

P039 Imaging Proteolysis in Prostate Cancer and Stromal Cells
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Tumour progression involves the degradation and remodelling of the extracellular matrix (ECM). Several classes of proteases play a part in this process including matrix metalloproteinases (MMPs), serine proteases and some lysosomal cysteine proteinases (Sloane *et al.*, Semin. Cancer Biol., 2005). There is some debate as to whether proteolysis of ECM proteins is essential for tumour cell migration, with some studies suggesting that tumour cells are able to migrate when proteolytic activity is inhibited (Wolf *et al.*, J. Cell Biol, 2003).

Multicellular tumour spheroids made from either prostate cancer cells (PC3) or prostatic stromal cells were cultured either separately or in co-culture in a 3-dimensional ECM model containing a quenched fluorescent gelatin substrate. Cleavage of the intact gelatin molecules by protease-induced hydrolysis releases cleavage products that fluoresce, making it possible to identify where proteolytic activity is taking place. The cultures were viewed under fluorescence microscopy at designated time points.

Results showed that stromal cell spheroids displayed brighter fluorescence than PC3 spheroids, suggesting greater proteolytic activity in the stromal cells. In co-culture, PC3 cells migrating outwards from the spheroids grew alongside the stromal cells in close association, indicating that stromal cells influence prostate cancer cell behaviour.