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Sakirat O. Akadri

Washington University in St. Louis

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EXPLORING THE ROLE OF FGF20 IN THE GUSTATORY SYSTEM OF MICE

Sakirat O. Akadri

Mentor: David Ornitz

FGF20, a member of the Fibroblast Growth Factor (FGF) family of signaling proteins, has been shown to play important roles in the development of neurosensory systems, including the auditory and olfactory systems. *Fgf20* is also expressed in the embryonic tongue surface, suggesting a role in the gustatory system. We hypothesized that *Fgf20* may have a role in the development and organization of taste buds, the sensory cells of the gustatory system. In order to determine when and where *Fgf20* is expressed in the tongue, we used genetically modified allele of *Fgf20* that replaces the FGF20 coding region with that of Green Fluorescent Protein (GFP). As a surrogate for FGF20, GFP expression was examined in the tongue at embryonic day (E) 11.5, E12.5, E13.5, E18.5 and postnatal day (P) 0, which encompasses the significant stages of taste bud development. Analysis showed that taste bud and taste-bud epithelial progenitors in the anterior-most portion of the tongue expressed *Fgf20* during embryonic stages, but not postnatally. To determine whether FGF20 is involved in taste bud development, we compared P0 tongues from mice heterozygous for an *Fgf20*-null allele (*Fgf20^{+/−}*) and from homozygous null mice (*Fgf20^{−/−}*). We found no significant difference between *Fgf20^{+/−}* and *Fgf20^{−/−}* tongues in terms of width of taste buds, the number of cells in taste buds, and the width of the fungiform papillae which surround taste buds. We believe that FGF20 may play a very subtle role in taste bud development, or that another FGF may act redundantly with FGF20 (another FGF performs the same function as FGF20). Future experiments will focus on determining whether FGF receptors are necessary for proper taste bud development.