

## Resumen del trabajo:

### **Coordinated Activation of Wnt in Epithelial and Melanocyte Stem Cells Initiates Pigmented Hair Regeneration**

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Melanocyte stem cells (McSCs) intimately interact with epithelial stem cells (EpSCs) in the hair follicle bulge and secondary hair germ (SHG). Together, they undergo activation and differentiation to regenerate pigmented hair. However, the mechanisms behind this coordinated stem cell behavior have not been elucidated. Here, we identified Wnt signaling as a key pathway that couples the behavior of the two stem cells. EpSCs and McSCs coordinately activate Wnt signaling at the onset of hair follicle regeneration within the SHG. Using genetic mouse models that specifically target either EpSCs or McSCs, we show that Wnt activation in McSCs drives their differentiation into pigment-producing melanocytes, while EpSC Wnt signaling not only dictates hair follicle formation but also regulates McSC proliferation during hair regeneration. Our data define a role for Wnt signaling in the regulation of McSCs and also illustrate a mechanism for regeneration of complex organs through collaboration between heterotypic stem cell populations.