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**Title:** Derivation and characterization of young and aged stem cell populations in an interleukin 1 receptor antagonist mouse model system

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**Body:** Recent evidence suggests that the IL1 receptor antagonist (IL1RN) assumes an important role in regulating stem cell senescence, and a deficiency of IL1RN may contribute to impaired lung tissue repair associated with COPD pathogenesis. Here we isolated stem cells from the teeth of transgenic mice and compared them to bone marrow (BM) derived stem cells from control B6CO mice; B6 IL1RN overexpressing transgenic mice (T16); and B6 ILRN knockout mice (IL1RN KO) and tested the hypothesis that the IL1 pathway would also regulate stem cell functions in this unique dental stem cell pool. BM cells were obtained by flushing the medullar space of both femurs and establishing adherent cultures. Dental cells were obtained by digesting excised teeth and mandibular pocket overnight, followed by plating single cell suspensions for culture. Cells were then analyzed by immunohistochemistry for stem cell associated as well as for endothelial progenitor and pluripotency-associated markers. A viable stem cell population was obtained and established from the BM and the dental tissues of all mice strains. BM stem cell populations displayed CD105 and KDR surface markers and contained populations expressing the VEGFR2 endothelial progenitor marker, indicating a possible population of circulating endothelial progenitors. Dental cells from both young (8 wks) and old (10 mo) animals contained populations expressing pluripotency associated markers OCT4, Sox2, and NANOG, as well as the CD105 and Connexin43 surface markers. These results demonstrate that dental tissue derived precursor cells may be obtained from transgenic mice and tested in experimental emphysema models.