all areas of theoretical computer science and discrete mathematics will be considered. We are looking for candidates that would strengthen and/or complement existing research areas in our group; for further information about our research group at KAM (the Department of Applied Mathematics), and CSI (the Computer Science Institute of UK). A successful candidate is expected to pursue an active research program under supervision of one of the senior members of KAM or CSI.
A PhD in computer science, discrete mathematics or a closely related field is required.

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

Deadline: 14th August 2015
Contact: Prof. Martin Loebl
loebl@kam.mff.cuni.cz
Charles University in Prague, Faculty of Mathematics and Physics
Department of Applied Mathematics

Faculty of Medicine in Plzeň

Title of the research project:

Molecular and genetic mechanisms in the neuro-endocrino-immune regulation of mammalian reproduction

Department: Laboratory of Reproductive Medicine, Biomedical Center and Dept. of Histology and Embryology

Contact: Milena Kralickova, M.D., Ph.D.
milena.kralickova@lfp.cuni.cz

Title of the research project:

Cerebellar degeneration, its impact on cerebellar function and cell-based therapy in mouse models

Department: Laboratory of Neurodegenerative Disorders, Biomedical Center

Contact: Jan Cendelin, M.D., Ph.D.
jan.cendelin@lfp.cuni.cz

Title of the research project:

Development of rapid microbiological methods for rational antibiotic therapy

Department: Laboratory of Antibiotic Resistance and Applications of Mass Spectrometry in Microbiology

Contact: Jaroslav Hrabak, Ph.D., M.Sc.
jaroslav.hrabak@lfp.cuni.cz

Title of the research project:

Cell-based therapy in the regeneration of various tissues using mesenchymal stem cells

Department: Laboratory of Cellular Regenerative Medicine, Biomedical Center

Contact: Lucie Vistejnova, Ph.D., M.Sc.
lucie.vistejnova@lfp.cuni.cz

Title of the research project:

Evolution and interplay of antibiotic resistance plasmids an bacterial clones

Department: Laboratory of Antibiotic Resistance and Applications of Mass Spectrometry in Microbiology

Contact: Monika Dolejska, Ph.D., M.Sc.
monika.dolejska@lfp.cuni.cz

Title of the research project:

Molecular and bio-functional understanding of sepsis-induced organ dysfunction and hypothesis-driven design of new treatment concepts - translational experimental research program

Department: Laboratory Experimental of Intensive Care Medicine

Contact: Martin Matejovic, M.D., Ph.D.
matejovic@fnplzen.cz

Catholic Theological Faculty

Title of the research project:

Forms of Faith in a Postmodern Context: Philosophical, Theological and Ethical Perspectives

This project seeks to understand the nature of faith against the background of the theological turn in contemporary continental philosophy. It contends that many discuss faith improperly, either as something one ‘has’ or ‘loses’ when considering a religion, or as an ethical response to God or something divine-like primarily. The project intends to correct these oversights by first inquiring into the notion that faith itself is integral to human thought and which, thus, begins as a nonreligious, personal expression. In order to understand this, the project will retrieve from philosophy a basic idea of how faith operates within human thought as a response to the world. From there, the project should contribute to critical considerations of what happens to this understanding when someone converts to a religion, when someone’s faith turns toward God and religion through doctrine. As such, it will inquire into how faith is theologically understood and how doctrine directs the religious self toward an understanding of her faith.

The results of project should contribute to a stronger concept of faith, which can be philosophically and theologically understood and which, thus, has a rational and ethical purpose. The goal of project is to portrait various ways in which

faith exists outside of religion and how, within a religious tradition, faith becomes a process of understanding for the believer through her assent to doctrines that guide the enactment or ethical expression of her faith.
Contact: ThLic. Prokop Brož, Th.D.