Prostate stem cell interactions with the vasculature.

Stem cells reside in a niche, a specialized region of stromal cells and epithelial cells that provides signals that keep the stem cells quiescent and guide their differentiation. We are investigating the signaling molecules that prostate stem cells use to communicate with the stromal cells in their specific niche. We have identified signaling molecules synthesized by embryonic prostate stem cells that have receptors in the embryonic stroma and signaling molecules synthesized by the stroma that have receptors in the stem cells. Prominent among these signaling molecules are 4 ephrins and 8 of their Eph receptors. Little is known about the role of ephrins and Eph receptors in prostate biology. This project will examine if these ephrins and their receptors are also important in adult prostate stem cells. The project will involve immunostaining immature and mature mouse prostates for expression of members of the ephrin family or their receptors, the Eph family of proteins. As stem cells reside primarily in the proximal region of the prostate, we will examine how staining varies along the proximal – distal axis of prostatic ducts. Correlation of specific ephrins and Eph receptors with stem cell areas will help identify these molecules as targets for disruption of their signaling in future experiments in order to establish their role in stem cell function.

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