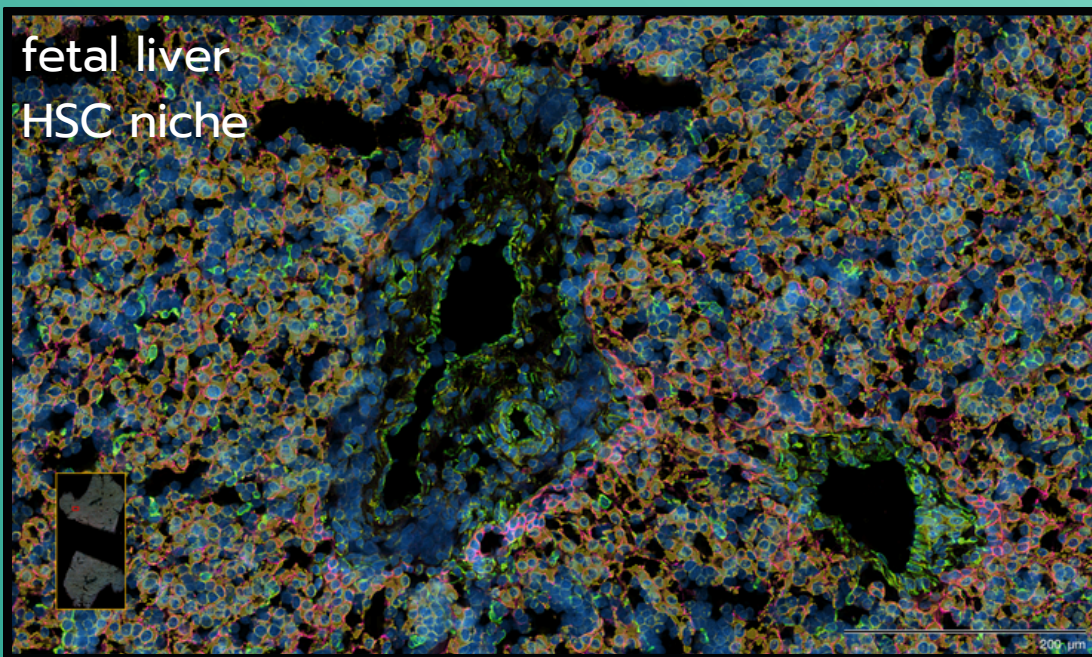
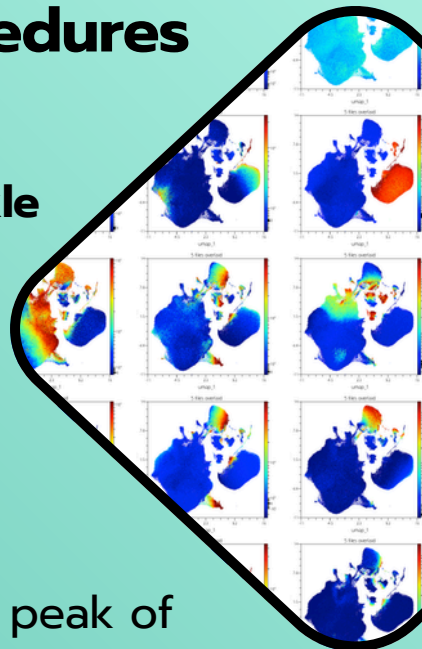




Vanuytsel lab

Our research is focused at the intersection of hematopoietic development, stem cell biology and sickle cell disease with the aim of improving gene therapy and transplantation procedures

Using our previously developed tools and resources to study **hematopoietic stem cells (HSCs)** in great detail, we are now studying HSCs collected from **sickle cell disease (SCD)** patients undergoing gene therapy at BMC to further tailor these transformative therapies to the unique challenges encountered in a SCD context and make these procedures safer, more effective and more accessible.



We also study HSCs at the peak of their functionality (in the developing fetal liver) to unravel the signals orchestrating their superior engraftment potential at this time. We then harness these signals to **better support HSC repopulating potential** in clinically relevant HSCs (from cord blood and mobilized peripheral blood) prior to transplantation.

Spatial transcriptomic profiling provides unprecedented resolution into the exact cell neighbors and extrinsic signaling milieu surrounding the most potent fetal liver HSCs.

We have developed a **SCD-specific induced pluripotent stem cell (iPSC) platform as preclinical screening tool** that factors in the genetic diversity of the SCD patient population.

