Yeasts is unicellular organisms which can create remarkably complex colonies. By studying multicellular structures of Saccharomyces cerevisiae yeast it was found that cells within the yeast colony behave differently. (Kamath and Bungay, 1988; Mináriková et al., 2001; Scherz et al., 2001; Palková and Váchová, 2006; Váchová et al., 2009; Piccirillo et al., 2010; Váchová et al., 2011).
Through microarray analysis of the developing yeast colony (Palková et al., 2002; Váchová et al., 2009) were described genes whose expression changes basically during the development of the colony. Of those genes, I chose four - PD5, STL1, PHO89, FET3 - that , as I thought, could affect the growth and differentiation of the yeast colony. I created their fusion variants with GFP and, using techniques of yeast colony cuts, yeast colony differentiation in sucrose gradient and measuring by flow cytometry I identified places in the colony, where the gene expression occurs. I found out that in the yeast colony differentiation and different expression take place in early phases of the development.