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Dr Falk/Guts UK Awards 2022

MEDICAL STUDENT PRIZE WINNER:
Ms Mosammath Monira Khatun

PROJECT:
Defining the Role of invariant Natural Kill T-cells (iNKT) and Interleaukin - 22 (IL-22) in the Pathogenesis of Perianal Fistulising Crohn's Disease.

Ms Khatun is undertaking this research project whilst intercalating for her BSc in Gastroenterology and Hepatology at the Department of Metabolism, Digestion and Reproduction at Imperial College London. In September she will return to her fifth year studies at the Imperial College School of Medicine.

Ms Khatun explains:

'Crohn's disease (CD) is commonly complicated by perianal fistulas, affecting around 25% of patients with CD. Patients with perianal CD (pCD) often have a more debilitating and aggressive disease course. Unfortunately, limited treatment options are available, and many patients lose response to current medical regimes. Therefore, there is a need to improve our understanding of the immunology underlying the pathogenesis of pCD to help us move forward in achieving better success for our patients.

'One of the driving forces of fistula formation is hypothesised to be from the epithelial-to-mesenchymal transition (EMT) theory. However, the role of immune cells and cytokines in this process remains unclear. Recently, invariant Natural Killer T cells (iNKT) have been suggested to implicate the formation of perianal fistulae by producing key cytokines, in particular IL-22. In this study, we first investigated the optimal iNKT isolation protocol in fistula to allow us to deep phenotype the cells and understand their role in the pathogenesis of pCD. We also looked to produce the key cytokines, IL-22 and IL-13 production in fistula as they have been shown to be potential drivers of fistulising disease.

'Following our optimisation of these novel iNKT cells in fistula, we are now ready to sort these cells and deep phenotype them to study their transcripts and how it relates to the pathogenesis of pCD.

Additionally, our results from inducing cytokine production revealed that fistula samples had IL-22 and IL-13 produced when stimulated with microbial components such as MDP and LPS.

These results suggest a role of the microbiota in activating IL-22 and IL-13 producing cells. 'I chose this project due to my interest in IBD. This project captivated me as I would be looking into these novel iNKT cells and hopefully contribute to our understanding of the pathogenesis of fistula formation.'

Ms Khatun's Project Supervisor Mr Sulak Anandabaskaran, IBD Research Fellow at St Mark's Hospital and PhD student at Imperial College comments:

'Perianal Crohn's Disease (CD) is a severe form of CD causing significant impairment to patients' quality life and there is an imminent need to improve our understanding of the immunopathogenesis underlying its disease process. 'Monira's BSc research project at Imperial College London involved the role of key cytokines (IL-22 and IL-13) involved in fistula pathogenesis along with optimising a protocol for future deep phenotyping of the novel invariant Natural Killer T (iNKT) cells which have been proposed to potentially play a key role through IL-22 production.

Monira is a driven, enthusiastic medical student who was eager to learn and grow both clinically and scientifically through this complex, multi-faceted research project. Thank you for awarding Monira with this prize. We are very grateful for your acknowledgement of this much needed research work in perianal Crohn's Disease.

Ms Khatun states:

'I am extremely grateful and delighted in receiving the Dr Falk/Guts UK award. Laboratory based projects have many hurdles and require time and dedication, however seeing our results and receiving this award has made it all the worthwhile. This award has given me the confidence to pursue research in the future and contribute to the field of Gastroenterology and Hepatology. I would like to thank my supervisor Dr Sulak for his continuous support and assistance'

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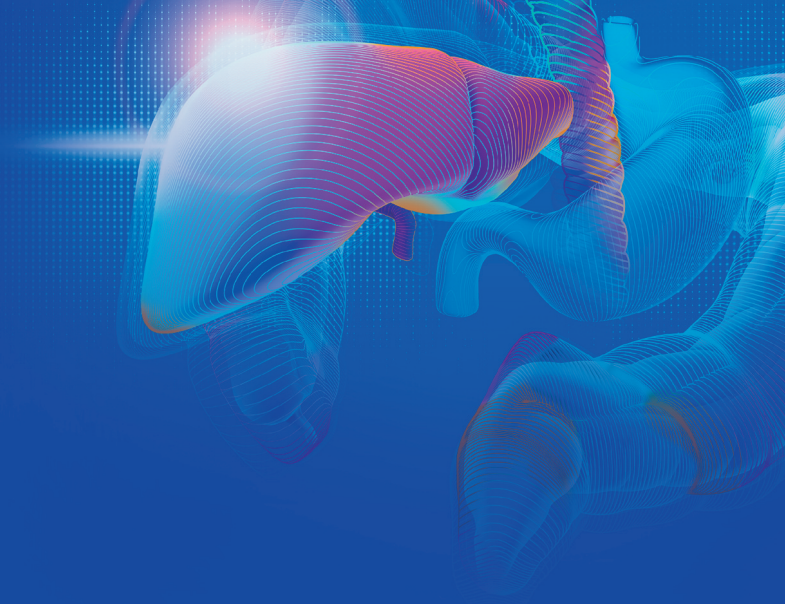

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