**PROSTATE CANCER STEM CELLS ONGOING PROJECTS - 2**

**MICROARRAY ANALYSIS OF PROSTATE STEM CELLS**

Different cell populations were selected from primary patient samples and microarray analysis was carried out to determine expression of genes in the different populations.

**CELL SELECTION PROCEDURE:**

Primary patient cells

- α2β1 integrin hi
- α2β1 integrin low

Committed BASAL CELLS

- CD133+
- CD133-

**CLUSTERING OF EXPRESSION PATTERN**

Samples & probes clustered by probe expression pattern (Pearson Correlation)

- Malignant cells cluster away from benign cells
- Malignant cluster sub-divides into stem and committed groups
- Signature expression patterns can be derived for the different groups of cells
  - Malignant stem
  - Benign stem
  - Malignant committed
  - Benign committed

From these data several genes that are highly expressed in the cancer stem cells have been selected and investigated further as potential novel therapeutic targets.

**PROSTATE STROMA AND THE STEM CELL NICHE**

It is important to study stem cells in the context of their extracellular environment. Signals between epithelial cells and the surrounding stroma impact the behaviour of the cells and include signals to grow or differentiate.

**STROMAL-EPITHELIAL INTERACTIONS**

- Stroma is composed of smooth muscle cells, myofibroblasts, and fibroblasts.
- Growth factors are secreted which modulate the cancer stem cell →
- Cancer stem cell resides in the epithelial compartment
- Stromal smooth muscle cells and secretory luminal epithelial cells express androgen receptor.

(a) Stromal cells in culture.
(b) Procollagen-1
(c) Vimentin
(d) α-actin
(e) Androgen receptor
(f) DAPI staining of nuclei

Stromal cells express specific markers that can be detected by immunofluorescence.

Androgen receptor localises to the nucleus after androgen stimulation.