

**S010** Male gamete biology in flowering plants  
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Double fertilization launches two dramatically different developmental programs: one gamete fusion with a sperm cells forms the zygote/embryo, and a second gamete fusion forming the endosperm. The potential of the male to influence development, limited by maternal imprinting, greater cellular volume and the female program may nonetheless have contributions stemming from their unique expressional profile, which appears to be regulated within the sperm cells by a distinct complement of chromatin modifying proteins, ubiquitin pathway proteins, and transcription factors. In *Plumbago zeylanica*, divergent expression in embryo and endosperm may be further amplified by preferential expression in dimorphic sperm cells. Genome-wide transcriptional profiling in rice (*Oryza sativa* ssp. *japonica* cv. Katy) indicates that many genes are transcribed under both gametic and sporophytic regimes, allowing genes expressed under a male haploid program to select traits that are also expressed through sporophyte and later gametophyte tissues, as well. Although the genes expressed in common in these tissues may show different levels of amplification based on tissue type, the pathways expressed are broad enough to provide multiple opportunities for signalling and inter-generational regulatory control. Modulation of chromatin state may control much expression in the male germline and appears to be distinct from patterns of pollen vegetative cell expression.