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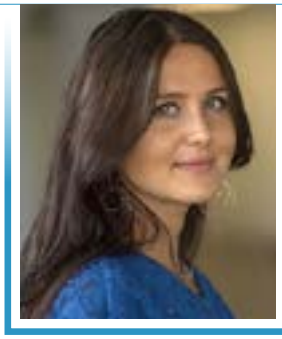

Anne Rios

Princess Maxima Center of Pediatric Oncology, Netherlands

BIOGRAPHY

Anne Rios obtained her PhD in 2011. Her work represented a novel cell signalling mechanism that triggers the differentiation of a defined subset of cells within a stem pool (Nature, 2011). Then she joined in the laboratory of professors Jane Visvader and Geoff Lindeman focusing on breast cancer. In 2016, she received the Medical Innovation Award (Centenary Institute Lawrence Creative Prize Winner) for her postdoctoral's work (Nature, 2014). In 2017, she was appointed group leader at the Princess Máxima Center and head the Princess Máxima Imaging Centre. She is currently investigating the cellular mechanisms underlying pediactric and adult solid tumor progression using State-of-the-art imaging technologies.

a.c.rios@prinsesmaximacentrum.nl

INVESTIGATING THE CELLULAR DYNAMICS OF ORGANS DEVELOPMENT AND CANCER USING 3D IMAGING

Rios implemented a novel 3D-imaging approach (with 3D glasses) to perform innovative multicoloured lineage tracing studies to follow the development and fate of mammary stem cells (MaSC) and descendant progenitor cells *in vivo* in entire mammary gland. As stem cells divide they produce clones of cells; using this imaging technique the fate of these individual clones could be tracked throughout various stages of mammary gland development, including puberty, pregnancy and normal adult homeostasis. This work provided the first *in vivo* evidence for the existence of bipotent MaSCs, which give rise to the two cell lineages that constitute the mammary ducts, the luminal and the myoepithelial cells, as well as the presence of distinct long-lived unipotent progenitor cells. The cellular dynamics observed at different developmental stages support a model in which both stem and progenitor cells drive morphogenesis during puberty, whereas bipotent MaSCs coordinate ductal homeostasis and remodelling of the adult mouse gland (Nature 2014, Nature Comm. 2016, NCB 2017). We have now specialized this 3D technology combined with the multicolored reporter confetti to detect early aberrant cellular behaviour in models of breast cancer and to visualise how cancerous cells, according to their cell-of-origin, exit normal ductal homeostasis and survive to self-organise into a solid tumour.