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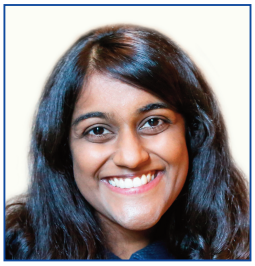
Dr Falk/Guts UK Awards 2021

F1/F2 RESEARCH AWARDS WINNER:
Dr Rebecca Jeyaraj



PROJECT:
Variation in genes involved in bile acid homeostasis and their contribution to paediatric non-alcoholic fatty liver disease.

Dr Jeyaraj has been working on this research at the Institute of Liver Studies, King's College Hospital. She is currently an Academic Clinical Fellow in Paediatrics based in London.

Dr Jeyaraj explains:

'Non-alcoholic fatty liver disease (NAFLD) has become one of the most common chronic liver diseases of childhood. It affects around one-third of children and adolescents with obesity, leaving them at risk of developing liver inflammation and scarring over the course of their lives. I was particularly interested in the question of why some children go on to develop severe NAFLD. I really enjoy working with children and their families and hope to specialise in caring for children with liver disease in the future, therefore this project was a natural choice for me as it allows me to develop my skills in bioinformatic analysis while seeking to answer an important and challenging question in the field of hepatology.'

'Although some studies suggest a significant heritability factor in the development of NAFLD, less than 5% of the overall genetic risk of NAFLD has been accounted for and identified. This may be partly because genome-wide association studies use only common variants, whilst rare or low frequency genetic variants with significant effects are not studied. We believed that a candidate gene approach could help address this problem of "missing heritability" by identifying rare but important risk variants in selected genes. Recently, growing attention is being paid to the role of bile acids in the pathophysiology of NAFLD. Bile acids regulate glucose and lipid metabolism by acting as signalling molecules through receptors such as the farnesoid X receptor. Variation in genes involved in bile acid homeostasis may therefore affect glucose and lipid homeostasis, which could in turn affect predisposition to NAFLD.'

'To test this hypothesis, this project aims to analyse sequence data of selected genes involved in bile acid homeostasis from 100 children with biopsy-proven NAFLD. *In silico* prediction will be used to explore the likely effect of genetic variants on protein function and wider cellular processes.'

'We will also seek to identify distinct subgroups of patients, and test for whether the identified genetic variants in these young people relate to the pattern or severity of their liver disease.'

'The findings from this project could help clarify which children are at risk of developing severe NAFLD, as well as identify new ways of treating the condition before it progresses to liver inflammation and scarring. I hope this project will contribute to wider efforts to improve liver health, both in childhood and in later adult life.'

Dr Jeyaraj's Project Supervisor, Richard Thompson, Professor of Molecular Hepatology comments:

'Rebecca is a passionate junior doctor. It is clear that she is committed to this project and will work hard to fulfil its aims. She is an independent worker who can be relied upon to work consistently and meticulously, as demonstrated by a strong track record of publications, presentations and prizes. She does not shy away from challenging tasks and has been enthusiastic about learning and developing new skills. Rebecca has shown a sincere determination to improve clinical care through a clinical academic career and has identified further opportunities for building her clinical and research experience in gastroenterology/ hepatology.'

Dr Jeyaraj states:

'I am incredibly grateful and honoured to have received this award. It has empowered me to approach the topic of paediatric NAFLD – a topic I am truly passionate about – using new and exciting bioinformatic tools. It is also an acknowledgement of the importance of this topic to the scientific and wider community, and a huge encouragement for my future academic aspirations. Additionally, it will equip me with some of the knowledge and skills necessary for a clinical academic career in paediatric hepatology.'

'I recognise what a privilege it is to be able to work on this project and am all the more determined to make a meaningful contribution to the field. With the help of this award as well as the supportive team at King's, I hope this work will contribute to wider efforts to improve the liver health of children, young people, and the adults they become.'

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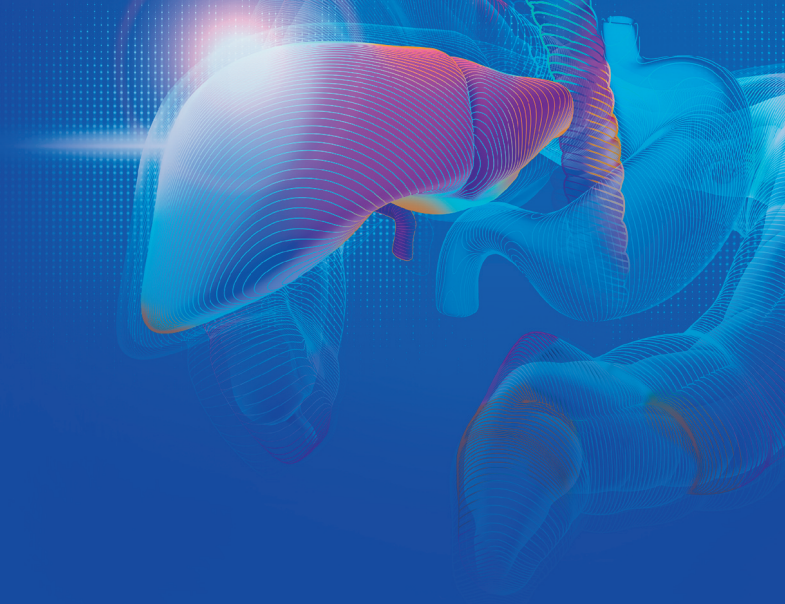

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