Abstract Christa Rhiner

Injury-induced activation of quiescent neural progenitors in the adult fly brain.

Christa Rhiner, Champalimaud Center of the Unknown, Lisbon.

Abstract:
Numerous adult tissues contain quiescent stem cells residing in a reversible state of dormancy. Injury is a major factor known to trigger plasticity and recruitment of dormant stem cells to tissue repair. We have previously found that the adult brain of Drosophila, similar to humans, harbors quiescent neural stem cells (qNSCs), which - following acute injury - proliferate and give rise to new neurons.
Nevertheless, the mechanisms that activate qNSCs in response to brain injury remain unknown.
In our research we use stab lesions to model traumatic brain injury in adult flies and study injury-dependent control of stem cell activation to gain a mechanistic understanding of the damage-induced dynamic processes, which turn dormant qNSCs into dividing progenitors.
By using a combination of whole genome transcriptome profiling and *in vivo* functional genetic assays, we have identified several secreted factors that promote injury-induced proliferation of quiescent neural progenitors in the fly. Our results reveal an important role of a neuro-glial signaling relay able to activate distant qNSCs by fostering an extensive, but transient stem cell-activating milieu in the injured brain area.