

# CEITEC at Masaryk University



## **Our Vision**

What we aspire to be

Leading European research institute in life sciences, known for its discoveries



## **Our Mission**

Who we are

CEITEC MU is a research institute of Masaryk University and a member of the CEITEC consortium that aims to improve quality of life and human health through scientific innovations



## **Our Values**

What defines us

Curiosity, Scientific independence, Collaboration, Knowledge sharing, Integrity, Inclusiveness



## Our Strategic Priorities

### What matters to us

Excellent research, Societal relevance and recognition, Governance and human resources, Research infrastructure, Supporting future leaders in research



## Our Profile Topics

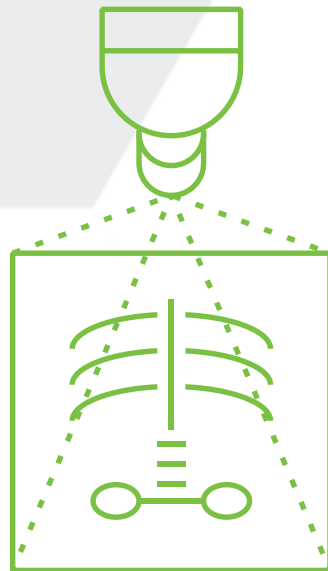
### What we work on

- Harnessing knowledge of plant biology for crop improvement
- Infectious diseases
- RNA / nucleic acids in health and disease
- Correlative approaches to connect dynamics and structure of living systems
- Cancer biology
- Brain disorders

# Discoveries of Science



**PENICILLIN**



**ROENTGEN**



**INSULIN**



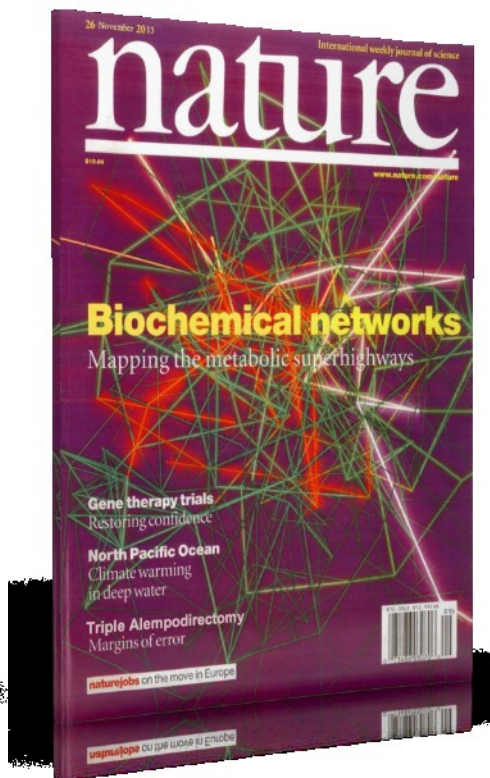
BRNO



# Understanding the Future



Historical Legacy



Scientific Results



CEE Leadership

# Improving Quality of Life Through Scientific Research



State of the Art  
Infrastructure



People

Vibrant **Scientific  
Community**



# Built on a Foundation of 6 Core Institutions





# CEITEC MU Highlights (2022)



**32**

Mil. EUR  
Total Budget



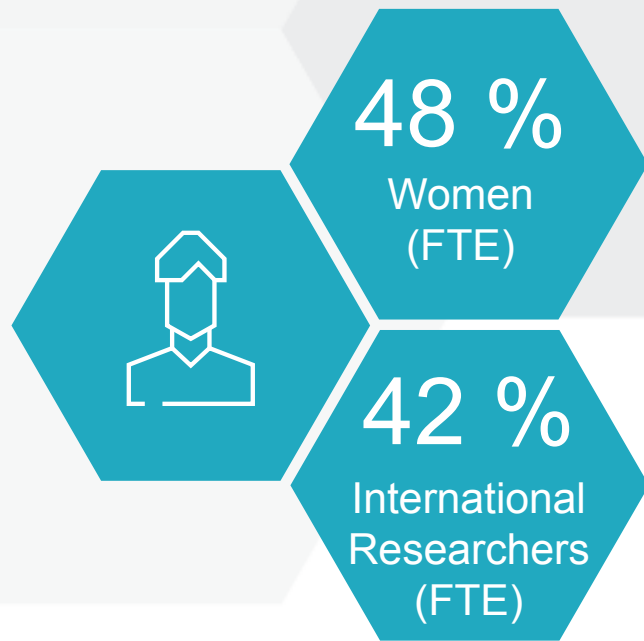
**28**

Research  
Groups

**12**

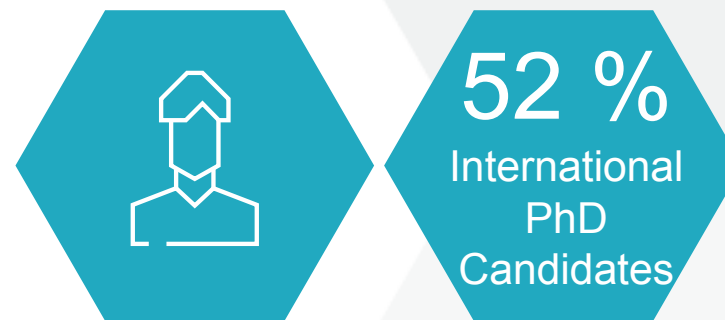
Core  
Facilities

# CEITEC MU Highlights in Detail (2022)



**261**

Scientific  
Employees  
(FTE)



**212**

PhD  
Candidates

# CEITEC MU Highlights (2021)



# Management Excellence



**COORDINATION  
BOARD**

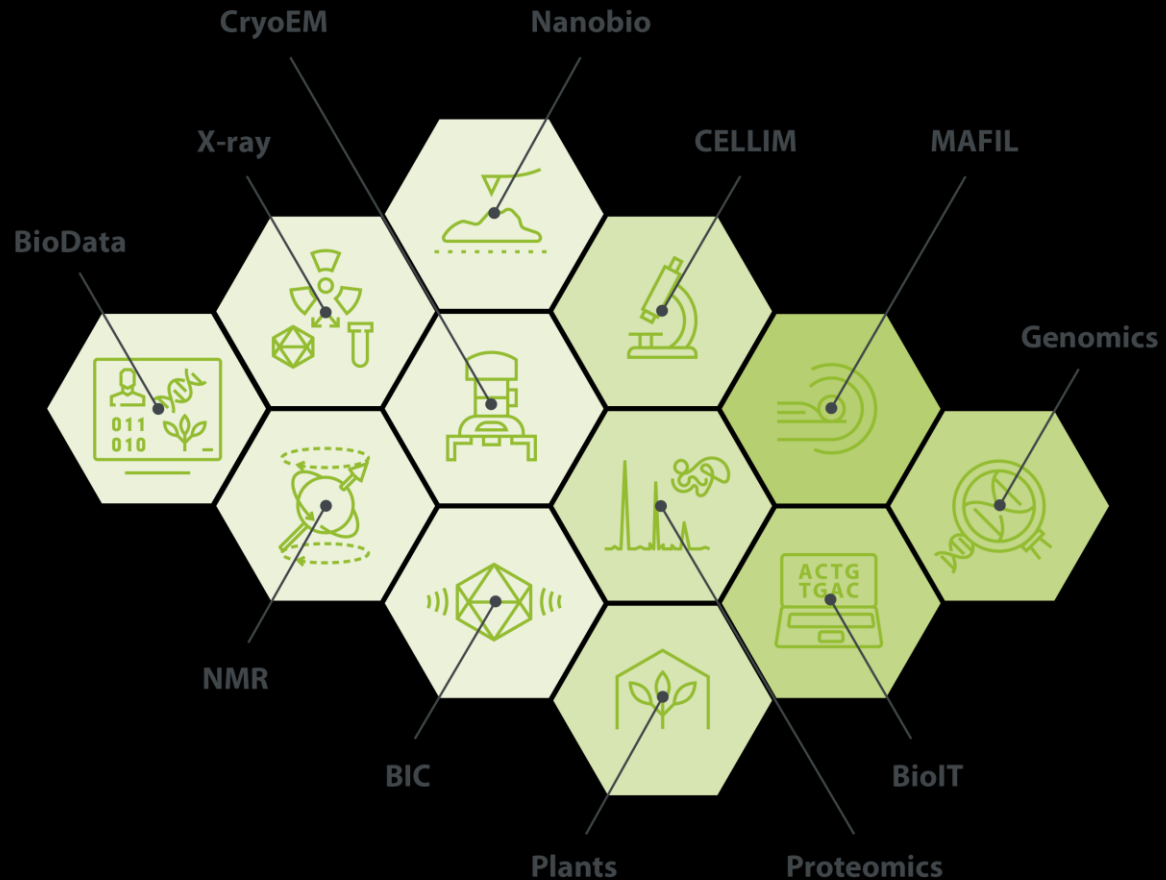


**INTERNATIONAL SCIENTIFIC  
ADVISORY BOARD**



**EVALUATION**

# Core Facilities



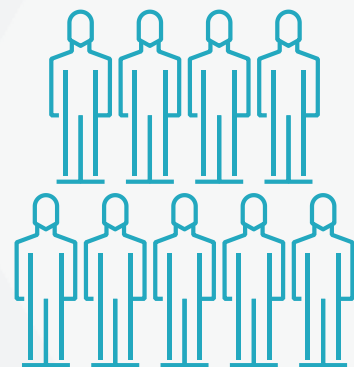
BIC	Biomolecular Interactions an Crystallization
BioData	Biological Data Management and Analysis
BioIT	Bioinformatics
CELLIM	Cellular Imaging
CryoEM	Cryo-electron Microscopy and Tomography
Genomics	Genomics
MAFIL	Multimodal and Functional Imaging Laboratory
NMR	Josef Dadok National NMR Centre
Plants	Plant Sciences
Proteomics	Proteomics
X-ray	X-ray Diffraction and Bio-SAXS



# Our People

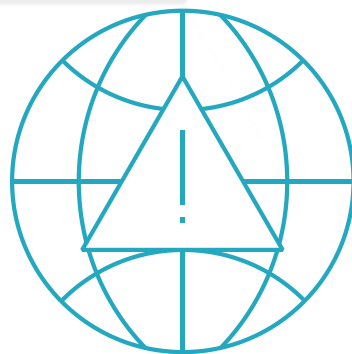


# Addressing Global Challenges



9

Billion People  
in 2040



CEITEC Agricultural  
Sustainability



CEITEC Biomedicine



# Main Research Areas



Structural  
Biology



Plant Biology



Molecular  
Medicine



Neurosciences

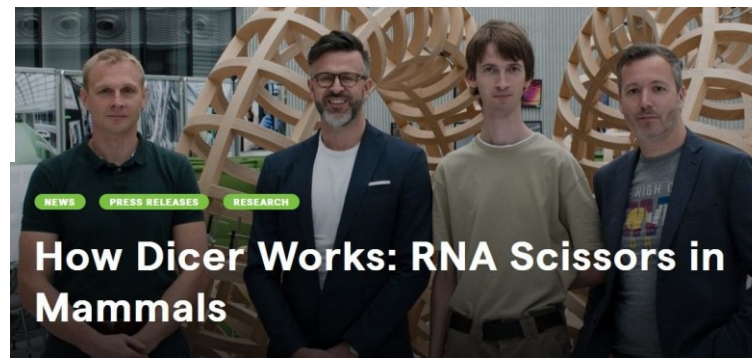
# “The triumph“ of 2022



Share 14. Sept. 2022

Share The findings were published in the scientific journal Nature

Share The scientific journal NATURE has just published the discovery of the research team led by [Dalibor Blazek](#) that describes a previously unknown mechanism regulating RNA splicing – an essential process for the control of gene expression. RNA splicing is performed by



Share

Share [Albert Cairó](#), [Karel Říha](#) and their colleagues have discovered a previously unknown mechanism that is responsible for reprogramming gene expression during the transition when one cell differentiates into another one. The mechanism occurs at the end of meiosis.



Share 4. Nov. 2022

Share **This discovery offers a new way of defence against RNA viruses in humans**

Share [Richard Stefl](#) from CEITEC Masaryk University (MU) and Petr Svoboda from the Institute of Molecular Genetics of the Czech Academy of Sciences (IMG CAS) and their colleagues have revealed the unique mechanism of action of mammalian Dicer. Dicer is an RNA-cutting

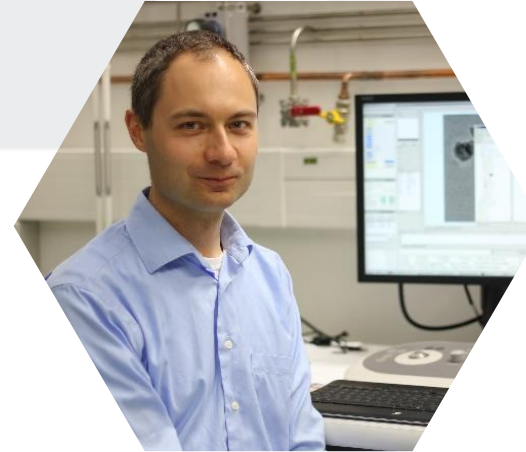
# CEITEC MU ERC Grant Holders



**Richard Štefl**

**ERC Consolidator Grant**

Dynamic Assembly and Exchange of RNA Polymerase II CTD Factors



**Pavel Plevka**

**ERC Starting Grant**

Structural Study of Human Picornaviruses



**Marek Mráz**

**ERC Starting Grant**

Signaling Propensity in the Microenvironment of B Cell Chronic Lymphocytic Leukemia



**European Research Council**

Established by the European Commission



**Robert Vácha**

**ERC Consolidator Grant**

PeptideKillers

# Vibrant Scientific Community at CEITEC

## Scientific Events

**MUNI CEITEC FNUSA ICRC**

### Life Sciences Seminar Series

Spring 2021

NO LSSS-THURSDAY, 4:00 P.M.,  
NEBEL LECTURES-THURSDAY, 5:00 P.M.

ONLINE VIA MS TEAMS - CODE TO JOIN THE TEAM: eeymbmr  
LINK TO PARTICIPATE LECTURES WILL BE POSTED ALSO ON THE WEBSITE

MARCH	MAY
11. 03. 2021 <b>Filly Studies of Ovarian Ailia where Do the Proteins Keep the Placenta Healthy?</b> KATEŘINA ŠAM, University of South Bohemia in České Budějovice, Czech Republic Hosted by Slavica Pátek	04. 05. 2021 <b>How Do Proteins Evolve</b> JAMES S. TAYLOR, University of Exeter, Exeter, United Kingdom Hosted by Jitka Fajkus
05. 03. 2021 <b>Small RNAs in the Mammalian Germine: A Lesson from Humans</b> PETR VOJTEHA, Institute of Molecular Genetics CAS, Czech Republic Hosted by Vladimír Vlček	13. 05. 2021 <b>From Single Molecules to Live Cells: Imaging Nuclear Actin-Promoter Interactions</b> OMAR RUBBA, Imperial College London, United Kingdom Hosted by Lenka Vondrušková
01. 04. 2021 <b>How to Build a Cell-like-Coated Vesicle: Barbitone, Thionin &amp; Surface</b> ZUZANA KABLECOVÁ, Centre for Medical Research, Oxford Brookes University, UK Hosted by Lenka Vondrušková	20. 05. 2021 <b>The Internet of Animals</b> MARTIN WINKLER, Max Planck Institute for Ornithology, Germany Hosted by Vladimír Vlček
08. 04. 2021 <b>Cytotoxic T Cells in Immunity and Self-Tolerance</b> EMILIO BERGAMI, Institute of Molecular Genetics CAS, Czech Republic Hosted by Markéta Měsíková	27. 04. 2021 <b>Investigation of Cellular Mechanisms Regulating CD20 Expression in Malignant B Cells</b> Aneta Ledererová, Michal Svoboda IG Hosted by Vladimír Vlček
15. 04. 2021 <b>Molecular Principles of Epigenetic Reprogramming in Mice</b> PETRA HAJDŮVÁ, Imperial College London, United Kingdom Hosted by Vladimír Vlček	28. 04. 2021 <b>Sweet Taste of Heavy Water</b> PAVEL JANDHOVÝ, Institute of Organic Chemistry and Biochemistry of the CAS, Czech Republic Hosted by Vladimír Vlček
22. 04. 2021 <b>Wet-Generated Placental Cell Polarity Signaling in Development and Disease</b> MAREK MČEDK, Icahn School of Medicine at Mount Sinai, USA Hosted by Vladimír Vlček	

*If you wish to engage in online discussion with the speaker, contact the corresponding host.*

WITH: S010BARBERS010S - W003 - 22  
W03 - W030LLECTURES - W003 - 22

**CEITEC MUNI**

### Molecular Medicine Seminar

Spring 2021

Tuesdays at 9.30 a.m., online

APRIL	MAY
06/04/2021 <b>Milan Hluchý</b> Doubou Běloh IG Elucidating Role of Cdk11 in Gene Expression Using Chemical Inhibition	04/05/2021 <b>Julia Bohoslová</b> Ondřej Slávik IG Noncoding RNAs in Diagnostics, Prognostics and Therapy of Renal Cell Carcinoma
13/04/2021 <b>Nana Svatošová</b> Sarka Procházková IG 3D Culture of Leukemic B Cells	11/05/2021 <b>Anastasya Volokhina</b> Sarka Procházková IG Exploring Transposon Activity in Hematological Malignancies
20/04/2021 <b>Eliška Chalupová</b> Pavla Šimková IG Looking at RNA-binding Proteins Through Deep Neural Networks	18/05/2021 <b>Sonali Sharma</b> Markéta Měsíková IG The Role of miR-29 in Regulation of CLL-T cell Interactions in CLL
27/04/2021 <b>Aneta Ledererová</b> Michal Svoboda IG Investigation of Cellular Mechanisms Regulating CD20 Expression in Malignant B Cells	25/05/2021 <b>Veronika Rájecká</b> Sarka Procházková IG The New Machines Involved in the Formation of 3' termini of Eukaryotic mRNAs

Funded under FP7 project The ERA Chair Culture as a Catalyst to Maximize the Potential of CEITEC (contract no. 612366).

**CEITEC MUNI**

### PRINCIPAL INVESTIGATOR SEMINAR SERIES AUTUMN 2021

WHERE: University Campus, Building B11, Room 205  
WHEN: Every Friday - from 1300 October - December (Autumn Semester)

Due to possible emergency measures concerning the spread of coronavirus, the events may be cancelled. Please read our website or Events of the Week for updates.

SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
24/09/2021 <b>Pavel Tománek</b> Masaryk Institute of Neurological Cell Biology and Genomics, CEITEC-MU Evolution of Methylgenetics	01/10/2021 <b>Pavel Bouchal</b> Faculty of Science, Masaryk University Proteomics Portrait of Breast Cancer	05/11/2021 <b>Jozef Bryja</b> Faculty of Science, Masaryk University Why Are Biodiversity Hotspots so Diverse and How Can the Genetic Studies of African Rodents Help to Understand It?	03/12/2021 <b>Žbyněk Prošek</b> Faculty of Science, Masaryk University Transient Kinetics, Microfluidics and Machine Learning in Protein Engineering
08/10/2021 <b>Jan Křivánek</b> Faculty of Medicine, Masaryk University Ever Growing Rodent Teeth: Implications for Regenerative Dentistry	15/10/2021 <b>Goazad Bernard</b> Centre for Translational Medicine, St. Anne's University Hospital Mechanisms Underlying Immediate Axonal Response to Injury	12/11/2021 <b>Martin Marek</b> Faculty of Science, Masaryk University Engineering of Ancestors: As a Way to understand Enzyme Evolution	10/12/2021 <b>Nicola Silva</b> Faculty of Medicine, Masaryk University PARF Establishes a Functional Module with BRCA1-BARD1 That Ensures Crossover Homologous and Safeguards Genome Integrity During Meiosis
15/10/2021 <b>Stanislav Mazurek</b> Faculty of Science, Masaryk University Data-Driven Protein Engineering	26/11/2021 <b>Ondřej Slávik</b> Molecular Oncology, Masaryk University A real-world Genomics-guided Precision Medicine in Pediatric Oncology	19/11/2021 <b>Gabriel Demo</b> Department of Biology, Faculty of Science, Masaryk University Time involved: Cytochrome c promotes Ribosome Translocation in Chaperon Specific	20/04/2021 <b>Jihedra Thakur</b> HNRK, New Delhi, India Structure and Function of Plant Mediator Complex Hosted by: Jitka Fajkus

EVERYONE IS WELCOME

CONTACT:  
[https://bit.ly/CEITEC\\_PI\\_SeminarSeriesAutumn2021](https://bit.ly/CEITEC_PI_SeminarSeriesAutumn2021)

sponsored by **BioVendor**

**CEITEC MUNI**

### Mendel Centre Seminars Spring 2021

Tuesdays 2 p.m., Online

MARCH	MAY
09/03/2021 <b>Markéta Pěnčíková</b> Faculty of Science, Masaryk University, CEITEC, Czech Republic Hormonal Regulation of de Novo Oligogenesis Hosted by: Jitka Fajkus	27/04/2021 <b>Arun Sampathkumar</b> IIS, Bangalore Mechanical Control of Cytoskeletal and Cell Wall Machinery Regulating Morphogenesis in Yeast Hosted by: Jan Hejlicka
16/03/2021 <b>Sarka Valuchová</b> CEITEC, Czech Republic Sex Life of Plants in the Spotlight of Lightsheet Microscope Hosted by: Karel Růžka	04/05/2021 <b>Katellina Měsíková</b> CEITEC, Czech Republic Effects of Long-term High-temperature Stress on Biosocial Invasive Reproductive Growth Hosted by: Melana Robert-Balcanova
23/03/2021 <b>Mert Dogan, Wanda Shan</b> CEITEC, Czech Republic Phylogenetics and Reproductive Evolution in the Tribe Heliotropinae (Boraginaceae) Interphase Chromosome Organization in Crucifer Species Hosted by: Martin Grah	11/05/2021 <b>Andrea Chini</b> CNR-ICM, Madrid, Spain When Chemistry Meets Biology: an Alternative Isomeric Biogeochemical Pathway Hosted by: Jan Zouhar
30/03/2021 <b>Isabella Spingolone</b> CEITEC, Czech Republic Generalized Linear Mixed Regression Models as a Tool in Agriculture and Plant Sciences Hosted by: Jan Hejlicka	18/05/2021 <b>Adam Vrlan Smith</b> NIBS, Wu, Nanjing The Role of Auxin Responses in Triggering Post-Fertilisation Development of Fruits and Seeds Hosted by: Melana Robert-Balcanova
06/04/2021 <b>Adria Sans Sánchez</b> CEITEC, Czech Republic Lateral Roots and Auxin - Expanding the Legacy Hosted by: Tomasz Hodynski	25/05/2021 <b>Paul Tarr</b> CALTIO, USA Spatio-Temporal Uncoupling of Cytosolic Signaling and WUSCHEL Expression Reveals Distinct Roles for Each in the Regulation of the Shoot Stem Cell Niche Hosted by: Jan Hejlicka
20/04/2021 <b>Jihedra Thakur</b> HNRK, New Delhi, India Structure and Function of Plant Mediator Complex Hosted by: Jitka Fajkus	

[bit.ly/MendelCentreSeminarSeriesCEITECSpring2021](http://bit.ly/MendelCentreSeminarSeriesCEITECSpring2021)

# Vibrant Scientific Community at CEITEC

## Collaboration & Partnerships



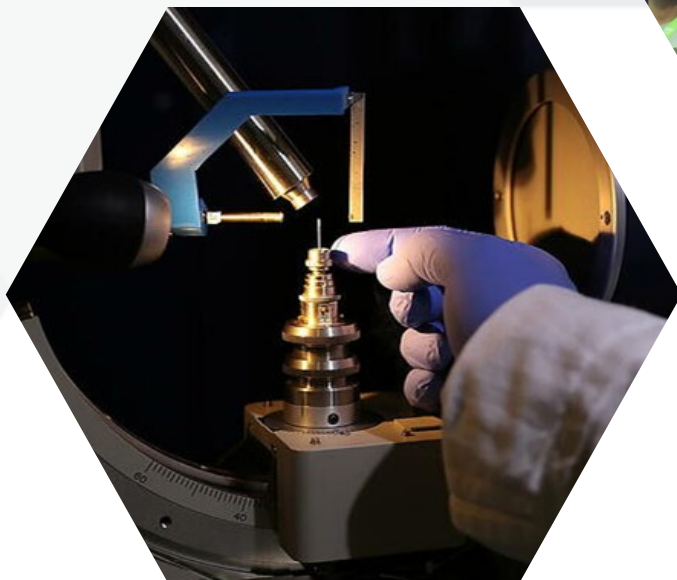
# Vibrant Scientific Community at CEITEC

## International Staff & PhD Program



# Reasons to Choose CEITEC

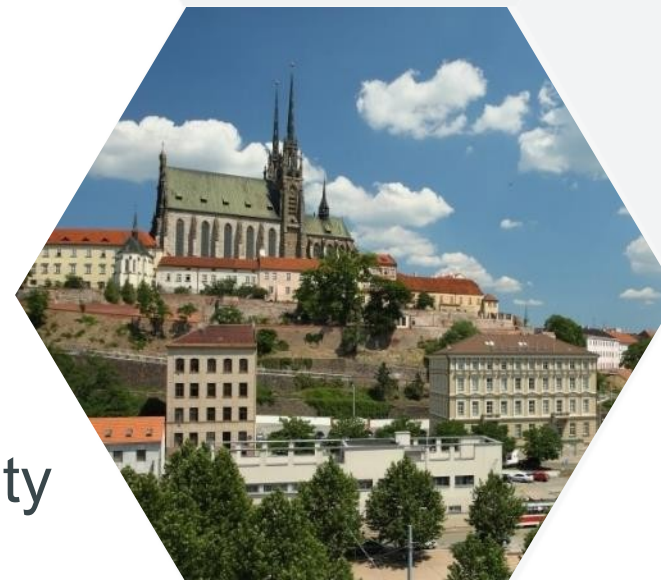
Breakthrough  
Technologies



International  
Scientific  
Community



High Quality  
of Life





HR EXCELLENCE IN RESEARCH

# HR Award

**CEITEC MU – a proud holder of this award!**





# Brno for Living – Safe, Vibrant & Convenient

#4 Most Popular City in the World for Students  
(topuniversities.com)

#6 Safest Country in EU  
(European Commission)

Prague

#1 Best City for  
EXPAT Support  
(Financial Times)

Excellent Health-Care  
Coverage

3.8% of GDP for Sciences  
and Research

**BRNO**

Bratislava

Mild Climate

EU, Schengen,  
NATO, OECD Member

Vienna



# Improving Quality of Life and Human Health Through Scientific Research



Legacy of Great Science



Worthy Partner

Excellent Scientific Results



# CEITEC PhD School

- **Life Sciences and Molecular Medicine PhD Programmes**

- 4-year PhD [program](#)
- Above-standard [funding](#)
- State-of-the-art [core facilities](#)
- [Coursework](#) in your chosen [field](#) and soft skill courses
- International and interdisciplinary environment
- Wide range of [topics](#) from experienced supervisors
- Support of mentoring and career development activities

- **More information:** [www.ls-phd.ceitec.cz](http://www.ls-phd.ceitec.cz)

- **Overview of CEITEC research groups:** [www.ceitec.eu/research-groups](http://www.ceitec.eu/research-groups)

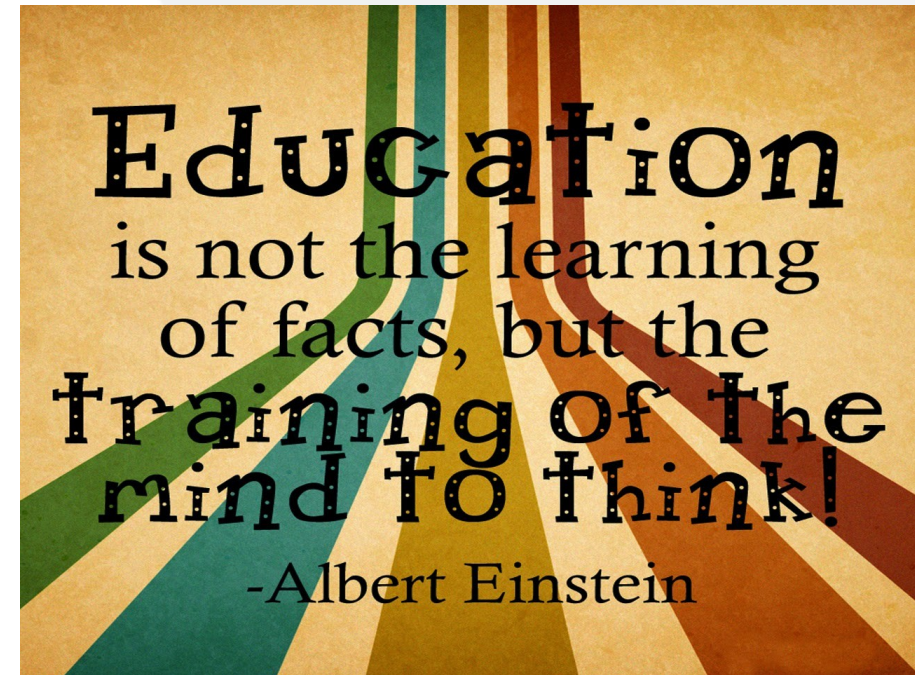


## CEITEC PhD School - Life Sciences and Molecular Medicine

- 4-year PhD [program](#)
- Above-standard [funding](#)
- [Coursework](#) in your chosen [field](#) and soft skill courses (publishing, funding...)
- International and interdisciplinary environment
- Wide range of [topics](#) from experienced supervisors

# Training and Career Development

- Support of career development and well-being of our researchers
- Well-balanced portfolio of courses in soft skills and transferable skills
- Relevant and competitive skill set for successful life science career
  - with regard to global standards and reflect the needs of the scientific community CEITEC
- Examples:
  - Academic Writing/Presentation Skills in English
  - Science Communication Course: Present Your Research Results with Confidence
  - From Idea to Start-Up
  - Open Science and Your Research



# Life after PhD

- Lectures series with successful researchers from academia and the private sector who share their experiences

## Company Visit

- Company presentation
- Opportunities for cooperation
- The tour company premises

### Life after PhD with Adrian and Kate Krainer

5. 3. 2020, 13:10 - 14:10 CEITEC, Building A35/Room 211

Adrian Krainer and Kate Krainer [Add to my calendar](#)



Join us for the next session of the popular **Life After PhD** event series. This time with Adrian Krainer Ph.D. and Kate M. Creasey Krainer Ph.D. Professor Adrian Krainer is biochemist and molecular geneticist from the Cold Spring Harbor Laboratory. In 2019, he was awarded the Breakthrough Prize in Life Sciences for the development of an effective antisense oligonucleotide therapy for children with the neurodegenerative disease spinal muscular atrophy. Dr. Kate Krainer is a plant geneticist and serves as President of Grow More Foundation with a clear mission to promote the responsible use of science

to solve the world's global agricultural problems. Don't miss this great opportunity to meet Adrian and Kate and get some first-hand career tips from two science celebrities!

**GeneProof**  
Molecular diagnostics for your routine

[About us](#) [Products](#) [Solutions](#) [Support](#) [News](#) [Contact](#)

**Covid-19 • Flu • RSV GPack -  
Differential diagnostics of 5 pathogens  
from one sample in a single run**

[READ MORE](#)

**Molecular diagnostics for your routine**

GeneProof is the biotechnological company providing customers with technologically advanced solutions in the field of molecular in vitro diagnostics of serious infections and genetic diseases.



### Life after PhD with Katerina Falk

Katerina Falk  
Helmholtz-Zentrum Dresden-Rossendorf

12/10/2020, 10.00

CEITEC MU / Kamenice 5, Brno / A35/211

Join us for the next session of the popular Life after PhD event series. This time with world-renowned physicist and science popularizer Katerina Falk, Ph.D. She will share with you her career path, how to combine motherhood and science, how mentoring works in science, and much more.

MUNI

# Mentoring

- At CEITEC MU, mentoring is a part of the **Thesis Advisory Committee (TAC)**:
  - System of **individual quality assessment (IQA)** of PhD students that led to the successful completion of doctoral studies up to the defense itself
  - Every PhD candidate enrolled in a PhD Programme under the CEITEC PhD School must be supervised and mentored during their studies by the TAC
- Support of the „**peer mentoring**“ activities - sharing experiences between mentees:
  - **Tea time meetings** (voluntary and organized by young scientists)
  - activities of the **CEITEC PhD Student Committee**



# Student's Activities - PhD Retreats, Tea Times...

## PhD Retreat

- Event for students from CEITEC and from other institutes
- Networking and sharing good practice
- Initiating interdisciplinary cooperation
- Opportunity to present research results and improve presentation skills



## CEITEC Tea Time

- Informal tea / coffee meetings



# Postdoc Peer Committee

- Established in 2019
- The goal is to hear the voice of CEITEC MU postdocs, to **understand their needs and jointly seek for solutions** to problems that we can solve
  - Identifies institutional strengths and weaknesses, suggest and jointly with the administration implements solutions that fit the postdoc needs.
- Postdocs are drawn to grass-roots activism to create better working conditions for themselves and their peers.
- **Postdoc Retreats**
  - Event for postdocs from CEITEC and from other institutes
  - Networking and sharing good practice
  - Initiating interdisciplinary cooperation





# Internships at CEITEC MU

- Boost your scientific career
- Find out if science is right for you
- Contact: directly the group leader of a chosen group: [www.ceitec.eu/research-groups](http://www.ceitec.eu/research-groups)



# Cooperation with Industry

The cooperation with CEITEC brings you the following benefits:

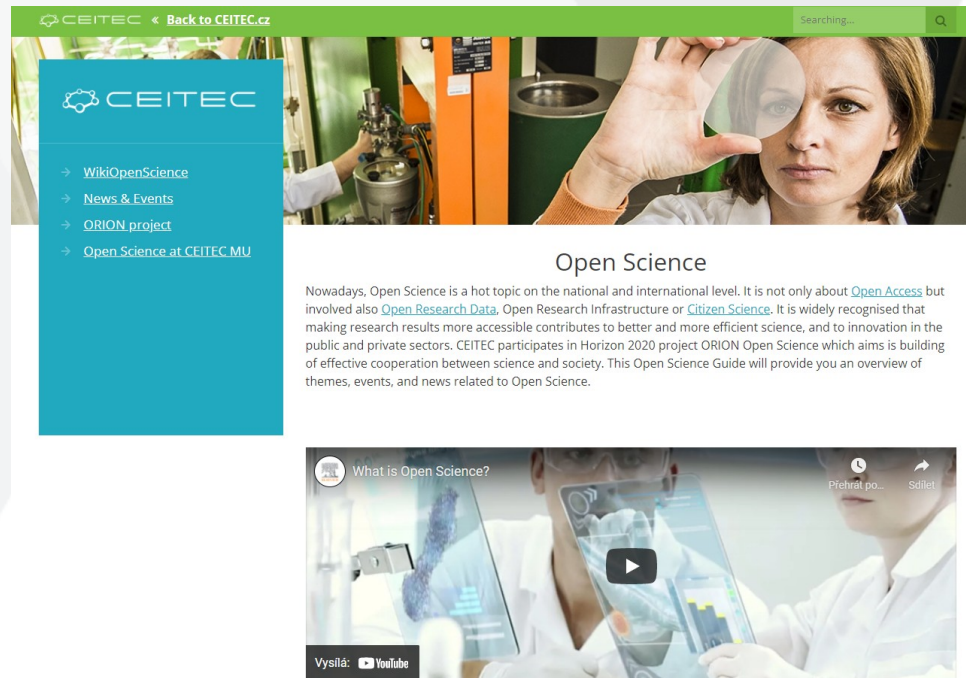
- quick access to the latest scientific knowledge, the possibility of expert consultations and to the transfer of know-how,
- building a brand on the university grounds with the opportunity to promote your company at professional events of the institute (professional training, workshops, conferences),
- access to the most modern equipment in South Moravia (online reservation of equipment on the web <https://www.ceitec.eu/core-facilities/>) and the possibility of training for your employees,
- collaborative research or complete tailor-made services (from project design to data analysis and interpretation),
- the possibility of involvement in joint grant projects and national and international research infrastructures,
- internships for your employees at CEITEC MU, internships for PhD students in your company, the opportunity to find new employees
- more info at: <https://www.ceitec.eu/industry-cooperation/>

# Examples of cooperation with industry in 2020/2021



# Open Science

The CEITEC MU supports the **principle of openness** to the whole of the research process ranging from research outputs to underlying data as the most effective way in which they can be publicly and freely available to and (re)usable by other researchers and the general public.



CEITEC

- WikiOpenScience
- News & Events
- ORION project
- Open Science at CEITEC MU

## Open Science

Nowadays, Open Science is a hot topic on the national and international level. It is not only about [Open Access](#) but involved also [Open Research Data](#), Open Research Infrastructure or [Citizen Science](#). It is widely recognised that making research results more accessible contributes to better and more efficient science, and to innovation in the public and private sectors. CEITEC participates in Horizon 2020 project ORION Open Science which aims at building of effective cooperation between science and society. This Open Science Guide will provide you an overview of themes, events, and news related to Open Science.

What is Open Science?

Vysílá: YouTube





CEITEC



@CEITEC\_Brno

