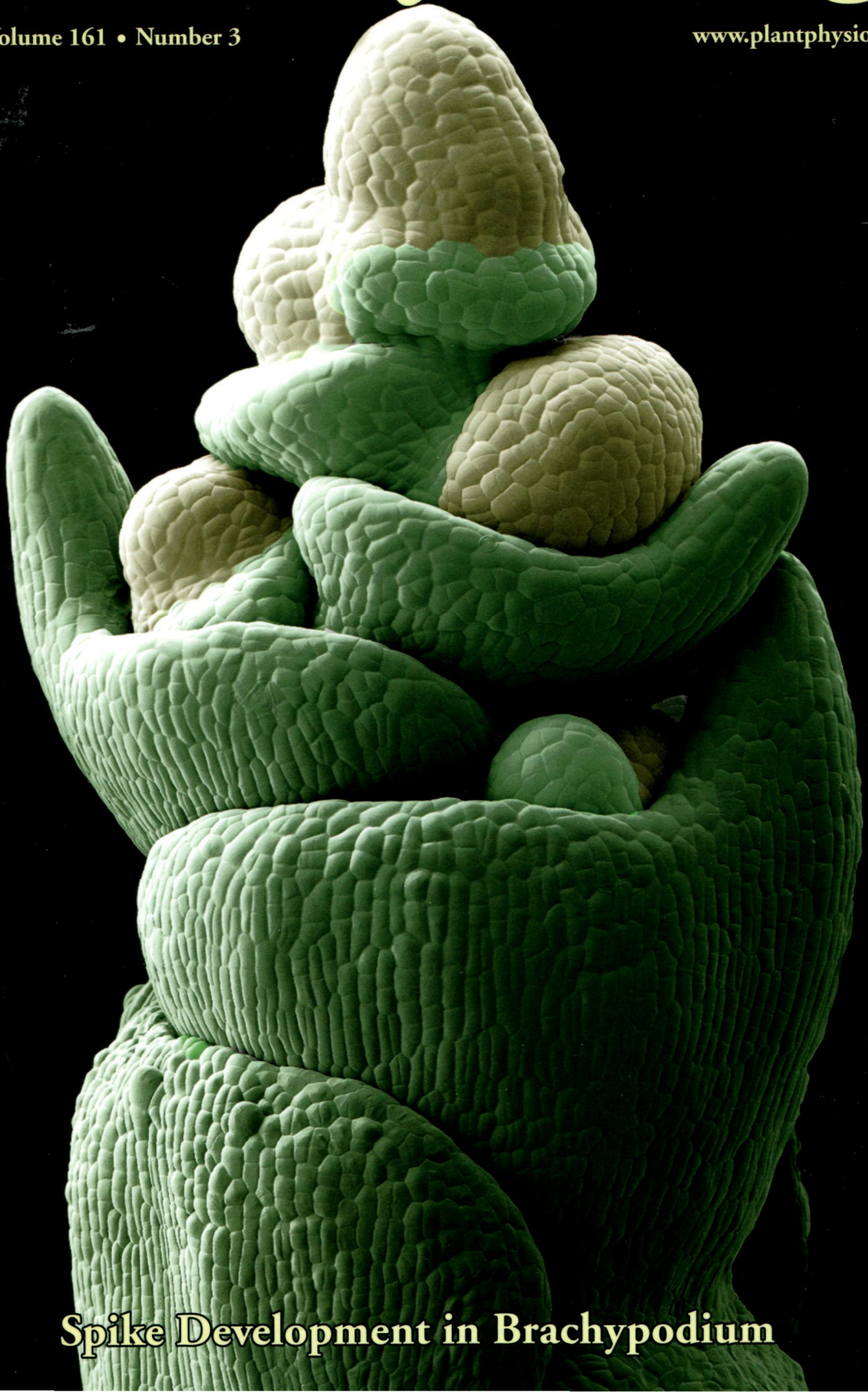


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Spike Development in Brachypodium

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On the Cover: *Brachypodium* (*Brachypodium distachyon*), or purple false brome, is a member of the grass subfamily Pooideae, which also includes two of the world's economically important crop species, wheat (*Triticum aestivum*) and barley (*Hordeum vulgare*). This small and rapid cycling temperate grass species has a relatively small genome, making it ideal as a genetic model system for fundamental and comparative studies of grasses, and as a valuable tool for understanding the biology of wheat. A mainstay of model species has been the ability to generate phenotypic mutants and to subsequently identify the genes that are involved in discrete developmental or physiological processes. In this issue, Derbyshire and Byrne (pp. 1291–1302) report the generation of *Brachypodium* fast neutron-induced inflorescence mutants to understand the genetic regulation of inflorescence development. The inflorescence is a key feature distinguishing different grass species. For instance, the crops maize (*Zea mays*) and rice (*Oryza sativa*) have a branched inflorescence, whereas the inflorescence of *Brachypodium* is similar to that of wheat and is an unbranched spike. The *Brachypodium* spike comprises a terminal spikelet and three to four lateral spikelets. The spikelets produce a number of florets. The cover image is a false colored scanning electron micrograph of a wild-type *Brachypodium* terminal spikelet. The spikelet meristem (yellow), at the tip of the spikelet, produces a succession of floral meristems (yellow). These floral meristems progressively mature from the tip to the base of the spikelet. Each floral meristem produces floral organs and ultimately gives rise to a single floret. The first and most obvious floral organ to be produced is the outer lemma (green), which initiates from the flanks of the floral meristem and subsequently elongates to surround the meristem. In this image, five floral meristems are visible. Photo credit: Paul Derbyshire and Mary Byrne.

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