1. Understand the big picture of plant evolution through independent lineage and the presence of progressive development.

2. Understand plant embryonic development and how a seedling serves as a reference for an adult plant.

3. Understand functional redundancy and how genome duplication events have led to extreme functional redundancy using the auxin transporters and their role in embryo development.

4. Understand the importance of shoot apical meristem and stem cell niche in progressive development of shoots. Students should be able to clearly delineate differences between cell division and cell differentiation that is required to balance stem cell and organ growth.

5. Understand the root apical meristem and how the root architecture develops from the root meristem. Through this students learn about cell-cell communication and cell signaling.

6. Understand the role of the antagonistic interaction between Auxin and Cytokinin in regulating shoot and root development.

7. Learn and apply concepts of homeotic genes and homeotic mutations using the ABC model for flower development.

8. Understand plant reproduction and the role of self-incompatibility in promoting hybrid vigor. Learn about the active rejection pathway of self-incompatibility. Student learn about vesicle trafficking and post-translational modifications through this topic.

9. Learn about various hormonal signaling pathways that influence plant development. Learn the most recent advances in Auxin and ABA signaling.

10. Learn plant senescence process and how it helps to mobilize resources to the developing seed. The various molecular and sub-cellular processes involved during plant senescence are also introduced.