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”Stochastic fate choices during cancer initiation”

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Abstract: “The changes in cell dynamics after oncogenic mutation that lead to the development of tumours are currently unknown. Here, using skin epidermis as a model, we assessed the effect of oncogenic hedgehog signalling in distinct cell populations and their capacity to induce basal cell carcinoma, the most frequent cancer in humans. We found that only stem cells, and not progenitors, initiated tumour formation upon oncogenic hedgehog signalling, mirroring the homeostasis spatial organisation and hierarchy of the tissue. Modelling reveals that cancer initiation is a stochastic process in which cells continue to make random fate decisions as they do during normal homeostasis. Our work reveals that the capacity of oncogene-targeted cells to induce tumour formation is dependent not only on their long-term survival and expansion, but also on the specific clonal dynamics of the cancer cell
of origin.”

Short CV:
PhD in Biological Physics at the Institut Curie, co-advised by Jean-Francois Joanny and Jacques Prost. Completed with Highest Honors. 2010-2014. B.Sc. in Chemistry, B.Sc. and Masters in Physics with Highest Honors at the École Normale Supérieure of Paris and at the University Pierre et Marie Curie. 2006-2010. “Classes préparatoires” specialized in mathematics, Physics, and Chemistry, corresponding approximately to a two-year university diploma in those three disciplines. 2004–2006. French Baccalauréat with Highest Honors. 2004
Work Experience: Sir Henry Wellcome Fellow of the Wellcome Trust, based in the Gurdon Institute, Cambridge 2016-2020. Junior Research Fellow at Trinity College, University of Cambridge, and at the Cavendish Laboratory, working with Prof. Benjamin Simons. 2015-2019 Supervisions at Trinity College, University of Cambridge, of Part IB physics students (2 hours/week). 2015-2016 Short Postdoctoral Position in the Developmental Biology Department at the Institut Curie, under the supervision of Yohanns Bellaiche 2014 Visiting Scholar at Harvard University. I worked in the Experimental Soft Condensed Matter Group (David A. Weitz), and studied the properties of collective cell dynamics as a function of cell density 2008.
Publications Peer-reviewed papers - 19 accepted research Articles General public articles and interventions _ “Mathematical modelling in biology” (2015), interview with Arte (franco-german TV channel). _ “Cancer and Randomness ?” (2015), invited speaker in the “Science, Research, Society” forum organised by “Le Monde”, France’s leading newspaper _ “Cancer and Randomness ?” (2015), article in the French magazine “La Recherche” _ “Does cancer play dice?” (2015), article in “Le Monde”, France’s leading newspaper _ “Angelina Jolie and the return of Pascal’s wager” (2013), article in “Le Journal du Dimanche”. _ “Young smiles in research” (2011), radio interview on “France Culture”
Scientific distinctions _ 2015: Sir Henry Wellcome Fellowship from the Wellcome Trust _ 2014: Young Researcher Prize from the Bettencourt-Schuller Foundation. Junior Research Fellowship from Trinity College, Cambridge. _ 2010: PhD grant from the French Ministry of Research. Address : O2 Great Court, Trinity College, Cambridge, UK

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