**Signalling pathways controlling the generation of the pharyngeal arches**

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Signalling pathways directing pharyngeal development

The pharynx is an important region of the body that is involved in many key processes including feeding, respiration, immune and endocrine activities. This territory has its developmental origin in a series of bulges, the pharyngeal arches, found on the lateral surface of the embryonic head. However, we know little about how the development of the pharynx is directed and it is important to understand this, both with respect to how this critical region of the body emerges but also because there are numerous birth defects that present with malformations of this territory. The aim of this project is to understand the mechanisms that control the development of the pharyngeal arches and their later remodelling. We aim to study the interplay between the main signalling pathways that are involved in this process (SHH, FGF, RA (retinoic acid) and WNT) and how these impact upon the development of the arches. We further aim to modulate the levels of these signalling pathways to determine if we can alter the number of pharyngeal pouches, and their later remodelling and to assess what effects this has for the anatomy of this region.

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