

## **Breast cancer lymphovascular invasion (LVI) and metastasis.**

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We are interested in the prognostic significance and regulation of, lymphangiogenesis in breast 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 lymphovascular (LVI) and blood vascular invasion (BVI), 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 primary invasive breast cancer 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. A recent focus of attention has been on the role that macrophage, and associated cytokines, play in regulating LVI.

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