Gene, netwoks, occlusal clock and functional patches : new understanding of pattern and process in the evolution of dentition

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Abstrak

Our understanding of the evolution of the dentition has been transformed by advances in the developmental biology, genetics, and functional morphology of teeth, as well as the methods available for studying tooth form and function. The hierarchical complexity of dental developmental genetics combined with dynamic effects of cells and tissues during development allow for substantial, rapid, and potentially non-linear evolutionary changes. Studies of selection on tooth function in the wild and evolutionary functional comparisons both suggest that tooth function and adaptation to diets are the most important factors guiding the evolution of teeth, yet selection against random changes that produce malocclusions (selectional drift) may be an equally important factor in groups with tribosphenic dentitions. These advances are critically reviewed here.