

Crucial factors driving the development of the maxilla and mandible

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During normal development, the Dlx code patterns the cranial neural crest cells of the first branchial arch into maxillary and mandibular primordia. Once specified, the mandibular prominence forms the mandible and part of the tongue and the maxillary prominence forms the maxillary bone, secondary palate, and upper lip. Recent evidence suggests that there are boundaries of gene expression between the distal and proximal regions of the mandibular and maxillary mesenchyme. This differential gene expression maybe be important in defining the distal and proximal ends of mandible and maxilla. Our goal is to build a comprehensive resource for the research community that incorporates micro-CT imaging, lineage tracing, microarray and *in situ* expression data in the proximal and distal regions of the mandible and maxilla over developmental time. We have completed data collection for normal mouse samples and in the remaining years of our funding we plan on expanding our effort into mutant models with mandibular defects, including *Wnt1-cre; Tgfbr2fl/fl* and *Wnt1-cre; Alk5fl/fl*. We hope that this resource will help generate new hypotheses about the regulatory pathways and mechanisms involved in craniofacial bone morphogenesis.