



# Plant Sciences Core Facility

## What we do

Plant Sciences Core Facility is an open CEITEC laboratory providing access to the research infrastructure for basic plant growth, environmental simulation and phenotyping analyses.

### **Genome evolution across the plant kingdom**

Our growth chambers are used by researchers from the Martin Lysak lab in CEITEC who carrying out research in the field of comparative and evolutionary plant cytogenetics to get new insights into the mechanisms and constraints of chromosome and karyotype evolution in plants, and to amalgamate comparative plant cytogenetics, genomics and phylogenetics.

### **Telomeres in chromosome stability and plant speciation**

The core facility infrastructure help researchers from the Jiri Fajkus and Karel Riha labs of the Mendel Center for Plant Genomics and Proteomics in CEITEC to run projects in the field of telomere biology, chromatin structure and epigenetics. Using unique features of plant systems (namely their high developmental plasticity), and their comparison to yeast or animal models, the aim is to characterise pathways involved in control of chromosome stability and distinguish between specific and general mechanisms involved. Outcomes of the studies (e.g., understanding mechanisms contributing to genome stability, aging or adaptation to changing environmental conditions) can be applied in agriculture, biotechnologies or medicine.

### **Molecular mechanisms underlying the regulation of plant development by plant hormones**

We provide services to researchers investigated hormonal signaling mechanisms in plants: Jan Hejatko lab, Helene Robert Boisivon lab and Tomasz Nodzynski lab of CEITEC MU. Plant hormones, particularly auxins and cytokinins were found to be major regulators of intrinsic developmental programs

#### **CEITEC**

Kamenice 753/5, Brno, 625 00  
University Campus Bohunice  
Buildings A2 and A26  
Czech Republic  
[www.ceitec.eu/plant-sciences](http://www.ceitec.eu/plant-sciences)  
[plants@ceitec.muni.cz](mailto:plants@ceitec.muni.cz)



Walk-in plant growth chamber (PSI) with open shelves.



Greenhouse chamber enable maintaining controlled growing conditions of temperature and humidity.



Walk-in plant growth chamber (PSI) with closed cultivation banks serve for precisely controlled plant cultivation and comparison studies.



Plants in closed growth bank grown under the high light stress.

associated with changes of differentiation status of plant cells and tissues. Identification of basic molecular principles involved in the regulation of plant cell division and differentiation will provide developmental model useful in the comparative biology approaches and identification of corresponding regulatory and developmental events even in non-plant systems.

## Services and Methodologies Provided

The Core Facility provides academic community with access to advanced plant growth technologies and highly trained staff. We operate 15 fully controlled walk-in growth chambers (phytotrons) and 10 greenhouses to provide defined environment for controlled plant growing to conduct many types of controlled environment experiments, from the simplest to the most complex. We are able to control: temperature, humidity, light intensity and light quality, day and night length. For optimum plant growth light-emitting diodes (LEDs) as a sole light source are used. Thus provides excellent spectral quality with high irradiance for plant physiology applications. In some chambers the different light wavelengths are possible to combine: UV<sub>365,385</sub>, blue<sub>400,450</sub>, green<sub>525</sub>, amber<sub>590</sub>, red<sub>665</sub> and far-red<sub>730</sub>. We also have chambers where different gas conditions (e.g. ethylene and CO<sub>2</sub>) can be adjusted.

## Equipment

- Phytotrons (walk-in growth chambers with open shelves or closed cultivation banks)
- Greenhouses
- Small growth chambers (Percival, AlgaeTron)

## Contact and Location

### CEITEC

Kamenice 753/5, Brno, 625 00, Czech Republic  
University Campus Bohunice  
Buildings A2 and A26  
[www.ceitec.eu/plant-sciences](http://www.ceitec.eu/plant-sciences)  
[plants@ceitec.muni.cz](mailto:plants@ceitec.muni.cz)

MUNI



CEITEC