MEDICAL STUDENT PRIZE WINNER:

MAJA KOPCZYNSKA

PROJECT: Developing Genomic Biomarkers to Predict Cancer Risk in Inflammatory Bowel Disease

'I am honoured to receive the Dr Falk Core Medical Student Prize and I would like to thank my supervisors at Barts Cancer Institute for their support and encouragement throughout the project. As an aspiring academic gastroenterologist this award provides me with opportunity to fulfil my passions and meet inspiring experts in the fields of gastroenterology and hepatology.'

Maja Kopczynska has just completed a BSc in Medical Sciences with Gastroenterology and Hepatology at Imperial College School of Medicine, London. In September she takes up her 4th year medical studies at Cardiff University.

'My ambition is to become an academic gastroenterologist, combining translational research with clinical practice. I believe that this project, which is a part of my intercalated BSc programme, would give me a head start in my career choice and enable me to obtain more exposure to cutting edge laboratory and genomic analysis techniques, which I have been exploring for the past few years.

'Colorectal cancer (CRC) is a recognised complication in patients with ulcerative colitis (UC) and currently IBD surveillance programmes are plagued by over diagnosis, overtreatment and high costs to the NHS. Therefore, clinically useful biomarkers are needed for better patient stratification.

'Chromosomal copy number alterations (CNAs) are acquired changes in the genome characterized by gain or loss of DNA regions and CNAs are known to occur in ostensibly normal UC colonic mucosa; their potential role as a biomarker of tumourigenesis is unexplored and potentially underappreciated.

'My project will form the pilot for a large multi-centre retrospective case-control study in patients with UC enrolled into a surveillance programme. The aim of the study is to establish if CNAs detected in endoscopic biopsies of UC patients can be leveraged to develop a biomarker that stratifies UC patients according to their future CRC risk.

'I analysed CNAs profiles in progressors (cases) who subsequently developed cancer or high-grade dysplasia 1-5 years later, and matched non-progressors (controls) who have remained neoplasia free for at least 5 years.

'During my project, I generated meaningful copy number profiles from archival biopsies that were up to 20 years old using as little as 0.5ng of DNA. I was able to identify CNAs in colonic mucosa in both progressors and non-progressors. This highlights the need to explore the burden of CNAs in normal cell populations and not just point mutations of key CRC genes.

'After completion of this project I intend to continue investigating the role of genomics in IBD and the evolutionary pathways of CRC. I find translational research incredibly stimulating and I believe that this project will provide me with essential skills to achieve my goals.'

Ms Kopczynska's Supervisors Dr Ibrahim Al Bakir & Professor Trevor Graham comments:

'Maja has proven to be an invaluable member of the Cancer & Evolution laboratory. She has demonstrated great dedication and persistence during her time at the Barts Cancer Institute, and proven herself to be an excellent team worker. By working seamlessly with clinicians, wet lab biologists, bioinformaticians and mathematical modellers, her successful pilot project justified further investigation with a larger patient cohort.

'Maja is clearly committed to an academic career based on "bench to bedside" research in gastroenterology, with the aim of being at the forefront of translating next generation sequencing applications into mainstream clinical use. Maja's next step after completing her medical degree would be to apply for an academic foundation programme, for which she would be eminently suitable.'