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## SOX2 positive progenitor cells isolated from mouse digit are associated with digit tip regeneration

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Regrowth of mammal digit tip has been reported in mice and humans after amputation through the distal inter-phalangeal level. Although it had been assumed that a unique pluripotent cell population might give rise to all regenerated tissues, several studies have demonstrated that lineage-restricted progenitor cells mediate regeneration of mouse digit tip after amputation injury recently. The objective of this study was to isolate stem/progenitor cells resided in digit tip and identify the putative function of these cells. Herein, suspension cell culture condition was employed to isolate and expand potential stem/progenitor cells from mouse digit tip. Under such condition, spheres were observed after seven days in culture. Microarray and real-time PCR showed that the cells from these spheres presented similar molecular characteristics to SKPs. Immunocytochemistry revealed that most of sphere cells were positive for Sox2 staining. Additionally, the cells were capable of self-renewal and multipotency *in vitro*. Moreover, we showed that endogenous Sox2<sup>+</sup> cells in digit tip were mobilized after amputation injury. Transplantation of digit tip derived sphere cells confirmed that donor cells integrated in digit tip regeneration. Collectively, these results demonstrate that digit tip derived sphere cells are SKPs-like cells and can functionally implicate in digit tip regeneration after amputation.

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