## ABSTRACT

Mouth in the majority of vertebrates develops throughout an ectodermal stomodeum which posteriorly contacts the foregut endoderm, together forming an oropharyngeal membrane. This ecto-/ endodermal membrane gradually thins and become eventually perforated, which causes opening of the stomodeal cavity into the pharynx. Teeth are then understood as organs arising within the stomodeal part of the mouth, where the ectodermal epithelium produces tooth enamel and neural crest mesenchymal cells form dentine and tooth pulp. This project was meant to study the dynamics of the ectoderm and endoderm during the formation of mouth and teeth in the Mexican axolotl. By utilizing transplantations of the oral ectoderm from GFP-transgenic embryos and injections of fluorescent tracer DiI into the endoderm, it was possible to follow the fate of both germ-layers during the course of embryonic development into details. By using this approach it was demonstrated that the mouth in the axolotl develops in a different way, i.e. via the stomodeal collar. Teeth were found to arise within the stomodeal collar ectoderm as well as in the more posteriorly situated endodermal areas. Moreover, some tooth germs were generated also directly at the ecto-/ endodermal boundary. Thus, the formation of teeth does not seem to primarily depend on the distribution of different germ-layer epithelia, but, more likely, on strictly defined places within the oropharynx. The evolutionary origin of teeth should not, therefore, be derived from denticles, which hypothetically settled the oral area in a mechanistic kind of shift, either from the external ectoderm or from the pharyngeal endoderm. Teeth should rather be assumed as neural-crest-derived elements, which arose primarily in the oropharyngeal area only after an odontogenic potential for their production was achieved here and which were probably never dependent on the germ-layer derivation of the epithelium.