Title:	Interaction Studies of Transcription Factors Enriched in the Epidermal and Sub Epidermal Cell Types in Shoot Apex of Arabidopsis Thaliana
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Abstract:	Thousands of plant species have been thriving on the planet since ages. How plants keep on growing throughout their life is an eternal question. Plants unlike animals grow and generate organs throughout their lives through the activity of the pluripotent stem cells present at the shoot and root apical meristem. The shoot apical meristem of higher plants harbours pluripotent stem cells at their tip. Typical development of a plant depends upon the regulatory networks, which control the balance between stem cells specification and differentiation. The transcription factors (TFs) are driving forces that are responsible for regulation of gene expression in living organisms. Dimerization of TFs increases their selectivity and specificity in imparting the protein–DNA interactions. Studies in model organisms have shown that the dimerization can also change the preference of TFs towards DNA. From microarray studies, sixty-five TFs were identified that are enriched in the L1/epidermal and L2/sub epidermal cell layer of Arabidopsis thaliana shoot apex (Yadav et.al, 2014). It is conceivable that the activity and interaction of these TFs may have a role in the maintenance of pluripotent stem cells and their fate specification. My project focuses on building a comprehensive TF-TF interactome to elucidate the gene regulatory network for stem cell niche. Yeast-two-hybrid based protein-protein interaction map was developed for TFs (Prince Saini and Ram Yadav, unpublished). The aim of my project was to validate the findings of yeast-two-hybrid using Bimolecular Fluorescence Complementation Assay (BiFC) in tobacco plant leaves. The overall interactome revealed during the study will help us to understand the molecular mechanisms involved in the development of the shoot apical meristem.
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