CRUK Cambridge Centre MRes rotation project

Rotation Project Title	**Determining the accuracy of automated image analysis algorithms in scoring breast cancer tissue micro-array sections stained for different markers of protein expression.**
Head of Laboratory (PI) Name	Paul PHAROAH
Second supervisor if applicable	
Programme	Breast Gynae Quantitative
Supervisor's Email	pp10001@medschl.cam.ac.uk
Laboratory Location	Strangeways Research Laboratory

Project Outline	**Aims and objectives** We have developed a data resource of ~20,000 breast tumours stained for expression of 15 different proteins. The scoring of a data set of this size by a trained pathologist is a major challenge. An alternative is automated image analysis algorithms. The aim of this project will be to compare manual scoring by a pathologist with automated scores.
Experimental plan	Breast tumours stained for expression of multiple protein biomarkers have been scored using the Astrogrid automated image analysis system. The main taks will be to: 1. Explore the association between the Astrogird score and ordinal scores of protein expression (manual scores) 2. Determine the sensitivity and specificity of the Astrogrid score in classifying tumours classed as expression positive and expression negative by manual scoring. 3. Comapre the prognostic value of Astrogird automated scoring with that of manual scoring.
Main Techniques	• Data wrangling/carpentry using R or Stata • Application of standard biastatistical methods and tests • Application of time-to-event analyses
Key References	1. Howat WJ, et al Performance of automated scoring of ER, PR, HER2, CK5/6 and EGFR in breast cancer tissue microarrays in the Breast Cancer Association Consortium. *J Pathol Clin Res* 1, 18-32, 2015. PMID 27499890 2. Ali HR, et al Astronomical algorithms for automated analysis of tissue protein expression in breast cancer. *Br. J. Cancer* 108, 602-12, 2013. PMID 23329232