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”Defining the role of stem and progenitor cells during tumour initiation”

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Many cancers arise from tissues maintained by stem and progenitor cells that ultimately give rise to non-dividing terminally differentiated cells. However, little is known about the contribution of stem cells and committed progenitors to cancer initiation.

In this study we assess the role of stem cells and progenitor cells in cancer initiation. Using skin epidermis as a model, we studied the impact of oncogenic hedgehog signalling in stem cells and progenitor cell populations and their capacity to induce basal cell carcinoma (BCC), the most frequent cancer in humans. We found that only stem cells, and not progenitors, were competent to initiate tumour formation upon oncogenic hedgehog signalling. Interestingly, this difference was due to the hierarchical organization of tumour growth in oncogene-targeted stem cells, characterized by an increase of symmetric self-renewing divisions and a higher p53-dependent resistance to apoptosis, leading to rapid clonal expansion and progression into invasive tumours.

Short CV

Adriana Sánchez-Danés received her BSc in Biotechnology in 2007 (Awarded first of the class by the Universitat Autònoma de Barcelona and National Prize of Excellence for University Academic Achievement by the Spanish Ministry of Science and Education, 2007). She obtained her MSc in Biomedical Research in 2008 and a PhD in Biomedicine in 2012 from Universitat Pompeu Fabra (Barcelona). During her PhD, she focused on the generation of human dopaminergic neurons from induced pluripotent stem cells to model Parkinson's disease.

In August 2012, Adriana joined Prof. Cédric Blanpain Lab at the Université Libre de Bruxelles. Prof. Blanpain's group has made major contributions to the skin cancer field and focuses on elucidating the mechanisms regulating stem cell fate decision during development, tissue homeostasis and cancer. During her postdoc, Adriana has been studying the mechanisms involved in skin cancer initiation and progression. She is recipient of a FNRS Postdoctoral Fellowship to pursue her research.

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