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Abstract #109

Abundant proliferating cells within chicken taste buds indicate a potentially “built-in” progenitor system for homeostasis

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Like other epithelial cells, taste bud cells have a short life span and undergo continuous turnover. An active stem or progenitor cell niche is essential for taste bud cell renewal. In chickens, taste bud cells have a much shorter life span (~4 days) than those in rodents (~10 days) requiring a more rigorous stem or progenitor cell niche. To better understand precursor sources of taste buds in chickens, in the present study we analyzed the distribution of proliferating cells in different tissue compartments: taste buds, surrounding epithelium and underlying connective tissue. We found similarity and discrepancy between chickens and rodents pertaining to the distribution of proliferating cells in the gustatory tissue. Similar to rodents, chickens appeared to have proliferating cells in the immediate surrounding tissue compartments – the epithelium and underlying connective tissue. However, in contrast to rodents, chickens had abundant proliferating cells within taste buds. These proliferating cells, indicated by BrdU⁺ cells, primarily localized to the basal region of taste buds and were largely unlabeled by molecular markers for chicken taste bud cells, suggesting their undifferentiated status. Our data indicate that chicken taste buds have “built-in” progenitors to meet the needs of maintaining their large size and rapid turnover.

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