

MEDICAL STUDENT PRIZE WINNER:
WILLIAM COLLIER



PROJECT: The Effect of Hypoxia on TRAIL mediated pancreatic cancer cell apoptosis

'It is a great honour to be awarded the Core Falk Award and I would like to thank everyone involved. The opportunity to carry out my research year has been a very valuable experience. I have gained skills in laboratory techniques and have gained an insight into the world of scientific research within medicine.'

William Collier has just completed an Intercalated BSc in Clinical Sciences at the Centre for Liver Research at the University of Birmingham. In September he takes up his final year of medical studies at the University of Birmingham.

'The incidence of pancreatic cancer (PC) continues to rise in the UK and is associated with very poor prognosis. Currently less than 3% of patients diagnosed with PC survive for more than 5 years. Having learnt how poor the survival for PC patients was during my clinical placements in medical school, I was very motivated to pursue this research. Additionally, I have always had an interest in both the gastroenterological system and cancer related medicine.

'Current management strategies are failing to improve this poor prognosis. Tumour Necrosis Factor-related Apoptosis Inducing Ligand (TRAIL) can induce cell death in PC cells and is considered a promising therapeutic agent.

'My project investigated whether hypoxia and/or a cellular process called autophagy affect TRAIL mediated cell death in PC cells. Specifically, I assessed whether hypoxia and/or autophagy mediated resistance to TRAIL induced cell death. This also involved characterising human PC tissue for TRAIL receptor expression and autophagy.

'The aims were threefold. To determine the response of PC cells to hypoxia, including levels of cell death, autophagy and TRAIL receptor expression, the effect of TRAIL agonism and autophagy inhibition on PC cells in hypoxia and establish PC tissue expression of autophagy and TRAIL/TRAIL receptors.

'The findings in this study implicate autophagy activation and altered TRAIL receptor expression in hypoxia as mechanisms contributing to TRAIL resistance and thus PC cell survival. These findings demonstrate inhibition of autophagy is a potential mechanism to sensitise PC cells to TRAIL induced apoptosis and overcome the clinically observed TRAIL resistance.'

Mr Collier's Supervisor Mr Ricky Bhogal comments:

'Since joining our team, Will has driven this project forward by producing high quality preliminary data during the relatively short time he has spent in our laboratory. He is clearly a highly motivated student who achieved one of the highest marks in his clinical core exams prior to joining our department.

'Will is a fast learner and has shown a high level of technical skill in picking up a range of scientific techniques including immunohistochemistry/fluorescence and viral transfection. In addition, he has already mastered flow cytometry the use of which is a prerequisite for him to be able to test his current hypothesis. Further funding would give him the opportunity to complete this project to an extremely high standard.

'Will has the full support of the team and I have no doubt that he will be highly successful in this project.'