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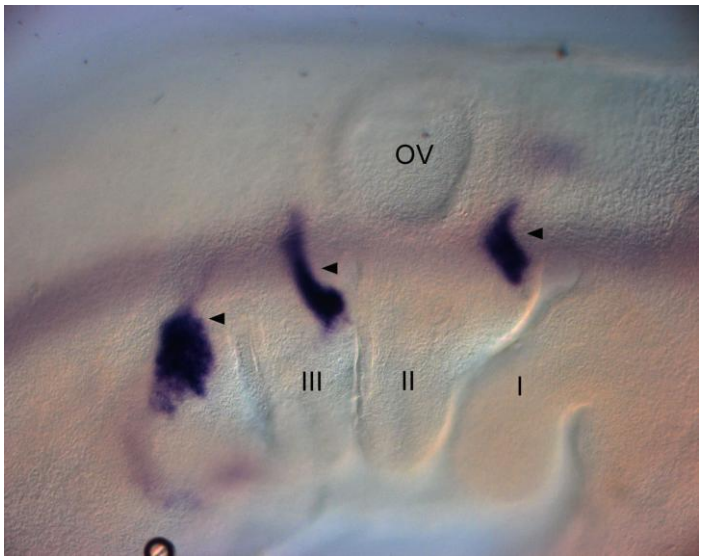
Characterisation of the migration of neuroblasts during the formation of the cranial sensory ganglia.

The cranial sensory ganglia are important as they are involved in general sensation from the face, and more specialised sensory processes such as taste; hearing and balance; chemosensation in the carotid body and baroreception in the aortic arch. The majority of neurons that make up these ganglia are generated in specialised regions of surface ectoderm: neurogenic placodes. In recent years we have made significant progress in understanding the generation of the neuronal progenitors within the placodal epithelium, yet we still know relatively little about how these progenitors go on to form the ganglia.

In this project we are focusing on the migration of the neuronal progenitors from the placodal ectoderm inwards to the site of ganglion formation. We are analysing the morphological changes that take place in the progenitors as they migrate, using in ovo electroporation to introduce fluorescent reporters into the cells so that we can study cell shape changes. We are addressing molecular mechanisms controlling the progenitor migration, analysing the function of candidate genes identified in a microarray screen. We will also compare progenitor migration in chick and mouse so that we can begin to analyse mice mutants with defects in the pharyngeal region where the ganglia are formed.



Migrating neuronal progenitors visualised by wholemount in situ hybridisation for Phox2b. Lateral view of st17 chick embryo showing the pharyngeal region. ov: otic vesicle; I, II, III; pharyngeal arches; arrowhead indicates migrating neuronal progenitors.