

Breast cancer lymphovascular invasion (LVI) and metastasis.

Professor Stewart Martin, Professor of Cancer and Radiation Biology

We are interested in the prognostic significance and regulation of, lymphangiogenesis in cancer and have shown that expression of angio- and lymphangiogenic growth factors is beneficial in identifying a subset of tumours with high probability of recurrence and metastatic spread.

Vascular invasion (VI), encompassing both lymphatic (LI) and blood vessel invasion (BI), is the major route for metastasis to regional lymph nodes (LNs) and, through lymphovascular shunts, to the systemic circulation. We have shown that even though tumours have a rich vascular network VI in cancers, including primary invasive breast cancer and melanoma, is predominantly of lymph vessels (96% of VI being LVI and 4% BVI) and is a powerful independent prognostic factor.

This project seeks to understand the processes that regulate LVI and why cancer cells show such a preference for lymphatic invasion. A variety of in vitro breast cancer cell systems are used, with a recent focus on inflammatory breast cancer.

Interactions of tumour cells with vascular and lymphatic endothelial cells are followed using a variety of phenotypic and tissue culture based techniques (including adhesion, migration, invasion and endothelial transmigration assays).

As well as learning in vitro tissue culture the PhD also encompasses a variety of histopathology based methodologies along with molecular biology and biochemical assays.

In addition to elucidating the genetic control mechanisms in the cancer cells themselves a recent focus of attention has been on the role of the tumour stroma may play, particularly macrophage, and associated cytokines, in regulating LVI.

Please **email a CV with a covering letter** to Dr Stewart Martin (stewart.martin@nottingham.ac.uk), who can also supply more information to interested parties.