

Professor Christopher Heeschen



Research Interests

My main research area is in **Stem Cell Biology** in the context of Cancer and Ageing. We are particularly interested in advancing our understanding of the molecular features of **cancer stem cells** including self-renewal, invasiveness, metabolism and drug resistance. We focus on cancers with poor prognosis and urgent medical need, e.g. pancreatic ductal adenocarcinoma (PDAC) and hepatocellular carcinoma.

My research group focuses on:

- Identification of novel biomarkers
- Tracking, isolation, propagation and characterisation of circulating cancer stem cells.
- *In vivo* studies of CSC biology in mouse models.
- Development of novel CSC-targeting therapies.
- Use of nanoparticles for targeted drug delivery.
- Clinical translation of novel treatment modalities.

Major Funders

- EU (CAM-PaC, MultiFun, EPC-TM)
- European Research Council
- Cancer Research UK
- Pancreatic Cancer Research Fund

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Recent Publications

- Miranda-Lorenzo I, *et al.* Intracellular autofluorescence: a biomarker for epithelial cancer stem cells. *Nat Methods*. 2014 Sep 28. [Epub].
- Hermann PC, *et al.* Nicotine promotes initiation and progression of KRAS-induced pancreatic cancer via Gata6-dependent dedifferentiation of acinar cells in mice. *Gastro*. 2014 Aug 10. [Epub ahead of print].
- Balic A, *et al.* Chloroquine targets pancreatic cancer stem cells via inhibition of CXCR4 and hedgehog signaling. *Mol Cancer Ther*. 2014 Jul;13(7):1758-71.
- Lonardo E, *et al.* Metformin targets the metabolic Achilles' heel of human pancreatic cancer stem cells. *PLOS ONE*. 2013 Oct 18;8(10):e76518.
- Sainz B Jr, Heeschen C. Standing out from the crowd: cancer stem cells in hepatocellular carcinoma. *Cancer Cell*. 2013 Apr 15;23(4):431-3.
- Lonardo E *et al.* Pancreatic stellate cells form a niche for cancer stem cells and promote their self-renewal and invasiveness. *Cell Cycle*. 2012 Apr 1;11(7):1282-90.
- Lonardo E, *et al.* Nodal/Activin signaling drives self-renewal and tumorigenicity of pancreatic cancer stem cells and provides a target for combined drug therapy. *Cell Stem Cell*. 2011 Nov 4;9(5):433-46.
- Hermann PC, *et al.* Distinct populations of cancer stem cells determine tumor growth and metastatic activity in human pancreatic cancer. *Cell Stem Cell*. 2007 Sep 13;1(3):313-23.

