PROJECT RESUME

Hypoxia is encountered in either pathological or physiological conditions, the latter of which is seen in amniote embryos at early stages of development. During the hypoxic stage, a large number of neural crest cells arise from the cephalic neural tube by epithelial-to-mesenchymal transition and contribute towards facial bones and cartilages, providing the skeletal basis for mandibular and neck structures. A deficit of cranial neural crest cells results in congenital craniofacial hypoplasia.

Our group recently found that the naturally occurring hypoxia aids induction of neural crest cells via activation of Hypoxia-Inducible Factors (HIFs). In this project we enhance the induction by chemical compounds that further activate the HIF pathway and examine what anatomical structures will be altered by application of the compounds. This work will tell us whether such compounds can be used for a potential therapeutic in utero approach for patients with neural crest cell deficit.