



Project: Structural and Chemical Biology of Noroviral Proteases - a major therapeutic target for structure-based design.

'As an international student studying in London, the costs of education and living can be overwhelming. The Falk/CORE Bursary has relieved a portion of this financial burden, and allowed me to develop my understanding of this disease.'

'This bursary will be a great help to my career, and research on the norovirus will grant me a better understanding of how to manage this debilitating disease in the clinical setting.'

Nataniel Tan is currently intercalating in a degree in Clinical Science. He will return to medical school at University College London in the next academic year.

'Last summer, I was on a family cruise around the Mediterranean. Upon meeting the Captain, he said he would not be shaking hands to limit the spread of norovirus,' says Mr Tan.' In addition, disinfecting hand solutions were abundant on board the ship. 'One of the few agents that were capable of turning the ship back to port was norovirus. It intrigued me how a simple virus could have such devastating effects, and I was extremely interested in the prospect of being a part of finding a cure for this viral infection.'

'Norovirus is a viral infection of the gastrointestinal system, and causes severe vomiting and diarrhoea for 24-72 hours upon contraction. While there are rarely any long-lasting health consequences, noroviral infections have a huge impact on societal infrastructures, costing governments millions of dollars annually. Since norovirus thrives in closed communities, infections spread rampantly in hospitals and elderly homes, often with severe implications.

'Vomiting and diarrhoea are extremely debilitating and draining physical symptoms to suffer from, and effectively interrupt the daily routine. Working on finding a cure, or alleviation of symptoms, for GI diseases would spare infected individuals from unnecessary suffering.

'The broad aim of the project was to develop an antiviral drug against norovirus, by targeting one of the key enzymes in its viral replication. Using protein crystallography, the specific aim of the project was to co-crystallize this enzyme with its substrate, allowing visualization of the mechanisms of its active site.

'Working on protein crystallography appealed greatly to me, as it is a very advanced and technical scientific field, which would take me out of my comfort zone and allow me to learn about something I would not otherwise have had the opportunity to do so.'

Mr Tan's supervisor Professor Jon B Cooper states:

'The project that Nat is undertaking has so far proved to be remarkably productive, due to his enthusiasm for the experimental techniques involved and his considerable efforts at laboratory work. Nat has learnt a large number of molecular biology and biochemical techniques and he has used these to engineer, express and purify a mutant protein for structure-function studies using various biochemical and Biophysical methods including crystallisation for X-ray analysis.

'Nat is a very hard-working, imaginative, competent, bright, helpful, organised and thoughtful person who does consistently well in research assignments.

'He takes a serious, rigorous approach to his work and makes the effort to do a significant amount of background reading and other preparation. He has thus obtained work experience which I expect will be of great relevance to him.'