

## **Abstract:**

Although the root-shoot junction (collet) of adult plants is a well-identifiable part of the plant body, its development has, surprisingly till now, escaped serious research attention. The junction is a key region in the life of plants, as it connects two contrasting plant life environments and involves important changes in developmental programs - underground vs aboveground. The junction in angiosperms is first established during the embryogenesis phase of development in the form of the broad embryonic root-hypocotyl transition region, and it continues to develop further after seed germination during the individual's growth. The most important organ in this process is the hypocotyl, which exhibits considerable developmental plasticity, allowing extraordinary elongation in etiolated dark growth but also initiating formation of adventitious roots upon the deetiolation. During each stage of the junction's development, auxin signalling and polar auxin transport play a crucial role. Most of the research focuses on the development of the junction in the model organism *Arabidopsis thaliana*. The significance of the phylogenetic origin of the junction is also discussed from the perspective of the evolutionary origin of roots vs shoots and embryos evolution. This work aims to provide an overview of the ontogenetic and phylogenetic origin and development of the junction between the root and shoot.

## **Keywords:**

root; shoot; root-shoot junction; collet; embryogenesis; clonal analysis; ontogenesis; response to environment; adventitious roots