

Abstract

Vertebrate body appendages include a number of structures such as limbs, paired and median fins, the tail bud, the cloacal region, barbels or pharyngeal arch derivatives. Despite differences in form and function, these appendages share a number of developmental genetic mechanisms.

Development of these structures is chiefly regulated by Fgf, Shh, Wnt, Tgf- β and retinoic acid signalling pathways, activity of transcription factors such as Hox or Tbx along with *cis*-regulatory elements controlling the genes in which these factors are encoded.

A recurring feature shared by some of the herein discussed anatomical structures is a transient epithelial ridge whose activity influences production and proliferation of the adjacent mesenchyme. Some are also instructed by a signalling centre, which confers asymmetry to the structure.

In this text, the various appendages are compared on the basis of their development in relation to tetrapod limbs and theories evaluating the emergence of vertebrate paired appendages. The fin fold theory and archipterygial theory are discussed in the light of recent data provided by evolutionary developmental biology. All together, this thesis evaluates shared and derived characteristics of vertebrate body appendages with the aim to provide a basis for the upcoming work on the role of signalling centres in vertebrate body appendage development.