

Current Research on Plant Development in Shanghai Institute of Plant Physiology

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Research on plant development is one of the important aspects in plant science. It is also a main research area in Shanghai Institute of Plant Physiology (SIPP), Chinese Academy of Sciences. The researches on plant development at the molecular level carried out in SIPP are as following:

THE DEVELOPMENT OF VEGETATIVE ORGANS

For example the research on morphological features and gene regulation in differentiation and development of plant leafy head. According to active morphological changes of growing points during development of leafy head, we constructed two cDNA libraries of Chinese cabbage, the one from the growing points at early stage of leafy head and the other from the growing points of early stage of inflorescence. Two differential cDNA clones LH1 and LH2 were screened to be related to the development of leafy head. When LH1 and LH2 probes were used for hybridization with mRNA of leaves and growing points at seedling stage, of root, leaves and shoot apex at rosette stage, shoot, growing points at wrapper stage, only growing points at wrapper stage gave weak signal for LH1, and all of the tissues examined gave weak signal for LH2. The experiment is performed to identify the specificity of LH1 clone.

effects of specific expression of IAA-lysine synthetase gene in tobacco anther tapelum on pollen embryogenesis, variations of flower development in transgenic tobacco caused by expression of IAA-lysine synthetase gene, molecular mechanism in development of plant floral type, cloning of auxin binding protein gene and its expression in tobacco and so on.

THE EFFECT OF MICROGRAVITY ON DEVELOPMENT OF PLANTS

As first step, simulator of microgravity effect, clinostat, is used to investigate the effect of microgravity on growth and differentiation of tobacco callus.

THE DEVELOPMENT OF REPRODUCTIVE ORGANS

For example construction of plant floral-specific expression vectors and genetic transformation, specific expression of barnase gene in flower of transgenic tobacco as well as flower and fruit abnormalities,