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Neural competent cells of adult human dermis belong to the Schwann lineage

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Resident neural precursor cells (NPCs) have been reported for a number of adult tissues. Understanding their physiological function or, alternatively, their activation after tissue damage or *in vitro* manipulation remains an unsolved issue. Here we investigated the source of human dermal NPCs in the adult. By following an unbiased, comprehensive approach of cell surface marker screening, cell separation, transcriptomic characterization and *in vivo* fate analyses, we found that p75NTR+ precursors of human foreskin can be ascribed to the Schwann (CD56+) and perivascular (CD56-) cell lineages. Moreover, neural differentiation potential was restricted to the p75NTR+CD56+ Schwann cells and correlated with Sox2 expression levels. Loss and gain of function experiments demonstrated that Sox2 levels dictate neural competence in dermal precursors and thus Sox2 is a major determinant of cell fate also in this system. Double positive NPCs were similarly obtained from human cardiospheres, indicating that this phenomenon might be widespread and underlie stromal NPCs previously described in diverse tissues.

Biography

Ander Izeta completed B.Sc. from Navarra University (1994) and PhD in Biology by Universidad Autonoma of Madrid (2000). The aim of his lab is to elucidate the ontogeny, expansion and differentiation capacity of precursor cells in mouse and human dermis, with the ultimate purpose of facilitating their therapeutic use through generation of tissue engineered constructs and help clarify their possible contribution to carcinogenic processes or other pathologies. Specifically, they are studying human skin-derived precursors (SKPs) and other dermal stem cells and their relationship to wound healing and aging, as well as their use in tissue engineering. They also do clinical wound healing research.

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