



## Cloning and characterization of SPL-family genes in the peanut (*Arachis hypogaea* L.)

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**ABSTRACT.** SQUAMOSA promoter-binding protein-like (SPL) proteins play crucial roles in plant growth, development, and responses to environmental stressors. The peanut (*Arachis hypogaea* L.) is a globally important oil crop. In this study, we cloned the full-length cDNA of 15 SPLs in the peanut by transcriptome sequencing and rapid amplification of cDNA ends, and analyzed their genomic DNA sequences. cDNA lengths varied significantly, from 369 to 3102 bp. The SBP domain of the peanut SPL proteins was highly conserved compared to SPLs in other plant species. Based on their sequence similarity to SPLs from other plant species, the peanut SPLs could be grouped into five subgroups. In each subgroup, lengths of individual genes, conserved motif numbers, and distribution patterns were similar. Seven of the SPLs were predicted to be targets of miR156. The SPLs were ubiquitously expressed in the roots, leaves, flowers, gynophores, and seeds, with different expression levels and accumulation patterns. Significant differences in the expression of most of the SPLs were observed between juvenile and adult leaves, suggesting that

they are involved in developmental regulation. Dynamic changes occurred in transcript levels at stage 1 (aerial grown green gynophores), stage 2 (gynophores buried in soil for about three days), and stage 3 (gynophores buried in soil for about nine days with enlarged pods). Possible roles that these genes play in peanut pod initiation are discussed.

**Key words:** SQUAMOSA promoter-binding protein-like protein; Peanut; Gene expression; Pod development