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The generation of teeth from mouse embryonic stem cells

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ABSTRACT

Embryonic stem cells are known to differentiate into tooth-like cells when combined with 10-day embryonic oral epithelium. This study aimed to determine whether mouse embryonic stem cells could also contribute to tooth formation when combined with lower jaw ectomesenchyme from mouse embryos. The epithelium and ectomesenchyme of 10,5-day and 12,5-day mouse embryonic lower jaws were separated. The 10,5-day lower jaw epithelium and 12,5-day lower jaw ectomesenchyme were respectively combined with either mouse embryonic stem cells or STO cells as control and cultured *in vitro*. Some of the explants were grown as renal subcapsular grafts for another 21 days. Histological and immunocytochemical analyses were performed on all the explants retrieved. Tooth buds were not identified in the *in vitro* cultures. The stem cell and jaw epithelium, STO cell and jaw epithelium and STO cell and jaw mesenchyme renal subcapsular grafts showed no tooth formation. Four out of ten stem cell and jaw mesenchyme renal subcapsular grafts developed teeth. The stem cells could not be identified after differentiating, but may have contributed to the tooth formation.