

## Practice module, Bachelor or Master topic „Phenotypic variation in Petunia”

### Background:

Several studies have identified phenotypic changes after *in vitro* passage. Often, these changes are also accompanied by changes in epigenetic markers, such as loss of DNA methylation. Loss of DNA methylation generally correlates with chromatin loosening, which can activate elements such as DNA transposons and trigger a range of unpredictable sequelae. To test, whether *in vitro* cultivation also induces somaclonal variability in Petunia, we crossed the red-flowered *P. exserta* and the white-flowered *P. hybrida* 'Mitchell' to produce a population suitable for studying somaclonal variation based on flower phenotypes. After *in vitro* cultivation, we observed several variations in flower phenotype, such as size, color, and pattern. Line 266-5-4 derived from the F2 generation produced both red and white flowers on different branches of the same plant, and the red flowers had a higher pH than the white flowers. In this Practice module, Bachelor or Master topic, further experiments are planned to investigate this effect on a molecular level to ask whether epigenetic control underlies the observed phenotype variations.

### Work Packages:

- Cultivation of petunias showing phenotypic variation in dependency of iron fertilisation
- Document flower characteristics, including measurement of pH-values
- Isolation of plant DNA
- Performing molecular biology techniques for DNA methylation analysis



We are looking for a highly motivated student with strong interest in epigenetics and *in vitro* plant propagation.

Join a research project in an interdisciplinary, innovative research area and an open and friendly working environment.

The **workplace** is located at the Erfurt Research Centre for Horticultural Crops (FGK), University of Applied Sciences Erfurt, Kühnhäuser Straße 101, 99090 Erfurt.

The thesis can be prepared in **English** or **German** language.

If you are interested, then please contact Dr. Stefan Ehrentraut by email (stefan.ehrentraut@fh-erfurt.de) or by phone (0361 6700 3463). Further information is available at <https://www.fh-erfurt.de/forschungsstelle-fuer-gartenbauliche-kulturpflanzen-fgk>.