JAMES RENNIE BEQUEST

REPORT ON EXPEDITION/PROJECT/CONFERENCE

Expedition/Project/ Conference Title: 29th Fungal Genetics Conference

Travel Dates: 14/03/17-19/03/17

Location: Asilomar, Pacific Grove, CA, USA

Group member(s): Francois Dussart

Aims: Present the results of my PhD project to the wider fungal genetic community

OUTCOME (not less than 300 words):-

The 29th Fungal Genetics Conference, organised by the Genetics Society of America, gathered around 1000 scientists and graduate students from all over the world. Over four days, all the delegates assembled every morning for the plenary sessions which covered broad aspects of fungal biology and emphasised the importance of fungal research in the wider scientific community. I particularly enjoyed a presentation on the role of *Neurospora crassa* research in understanding circadian clock. I also found fascinating a presentation on optogenetics, which consists in the utilisation of visible light to control gene expression. In this presentation the audience assisted to a real fusion between science and art as cultures of *Neurospora crassa* reproduced via expression of fluorescent protein-encoding genes, images that had been projected on them. The afternoon consisted of numerous concurrent sessions covering wide topics relating to fungal genetics including plant-fungus interactions, cell communications, chromosome dynamics, secondary metabolism or synthetic biology. Evenings were dedicated to poster sessions during which hundreds of posters were displayed in a unique array of topics, colours and shapes. The extremely popular poster sessions were also a unique opportunity to learn in detail the latest discoveries in diverse domains. The poster sessions were a scientific event as much as a social event and allowed me to meet people with common research interests.

My research interest being on the plant-pathogen interaction and primarily on secondary metabolism in fungi, I enjoyed the opportunity to attend sessions on secondary metabolism as well as on small secreted proteins and effectors. I was particularly excited by a presentation on the evolution of a non-ribosomal peptide synthase-encoding gene responsible for the biosynthesis of the secondary metabolite peramine, produced by several grass endophytic species. In this presentation, the evolution history of the PerA gene was revealed and linked with the presence of transposons resulting in the disruption of the C-terminal reductase domain involved in the release of the secondary metabolite product from the enzyme. The resulting gene which was originally thought to be non-functional produced a new cyclic compound released by intra-molecular cyclisation instead of reductase domain-mediated inter-molecular cyclisation. I found this presentation extremely interesting as it exemplified how the evolution of a species secondary metabolome can be driven by events such as the insertion of a transposable element in a gene coding sequence. During the poster sessions I was particularly fascinated by a poster presenting the discovery a new secondary metabolite in a strain of *Aspergillus nidulans* grown aboard the international space station. This poster emphasised the complexity of working with fungal secondary metabolism as inducing the expression of gene clusters and subsequent production of secondary metabolites may require very specific conditions such as micro-gravity.

Overall, attending to the 29th Fungal Genetics Conference was a very positive experience both scientifically and socially. In addition, walking the conference ground and its surroundings was a real pleasure as the Asilomar ground is also hosts to numerous native plant and animal species.