

Wednesday, 3rd April, 12.00 pm, Seminar Room

Host: Dr. Niels C. Reichardt

Rethinking regeneration: role of nerve-derived cells in tissue homeostasis and injury response

Dr. Ander Izeta Permisán
IIS Biodonostia

The paradigm of adult tissue regeneration based on adult "tissue resident" stem cells differentiating into committed precursors to repair/replace the damaged area is currently being reformulated in different systems, as alternative explanations are beginning to emerge. Rather than being a cell intrinsic property, stemness may be dictated instead by the pericellular niche (cell-cell, cell-ECM and other microenvironmental inputs and contacts). As a result of plasticity of "stably differentiated" cells, in the form of dedifferentiation to a progenitor-like state, or transdifferentiation/reprogramming between committed cell types, adult stem cell compartments may be replenished when the tissue is in need. In the lab we are interested in understanding cellular plasticity vs stemness in dermal and muscle regeneration and repair; and in particular we are focused on the role of dedifferentiated Schwann cells (SC) and pericytes in tissue homeostasis and wound healing, and also in response to aging. We postulate that nerve-derived cells not only may transition to other cell types (as required by local circumstances) but also act as paracrine signaling hubs to promote regeneration or repair, or act as a "direction guide" similar to their role in peripheral nerve regeneration. These phenomena should be relevant to other tissues and may also underlie cancer-associated stromal remodeling, which mediates invasion of several tumor types.