Why we focus on Adhesion and Integrins

Cell adhesion to the extracellular-matrix and to other cells, via specialised receptors such as integrins (cell-matrix and cell-cell) and cadherins (cell-cell), is a fundamental necessity in the maintenance of normal tissue biology. In cancer, the inappropriate expression or activity of many of these receptors actively promotes cancer progression, which is why we focus on understanding this process with a view to identifying new, molecular therapeutic targets.

What we do

• We investigate dysfunctional adhesion in Chronic Lymphocytic Leukaemia (CLL) and the potential use of immuno-modulatory drugs, which correct the dysfunction, to improve therapy of CLL.
• We study integrins that regulate endothelial growth factors, specifically αvβ3 and αvβ5. The absence of αvβ3 and αvβ5 increases both blood vessel and tumour growth, and therapy with very low concentrations of αvβ3/αvβ5 inhibitors actually increases blood vessel growth and tumour development, suggesting caution in the use of integrin inhibitors in cancer treatment.
• We focus on the epithelial-specific integrin αvβ6 as a therapeutic target for carcinoma because it is not expressed by most normal tissues but is upregulated in many carcinomas including breast, colon, lung, pancreas and cervix making it a novel therapeutic target. We have been the first to show that αvβ6 promotes invasion, in part, by regulating matrix-metalloproteinases (MMPs). Strong expression of αvβ6 correlates with very poor prognosis from breast cancer. The BCI αvβ6-specific peptide (A20FMDV2) is being developed for radio-imaging of human cancers.
Adhesion & Integrins

Key Publications

• Moore et al. Therapeutic targeting of integrin αvβ6 in breast cancer. *J Natl Cancer Inst.* 2014; 106(8)
• Tavora et al. Endothelial FAK is required for tumour angiogenesis. *EMBO Mol Med.* 2010; 2, (12) 516-528

Who does the research

Prof. Kairbaan Hodivala-Dilke  FAK and integrins αvβ3 and αvβ5 in tumour angiogenesis.
Prof. John F Marshall  Epithelial-specific integrin αvβ6 as a therapeutic target.
Prof. Louise Jones  Integrins in breast cancer pathology.
Prof. John Gribben  CLL and the immune synapse.

Major Funders

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