

Heterochrony and Morphological Variation of Epithalamic Asymmetry

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© 2016 Wiley Periodicals, Inc. Heterochrony is one proposed mechanism to explain how morphological variation and novelty arise during evolution. To experimentally approach heterochrony in a comprehensive manner, we must consider all three aspects of developmental time (sequence, timing, duration). This task is only possible in developmental models that allow the acquisition of high-quality temporal data in the context of normalized developmental time. Here we propose that epithalamic asymmetry of teleosts is one such model. Comparative studies among related teleost species have revealed heterochronic shifts in the timing of ontogenic events leading to the development of epithalamic asymmetry. Such temporal changes involve neural structures critical for tissue-tissue interactions underlying the generation of asymmetry and are concurrent with the appearance of morphological differences in the pattern of asymmetry between species. Based on these findings, we hypothesize that interspecies