

Abstract

Plant cell lines represent useful models in plant cell biology. They allow simple analysis of the effects of various factors including modulated gene expression at cellular and subcellular level. Tobacco BY-2 cell line is a favored model due to its high proliferation rate, capability of effective synchronization and accessibility to transformation. Relatively high uniformity of BY-2 cultures allows morphological phenotyping and assessment of growth parameters like mitotic index, viability or cell density.

Presented thesis summarizes established methods and up-to-date experience with tobacco BY-2 cell lines. Selected results of two research projects focused on hybrid proline-rich proteins and heterotrimeric G-proteins are included. These projects are treated as case studies of cell line phenotyping and evaluation of cytological parameters. Protocols and general experimental suggestions that were optimized during the solving of the projects are described and discussed.