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Abstract #130

SOX10-expressing Cells Are Progenitors of a Unique Population of Differentiated Taste Bud Cells

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In our recent studies using a mouse model, *SOX10-Cre*, to trace migrating neural crest lineages, labeled cells were found within mature taste buds (TBs) in adult mice. In the present study, we aimed to (1) define the time window when *SOX10-Cre*-labeled cells emerge in TBs, (2) characterize the properties of *SOX10-Cre*-labeled TB cells, and (3) explore the SOX10-expressing cell niches that contribute to TBs. The distribution of *SOX10-Cre*-labeled cells in neural crest and TBs was analyzed at different stages (E8.5, P1d, 1 wk, 2 wk, 4 wk, 8 wk, 16 wk) by crossing with a tdTomato (RFP) Cre reporter. We found that abundant *SOX10-Cre*-labeled cells were present in the connective tissue at all postnatal stages. At P1d and 1 wk, *SOX10-Cre*-labeled cells were absent within TBs. By 2 wk, *SOX10-Cre*-labeled cells were frequently observed in TBs. In mature TBs at 4 wk and in adult mice (8 wk and 16 wk), *SOX10-Cre* labeling was abundant and consistent among TBs in the three types of lingual taste papillae and soft palate, in which they co-localized with cell markers of Type I, II, and III TB cells. Intriguingly, *SOX10-Cre*-labeled cells within TBs were not co-labeled by keratin 8, a widely used marker for differentiated TB cells. Cre immunosignals were specifically distributed in migrating neural crest cells in E8.5 embryos, and quantitative RT-PCR analysis showed low Cre expression in tongue epithelium and connective tissue at 2 wk but negligible in adult tongue tissues of *SOX10-Cre* mice. Together, our data indicate that *SOX10*-expressing cells serve as precursors for TB maturation and homeostasis and contribute to a unique population of TB cells. Further studies are ongoing to define the *SOX10*-expressing cell population that contributes to TBs, likely neural crest or/and TB or/and TB-surrounding cells.

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