Institute of Experimental Botany

of the Academy of Sciences of the Czech Republic, v. v. i.

About the Institute

The Institute of Experimental Botany (IEB) was founded in 1962.
Its laboratories are located in several centers in two cities, Prague and Olomouc.

IEB conducts research in **plant biology**, namely in plant **genetics**, **physiology** and **biotechnology**.

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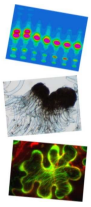
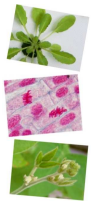
IEB building at Rozvojová street in Prague

Laboratories



- Biologically Active Compounds
- Cell Biology
- Cytoskeleton
- DNA Repair
- Experimental Station at Střížovice
- Growth Substances

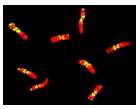


- Hormonal Regulations in Plants
- Isotope Laboratory
- Mass Spectroscopy
- Molecular Cytogenetics and Cytometry
- Pathological Plant Physiology
- Plant Biotechnologies

- Plant Reproduction
- Plant-Pathogen Interactions
- Pollen Biology
- Signal Transduction
- Stress Physiology
- Virology

Current research highlights

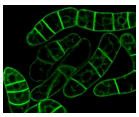
The Institute is primarily focused on **basic research**. Here are several examples of highly valuable results from recent years which were published in *Nature*, *Science*, *PNAS*, *Plant Cell*, and other **top journals**.



wheat 3B chromosomes

Chromosome sorting for genomics

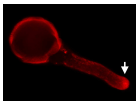
A unique method for chromosome sorting by flow cytometry was developed at IEB. The sorted chromosomes are used for genome sequencing in wheat and other plants with large and complex genomes.



PIN1:GFP protein in tobacco cells

Molecular mechanism of auxin transport

In cooperation with Czech and international groups, the molecular function of PIN efflux carriers was elucidated and a novel mechanism of auxin efflux regulation by cytokinins was discovered.



an exocyst subunit in a pollen tube

Regulation of plant cell growth and its polarity

This research brought important insights into functions of small GTPases, a class of regulatory proteins. In addition, IEB scientists were the first who described the role of exocyst complex in plants, which regulates vesicle transport to the plasma membrane and subsequent secretion.

Biotechnology and other applications

Some projects at the Institute are aimed at **practical applications**. Important topics include:

scab-resistant variety Opal

Disease-resistant apple trees

IEB successfully breeds apple trees resistant to scab and other fungal diseases. A broad spectrum of varieties has already been developed. These varieties are patented in the USA or protected by Plant Variety Rights in the EU.

the cytokinin derivative roscovitine

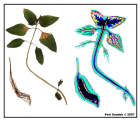
Medicines derived from phytohormones

Studies of cytokinins and brassinosteroids resulted in the synthesis of compounds which delay skin aging (already on the market in the USA) or show promising cytostatic effects (now in laboratory or clinical tests).

soybean

Edible vaccines

Producing proteins for vaccination in plants could be a cost-efficient alternative to current manufacturing methods. IEB scientists focus mainly on vaccines against the human papilloma virus produced in soybean seeds.



cadmium accumulation in sunflower

Phytoremediation

Phytoremediation uses plants to clean environmental contamination. IEB researchers develop methods for removing heavy metals, radionuclides, and explosives from soil and water.