蝴蝶蘭擬原球體的奇幻旅程

方素瓊

The distinct reproductive program of orchids provides a unique evolutionary model with pollination-triggered ovule development and megasporogenesis, a modified embryogenesis program resulting in seeds with immature embryos, and mycorrhiza-induced seed germination. However, the molecular mechanisms that have evolved to establish these unparalleled developmental programs are largely unclear. We conducted comparative studies of genome-wide gene expression of various reproductive tissues and captured the molecular events associated with distinct reproductive programs in *Phalaenopsis aphrodite*. Our data provide compelling evidence to demonstrate that protocorm-like body (PLB) regeneration (the clonal regeneration practice used in the orchid industry) does not follow the embryogenesis program. Instead, we propose that SHOOT MERISTEMLESS, a class I KNOTTED-LIKE HOMEOBOX gene, is likely to play a role in PLB regeneration. Our studies challenge the current understanding of the embryonic identity of PLBs. Taken together, the data obtained establish a fundamental framework for orchid reproductive development and provide a valuable new resource to enable the prediction of gene regulatory networks that is required for specialized developmental programs of orchid species.