

## Santander Travel Award Report

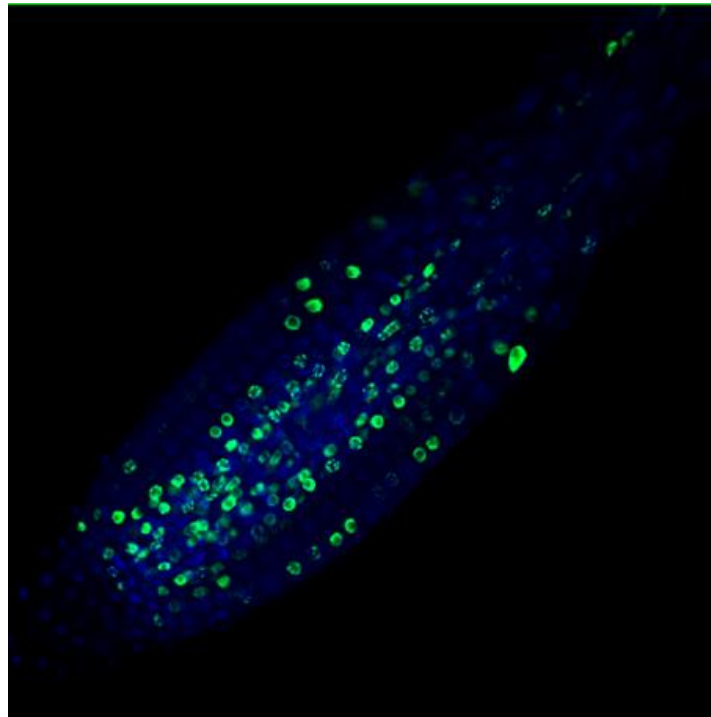
Zaki Ahmad



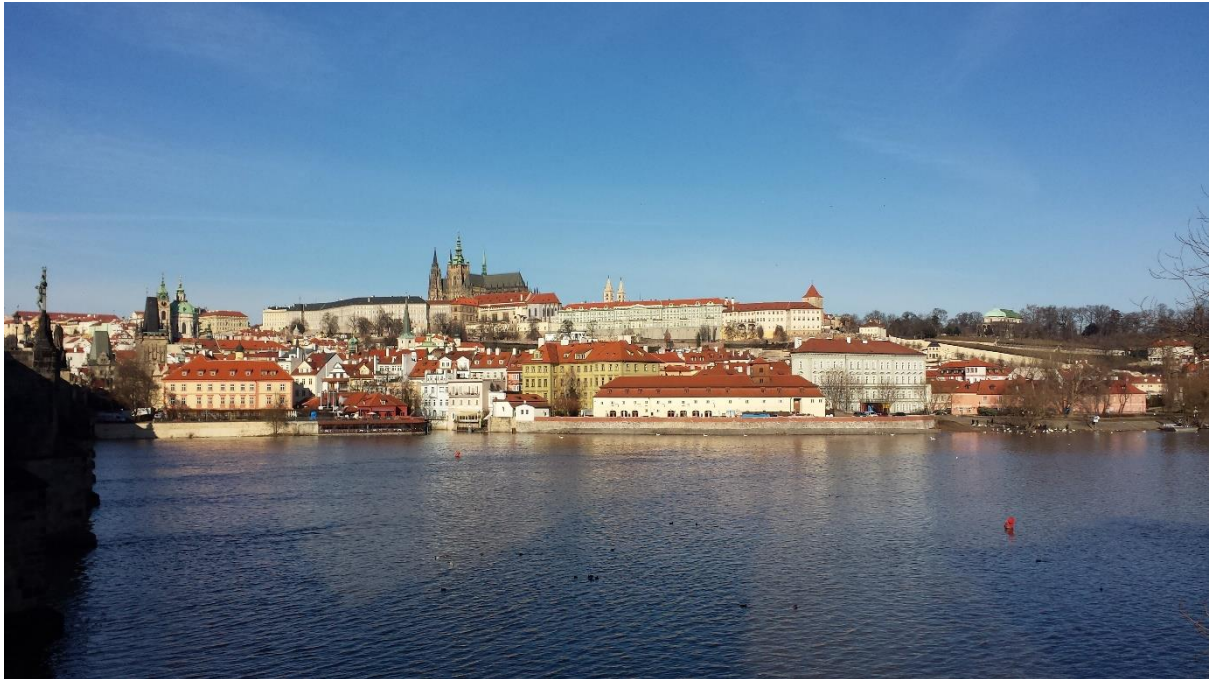
My PhD focuses on understanding the molecular basis of plant growth and its integration with the environment, this is a pertinent field especially in context of improving crop yield to ensure future food security. During spring 2017, I travelled to Prague for a three-week placement at the Institute of Microbiology of the Czech Academy of Sciences in the laboratory of Dr Pavla Binarová, where I was to learn techniques that I would help setup back home.

The central question of my project is how availability of nutrients is connected to organ growth at the molecular and cellular level. There are two fundamental processes that govern

plant growth, cell division cycle and cell growth. The first part of my research is to follow cell division under different environmental conditions and unravel the genes involved. Following cell division means observing different stages under the microscope, which are S phase (where DNA is replicated) and mitosis (where the genetic material is equally distributed to future two daughter cells). We can mark cells in S phase and mitosis by using EdU labelling and p-Histone3 immunofluorescent labelling, respectively. And this is why I was in Prague - to learn these techniques. I study roots because they are easy to see and they have a very clear structural organisation, and so a researcher can easily follow cell division and cell growth events and see how they change in response to different environmental conditions. The image below, which was taken using a confocal microscope, shows the tip of the root; green dots are cells that are undergoing DNA replication, blue dots mark the nucleus.



That was the science behind the trip, now few words on the activities. The daily commute involved first a tram, then the underground and finally a bus. The tram journey was most pleasant as it went through the town square, I should say I always looked forward to the morning and night tram journey! I would be in the lab no later than 8am as the experiments would run till 8-9pm at night, the plan was to do two months-worth of work in less than one, which we successfully completed. I noticed that nearly everyone at the institute wore slippers and I felt rather awkward with my shoes! I really looked forward to lunch time, besides Czech food, it was a great opportunity to engage with other researchers. Brexit was a hot topic at the time, of course.



Lastly, I would like to encourage all the readers to apply for the relevant travel award schemes the university offers, these are there to help students experience beyond what we are used to. Personally, I was both excited and nervous for the placement as I had never before worked in another laboratory, but I am really glad I applied and received the Santander travel award.