School of Pharmacy PhD Project 2017 / 2018

Identification of novel biomarkers and therapeutic strategies in Triple Negative Breast Cancer

Applicants must have at least an upper second class degree in Pharmacy, Molecular Biology, Pharmaceutical Sciences, Biochemistry, Biological/ Biomedical Sciences, or a closely related discipline.

Expression profiling has revolutionised the molecular classification of breast cancers and has led to the identification of the so-called 5 'intrinsic subtypes' of breast cancer, namely, (1) Luminal A, (2) Luminal B, (3) normal-like, (4) HER2-overexpressing and (5) TNBC (or Basal-Like). The term 'triple negative' denotes the absence of three key receptors, namely Estrogen Receptor alpha (ERα), the Progesterone receptor (PR) and lack of overexpression of the HER2 receptor. This triple receptor negativity rules out the use of targeted therapies such as tamoxifen and Herceptin, leaving TNBCs with no targeted therapy and with the poorest clinical outcomes. The current UK standard of care for TNBC is the DNA damaging chemotherapy treatment FEC (6 cycles 5-Fluorouracil, Epirubicin, Cyclophosphamide). TNBCs are known to be the most heterogeneous subtype and it is becoming apparent that within this subtype there appear to be at least two further breast cancer subpopulations, one with good clinical outcome to FEC (no relapse within 3 years of treatment) and one with poor outcome (relapse < 3 years). We have performed a series of bioinformatics analyses on profiles from a 60 TNBC cohort (39 good versus 21 poor FEC outcome) and have identified a number of genes showing discriminatory power to predict FEC outcome. We now want to discover the underlying biology surrounding such markers and assess their potential as novel biomarkers and/or therapeutic targets. We hope this information will help assist clinicians in deciding which chemotherapy to give patients and ultimately improve patient outcome. This 3-year will provide the opportunity to gain technical expertise in molecular biology and pharmaceutical formulation, in addition to in vitro and in vivo technologies.

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How to Apply
Postgraduate applications should be made using Queen's University Direct Applications Portal. Please note that there are two application processes: one for admission to the university and another for postgraduate awards.

Further Information
Additional information for prospective postgraduate students can be found on the School of Pharmacy website and the Queen's Postgraduate website.