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### **“Neural crest migration in marsupials: Developmental mechanisms of evolutionary change”**

Marsupial mammals are born at an embryonic state; nonetheless the neonate must be capable of considerable functional independence. Comparative studies have shown that in marsupials the morphogenesis of many structures critical to independent function is advanced relative to overall development. Marsupials exhibit a general advancement of the anterior part of the body, and advancement in the development of structures of the facial region. In contrast, the central nervous system exhibits a delay in development, with particular delay in the development of forebrain regions. Many of the tissues most advanced in development are derived from the cranial neural crest and in marsupials, the timing of cranial neural crest differentiation and migration is early relative to overall development. Cranial neural crest migrates before the neural tube begins to close or before the brain exhibits regional differentiation. This observation raises the question of whether cranial neural crest acquires patterning information before migration. Ongoing work is examining the relative timing of cranial crest differentiation and migration, regional differentiation of the neural plate, and expression of critical patterning genes such as *Fgf8*, and *Hoxa2*. These studies allow us to examine developmental shifts underlying evolutionary changes, and also test general hypotheses about craniofacial patterning.

