REGISTRATION FORM FOR CZECH SCIENTIFIC INSTITUTION

1. Research institution data (name and address):

Faculty of Science
Charles University
Ovocný trh 560
116 36 Praha 1

2. Type of research institution: Public university (veřejná vysoká škola)

3. Head of the institution: prof. MUDr. Milena Králíčková, Ph.D. – Rector

4. Contact information of designated person(s) for applicants:

Doc. RNDr. Fatima Cvrčková, Dr.rer.nat., Dr. – Department head
e-mail fatima.cvrckova@natur.cuni.cz, phone +420 221 951 683
Department of Experimental Plant Biology, Faculty of Sciences, Charles University
Binična 5, CZ 128 43 Praha 2, Czechia

5. Research discipline in which the strong international position of the institution ensures establishing a Dioscuri Centre:

Life Sciences: *Cellular and developmental biology* - cell biology, developmental biology, ageing biology, neurobiology

6. Description of important research achievements from the selected discipline from the last 5 years including a list of the most important publications, patents, or other results:

The centre will be hosted by the Department of Experimental Plant Biology of the Faculty of Sciences, Charles University, which has a long-standing record of internationally recognized research and publication achievements in the field of cellular and developmental biology of plants. The focus of present research in this area is especially investigation of molecular mechanisms of plant cell polarity in the context of individual development and environmental interactions (mainly biotic stress/pathogen attack responses), building to a large extent on previous priority discovery of the plant version of the conserved Exocyst protein complex. In the following list of selected important original research papersfrom last 5 years, names of authors affiliated with the department are shown in **bold**, corresponding authors marked by an asterisk (*):

Kulich I*, Vojtíková Z, Sabol P, Ortmannová J, Neděla V, Tihlaříková E, **Žárský V**. Exocyst subunit EXO70H4 has a specific role in callose synthase secretion and silica accumulation. Plant Physiol. 2018; 176(3):2040-2051. doi: 10.1104/pp.17.01693. (IF = 6.305, cited 45x)

Marković V, Cvrčková F, Potocký M, Kulich I, Pejchar P, **Kollárová E**, Synek L, Žárský V*. EXO70A2 is critical for exocyst complex function in pollen development. Plant Physiol. 2020; 184(4):1823-1839. doi: 10.1104/pp.19.01340 . (IF = 8.340, cited 5x)

Serre NBC, Kralík D, Yun P, Slouka Z, Shabala S, **Fendrych M*.** AFB1 controls rapid auxin signalling through membrane depolarization in Arabidopsis thaliana root. Nat Plants. 2021; 7(9):1229-1238. doi: 10.1038/s41477-021-00969-z.(IF = 15.793, cited 4x)

Synek L, Pleskot R, Sekereš J, **Serrano N**, Vukašinović N, Ortmannová J, Klejchová M, Pejchar P, **Batystová K**, Gutkowska M, Janková-Drdová E, **Marković V**, Pečenková T, Šantrůček J, **Žárský V*,** Potocký M*. Plasma membrane phospholipid signature recruits the plant exocyst complex via the EXO70A1 subunit. Proc Natl Acad Sci USA. 2021; 118(36):e2105287118. doi: 10.1073/pnas.2105287118. (IF = 11.205, cited 2x)

7. List of no more than 3 important research projects in the selected discipline awarded in national and international calls to the institution in the last 5 years:

NPUI LO1417 Centre of Experimental Plant Biology

PI Prof. Viktor Žárský

Ministry of Education, Youth and Sports of the Czech Republic

48 075 000 CZK (2015-2019)

ERC Starting Grant CELLONGATE - Unravelling the molecular network that drives cell growth in plants

PI Dr. Matyáš Fendrych

European Research Council

1 498 750 EUR (2018-2023)

GAČR/DFG 19-02242J Interplay of MLO and exocyst complex proteins in localized secretion in plant cells

PI Prof. Viktor Žárský (partner lab Prof. Ralph Panstruga - Univ. Aachen)

Grant Agency of the Czech Republic/Deutsche Forschungsgemeinschaft

5 616 000 CZK (2019-2021)

8. Description of the available laboratory and office space for a Dioscuri Centre:

For the beginning phase of the project, part of the existing office and laboratory space will be made available for the new team through spatial reorganization within the hosting department, located in Viničná 5, Prague. Expansion of the department by remodelling of the attic space is currently at an advanced planning stage. When accomplished, this will provide additional space, which, however, is not essential for accommodating the new team, The Centre will relocate into the newly built Campus Albertov Biocentrum as soon as possible (hopefully in 2026).

The team also will have access to common cultivation facilities of the department, as well as to shared service facilities of the Faculty of Science.

9. List of the available research equipment for a Dioscuri Centre:

The team of the Dioscuri centre will share large common equipment with the existing teams of the department, namely the facilities for plant material culture (climate-controlled cultivation chambers, culture rooms with standardized growth conditions, and a GMO approved greenhouse), large instruments for molecular biology, and facilities for fluorescence microscopy. Shared core facilities provide state-of-art equipment for advanced optical microscopy (confocal microscopes Zeiss LSM 880 capable of FLIM and Leica TCS SP8 with FRAP and FRET technology, an Olympus ScanR microscope, a Zeiss Z1 lightsheet microscope, and a Zeiss Elyra microscope suitable for TIRFM and superresolution observations), electron microscopy (both scanning and transmission), DNA sequencing, genomics and proteomics (including RT-PCR) and mass spectrometry.

10. List of the additional benefits (other than listed in the conditions for hosting a DC, see invitation) that the Institution declares to provide for a Dioscuri Centre (i.e.: additional funds, personal benefits, dual career options, relocation support or other):

The new team leader will have the opportunity to recruit additional student members of the Centre team via participating in undergraduate and graduate teaching, which may include not only supervision of graduate and undergraduate students but also possible development of new courses. If interested, the PI will have an opportunity to work towards his/her habilitation and towards future tenure according to the current legislation.

Partial financial support for graduate student members of the Dioscuri team will be provided in the form of a stipend paid from institutional sources independent of and in addition to resources of the project or any other grants.

11. Other information about the internationalization of the research institution, international researchers employed at the institution, the availability of English language seminars etc.:

The host department employees at full or part-time academic (i.e. teaching + research) or researcher position, including some graduate students employed as part-time members of various grant research teams, currently include citizens of ten countries – besides of Czech citizens, we have scientists and students from USA, India, China, Italy, Spain, Morocco, Croatia, Germany and Slovakia. There are also students of the department without employee status coming from additional countries – namely Iran, Russia and South Africa. While most of the Department´s teaching activities are in Czech, some seminars (including presentations given by graduate students) are in English, and also some courses are taught in the English language. In 2020, the department hosted Prof. Patrick Hussey, Durham University, UK as a visiting professor during his sabbatical.

Members of the department maintain collaboration with multiple researchers abroad, as documented by co-authored publications and shared research projects. In the field of plant cell and developmental biology, publications from the last 5 years involve co-authorship with scientists from Austria, Australia, Belgium, China, France, Germany, Israel, Japan, The Netherlands, Poland, Spain, United Kingdom and USA (e.g., Serre et al doi: 10.1038/s41477-021-00969-z; Synek et al., doi: 10.1073/pnas.2105287118, Schwechheimer et al, doi: doi: 10.1093/plphys/kiab132, Brejšková et al doi: 10.1111/tpj.15205, Larson et al doi: 10.1105/tpc.20.00280, Jimenez-Quesada et al doi: 10.3389/fpls.2019.01149, Glanc et al doi: 10.1016/j.cub.2021.02.028, Fendrych et al 10.1038/s41477-018-0190-1).