



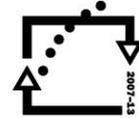
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MINISTERSTVO ŠKOLSTVÍ,
MLÁDEŽE A TĚLOVÝCHOVY



OP Vzdělávání
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INVESTICE DO ROZVOJE VZDĚLÁVÁNÍ

Tender for new postdoctoral positions

Institute of Botany, Academy of Sciences, v.v.i. announces a tender for the selection of 10 postdoctoral fellows on the project with reg. number: CZ.1.07/2.3.00/30.0048 financed from the European Social Fund and the state budget of the Czech Republic supported through the OP Education for Competitiveness. All selected postdocs will be involved in each of their selected subtopic (see below). Abstract of subtopics incl. further details and conditions of the tender are given in the tender documentation.

Job description (general, for all the same).

- Involvement of postdoctoral fellow in the activity (A) supports the creation of quality teams in research and development and their further development, especially initialization jobs and startup positions (within the project - key activities 3 and 4).
 - *The daily work on the project.*
 - *Opening seminar - for each topic - a total of 2 per project.*
 - *About 4 times a year a interdisciplinary teams workshop, a total of 20 seminars for the project.*
 - *Regular R&D conference - for each main topic once a year (6 conferences for the project).*
 - *PhD courses – in the final year of the project (each postdoctoral fellow will lead one course in his subtopic).*
 - *Closing seminar, designed for interested professionals in the field (one for each main topic, ie 2 in total).*
 - *Teaching. Mentors in collaboration with postdoctoral fellow (during the project) will use the newly acquired results in interdisciplinary teaching at a university in its already running courses, and the training of students in bachelor and master courses.*
- Involvement of postdoctoral fellow in activity (B) The promotion of intersectoral mobility, especially mobility between research institutions and the private and public sectors.
 - *Passing on 1-3 internships abroad (in scientific facilities, universities etc.). Specific internship depends on the selected subtopic and have already been determined by project mentors.*
- Participation in subtopic (each has its own subtopic)
- Scientific activities of the team and postdoctoral fellow leads to the outputs of its activities in the effect on the target group (training, seminars).
- Postdoctoral fellow is involved in key activities no. 2-6 according to the approved project documentation (available on request from the promoter).

Form of employment: contract, full time.

Length of contract: 29 months, from 01.02.2013 to 30.06.2015 (preferred, negotiable).

The salary: 45.000 CZK per month (gross wage).

Place of work. Place of work depends on selected subtopic. Postdoctoral activity during the project will be implemented in the following regions: Central Region (Přůhonice), South Bohemia (Třebon), South Moravia (Brno), Olomouc (Olomouc), Vysočina (Studenec).

Tender schedule.

21.12.2012 08:00 – 15.01.2013 12:00 - receipt of applications from candidates.

16.01 - 25.01.2013 - evaluation of applications of candidates.

25.01.2013 16:00 - announcement of the results of the selection procedure.



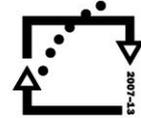
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Required documents for this tender.

Applicants are required to submit following documents:

- Evidence of achieving a PhD
- Curriculum vitae
- Cover letter, incl. selected subtopic and contact information (min. mailing address, phone, email)

Incomplete or invalid documentation can be reason for excluding candidates from the selection process. Documentation referred above will be sent by applicant in electronic form (scan of signed documents) to email: dolezal@butbn.cas.cz and also in print send documents by mail to following mail address:

Dr. Jiří Dolezal

Institute of Botany, Academy of Sciences, v.v.i.

Dukelská 135

379 82 Trebon

The envelope must contain (be labeled) min.:

- label "**Do not open**"
- marking "**Tender within the project reg: CZ.1.07/2.3.00/30.0048**"
- designation "**Selected position: postdoc č.XX**" (applicant is required to put the selected subtopic number in place of "XX")

List of Subtopics.

Each candidate in the selection procedure can apply for the position of postdoctoral fellow in one or more of the following subtopics.

Main Topic 1 / Téma 1.

Subtopic 1.a.1. Postdoc 1: The impact of biological invasions on reciprocal relationships in biological communities.

The aim is to quantify the costs and benefits in reciprocal relationship between bitterling fish and freshwater mussels. Bitterling lay their eggs into the gills of unionid mussels and mussels possess a larval stage parasitizing fish. Pilot study demonstrated that either the bitterling or the mussel may gain more benefit in this coevolutionary association and the roles of the host and parasite can be completely reversed. The project combines respirometry, histological, genetic and behavioural ecology methods and is based on comparative (interspecific and inter-population) approach. Fieldwork in Europe and China.

Subtopic 1.a.2 Postdoc 2: Host-parasite interaction in ecological and evolutionary context: a comparative approach.

The aim is to analyze relationship between variability in immune response (immune genes) and diversity of pathogen communities using comparative approaches and state-of-the-art methods for genetic analysis (next-generation sequencing). Results will be interpreted in ecological and evolutionary context (life history, population ecology and environmental and geographic parameters). Model taxa consist of European and Afrotropic passerine birds and murid rodents.

Subtopic 1.b.1 Postdoc 3: Plant hemiparasites – functional and evolutionary relationship.

The aim of proposed research is to explore the relationship of hemiparasitic plants with its host plants. The research will focus on the effect hemiparasites on taxonomic and functional diversity of the host plant community in the conditions of different productivity and on phylogenetic relationships of hemiparasites and their hosts. Field observations will be combined with the manipulative experiments



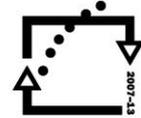
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done in both field and in laboratory. In the hemiparasite-host interactions the emphasis will be on species specific differences. For the determination of host response to parasitism the non-structural carbohydrate storage of hosts will be used.

Subtopic 1.b.2 Postdoc 4: General patterns in local and regional dynamics of plant populations.

The team is engaged in the research of population biology of plants (with emphasis on the critically endangered species), the identification of critical stages in the life cycle, interactions with herbivores and mycorrhizal fungi and the importance of polyploidy for population biology and success of plants in the landscape. In previous studies we obtained detailed knowledge on a wide range of single species. We, however, still lack the possibilities to generalize these results. Therefore, the existing (thorough, but limited to a relatively small set of species) data will be linked to the existing database containing data on various plant traits. The project will use data mining techniques to extrapolate the information on dynamics of single species to broader sets of species and build general trait based models linking species traits and species dynamics. This will help in further development of studies dealing with species dynamics and will extend our knowledge on species dynamics of local as well as landscape levels for both rare as well as invasive species.

Main topic 2 / Téma 2

Subtopic 2.a.1. Postdoc 5: The study of polyploidization as a dynamic process affecting plant variation.

The analysis of the transition between vegetative and reproductive phases of the life cycle across the genus *Chenopodium*. Integration of phylogenetics and developmental studies (evo-devo approach) using transcriptomics to shed light on the evolution of floral transition in this very diverse genus comprising species of various ploidy levels.

Subtopic 2.a.2. Postdoc 6: The study of plant genome and transcriptome as dynamic processes affecting plant variation.

The study of coexistence of multiple lineages of arbuscular mycorrhizal fungi in a root system of higher plants. Utilization of transcriptomic and genomic approaches to understand mutual relationships and interactions among the fungal symbionts and their host.

Subtopic 2.a.3. Postdoc 7: The application of next gen sequencing to the study of complex plant genomes.

Application of next generation sequencing for the study of highly complex plant genomes, containing frequent repeats owing to the polyploidization, gene duplication or recombination. Integration of genomic and transcriptomic methods for the analysis of differential expression, generation of transcription maps of specific genomic regions, and distinguishing gene expression of the parental genomes of the polyploids.

Subtopic 2.b.1 Postdoc 8: The role of whole-genome processes in invasion success of introduced plants.

The goal of the project is to better understand the impact of whole-genome processes (genome duplication, genome up- and downsizing, hybridization) on other plant traits, which can trigger invasive behaviour of introduced plant species. A suite of different cytogenetic, molecular and ecological techniques (flow cytometry, karyology, *in situ* hybridization, AFLP, large-scale parallel sequencing – 454, Solexa, common garden cultivation experiments) will be used to meet project's objectives. An eligible candidate is familiar with the above-mentioned methods and has an appropriate statistical background. Responsibilities of the postdoc will include (but are not restricted to):



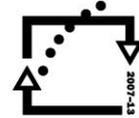
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- ploidy and genome size estimations using DNA flow cytometry, complemented by conventional chromosomal counts
- detailed insights into karyotype using techniques of *in situ* hybridization (FISH, GISH)
- phylogeographic analysis using selected nuclear and chloroplast markers and AFLP
- comparative genome analysis using large-scale parallel sequencing (454, Solexa)
- common-garden cultivation experiments comparing populations from primary and introduced ranges
- field studies comparing populations of invasive species at different stages of invasion in Central Europe
- interpretation of ecological and phenotypic traits in a phylogenetic framework

Subtopic 2.b.2 Postdoc 9: The role of whole-genome processes in adaptive radiation of plants

The goal of the project is to better understand how whole-genome processes and genome organization (genome duplication, genome up- and downsizing, hybridization) contribute to evolutionary divergence of plant groups that underwent rapid adaptive radiation. A suite of different cytogenetic, molecular and ecological techniques (flow cytometry, karyology, *in situ* hybridization, AFLP, large-scale parallel sequencing – 454, Solexa) will be used to meet project's objectives. An eligible candidate is familiar with the above-mentioned methods and has an appropriate statistical background. Responsibilities of the postdoc will include (but are not restricted to):

- ploidy and genome size estimations using DNA flow cytometry, complemented by conventional chromosomal counts
- detailed insights into karyotype using techniques of *in situ* hybridization (FISH, GISH)
- genome analysis using large-scale parallel sequencing (454, Solexa) of chloroplast genome

Subtopic 2.b.3 Postdoc 10: Transgenerational plasticity in clonal plants

Transgenerational plasticity (caused by epigenetic changes) has recently been recognized as a mechanism allowing phenotypic adjustments to local conditions to be passed on to sexually produced offspring. Although thus far it has been studied only in non-clonal plants, we propose that transgenerational plasticity is also applicable to asexually generated progeny, and that it can have multiple consequences for clonal plants. This hypothesis will be tested on a model species sampled in heterogeneous field conditions. Effect of transgenerational plasticity on performance of vegetative derived progeny in conditions of different degree of competition will be examined in manipulative experiments. The proposed project will bring entirely novel view on temporal dimension of phenotypic plasticity in clonal plants and contribute to understanding of ecology and evolution of clonality. As a model species will be selected root sprouting clonal plant.

Contacts.

For questions or concerns, please contact the project coordinator, Dr. Dolezal at the following contacts: Jiri Dolezal, Institute of Botany, Academy of Sciences of the Czech Republic, vvi, tel +420 774545707, email. dolezal@butbn.cas.cz