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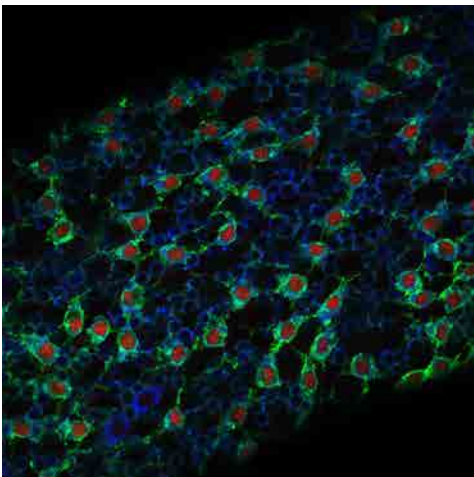
WEB armi.org.au/research-leadership/hobbs-group

In adult testis, there is a population of germline stem cells (spermatogonial stem cells; SSCs) needed for life-long production of spermatozoa and fertility. SSC maintenance is dependent on crosstalk between cell-intrinsic factors and growth factors produced from a stem cell niche. We have identified key transcription factors and growth factor signalling pathways involved in self-renewal and differentiation of SSCs. Through use of mouse models, we aim to define critical pathways regulating SSC function.

Projects will focus on characterizing mechanisms of SSC regulation with particular emphasis on components of transcription factor networks and their downstream targets. This work will involve use of mouse models, isolation and *in vitro* culture of SSCs, flow cytometry and cell/molecular biological techniques. These studies can have particular relevance to the stem cell and fertility fields.

Research Projects

1. Transcriptional networks controlling germline stem cell fate
2. Signalling pathways regulating germline stem cell maintenance



Cysts of spermatogonia at an early stage of differentiation within the basal layer of testis seminiferous epithelium. Cells express RAR (red) and c-Kit (green)

Selected significant publications:

1. ***Hobbs RM**, La HM, Makela JA, Kobayashi T, Noda T, *Pandolfi PP. 2015. Distinct germline progenitor subsets defined through Tsc2-mTORC1 signaling. *EMBO Rep.* 16, 467-480. *Co-corresponding authors.
2. **Hobbs RM**, Fagoonee S, Papa A, Webster K, Altruda F, Nishinakamura R, Chai L, Pandolfi PP. 2012. Functional Antagonism between Sall4 and Plzf Defines Germline Progenitors. *Cell Stem Cell* 10, 284-298.
3. Garcia-Cao I, *Song, MS, ***Hobbs RM**, *Laurent G, *Giorgi C, de Boer VC, Anastasiou D, Ito K, Sasaki AT, Rameh L, Carracedo A, Vander Heiden MG, Cantley LC, Pinton P, Haigis MC, Pandolfi PP. 2012. Systemic Elevation of PTEN Induces a Tumor-Suppressive Metabolic State. *Cell* 149, 49-62. *Joint second authors.
4. **Hobbs RM**, Seandel M, Falciatori I, Rafii S, Pandolfi PP. 2010. Plzf regulates germline progenitor self-renewal by opposing mTORC1. *Cell* 142, 468-479.
5. *Costoya JA, ***Hobbs RM**, Barna M, Cattoretti G, Manova K, Sukhwani M, Orwig KE, Wolgemuth DJ, Pandolfi PP. 2004. Essential role of Plzf in maintenance of spermatogonial stem cells. *Nature Genetics* 36, 653-659. * Joint first authors.