JAMES RENNIE BEQUEST

REPORT ON EXPEDITION/PROJECT/CONFERENCE

Expedition/Project/Conference Title: Asilomar 2005.....

Travel Dates: 12th March – 20th March 2005.....

Location: Pacific Grove California .....

Group Member(s): Pete Marris, Graham Wright, Kirsten Altenbach, Gabriela Roca, Eric Kalkman, Hshiao-che Kuo, Graham Clark, Professor Nick Read.....

Aims: Give oral and poster presentations of my work, discuss future collaboration with Professor Barry Bowman. .....

OUTCOME (not less than 300 words):-

23rd Fungal Genetics Conference at Asilomar

Wednesday March 16th

In the first of the plenary sessions, entitled "Genomes and Evolution", I was given a chance to listen to several interesting speakers. Of particular interest were James Galagan, 1st author of the *Neurospora* genome paper, and Ralph Dean, 1st author of the *Magnaporthe* genome paper. The Ca^{2+} signalling in these two organisms have been found to be significantly different to that in animals and plants. This session gave me an interesting and useful introduction into bioinformatics.

In the concurrent session for that afternoon I chose the "Regulation of Primary Metabolism" session. In this session there were several talks on plant pathogenesis including Richard Oliver, who talked about the effects of gene disruptions on the pathogenicity of *Stagonospora nodorum*, and John Scott-Craig, who was investigating the effects of knocking out gene's encoding regulators of pathogenic enzymes on leaf infection in *Cochliobolus carbonum*.

In the evening I presented my poster. This proved to be an interesting evening and it gave me a chance to talk to many people who often posed interesting questions about my work from a variety of different perspectives. In addition to my own work the poster session also gave me a chance to study the work of and meet Professor Barry Bowman. Professor Bowman has recently supplied my lab with several *Neurospora* mutants in which Ca^{2+} transporter proteins have been deleted. This session was a good update into Professor Bowman's work and provided an excellent opportunity to hear his opinions and idea's in person.

Thursday March 17th

The day began with the plenary session in "Fungal Interactions". This included two talks of particular relevance to my work. Firstly, Christophe D'Enfert talked about biofilm formation by the human pathogen *Candida*. In this work it had been found that touch sensing is involved in the formation of a fungal layer on solid surfaces. These surfaces may include surgical implements which would provide the fungus with an easy opportunity to spread to new hosts. In another talk Alfredo Herrera-Estrella talked about prey sensing in *Trichoderma* which may involve touch sensing and cAMP signalling.

In the concurrent that afternoon I attended the “Fungal Circadian Rhythms and Photobiology” session. In this session people presented work on a wide range of different aspects of the circadian clock in *Neurospora*.

Friday March 18th

In the plenary session entitled “Cell Biology and Development” my first supervisor, Professor Nick Read, was presenting some of the work done in our lab on cell fusion in *Neurospora*. I found the talk gave me a new appreciation of the impact which confocal imaging work and manipulation of spores with optical traps, or “laser tweezers” is having in the scientific community. With encountering this work on a regular basis I had begun to take its quality slightly for granted. When some of the movies were shown there was a noticeable reaction from the audience which has served as an excellent reminder to maintain these high standards with my work.

In the afternoon session I attended the “Fungal Cytoskeleton” concurrent session. In this session I was extremely impressed with the quality of some of the imaging of *Aspergillus* and *Neurospora*. Of particular interest was the talk given by Mouriño Pérez about an investigation into microtubule dynamics during growth and branching in *Neurospora*. This was especially relevant to my work as some results have shown that mechanical perturbation causes increased hyphal branching.

Saturday March 19th

In the plenary session, “Signalling and Gene Regulation”, there were two talks of particular interest. The first of these was given by Kathy Borkovich and covered the work her group in the role played by G protein coupled receptors in the control of diverse envioronmental responses in *Neurospora*. Then a talk given by Yi Liu looked at the molecular basis of the *Neurospora* circadian clock.

During lunch me, my supervisor Nick Read and Professor Barry Bowman had a chance to discuss our ideas about my future work. Barry Bowman has done extensive research into ATPases, ion transporters and the vacuole in *Neurospora*. Some of proteins he has investigated include Ca^{2+} ATPases and Ca^{2+}/H^{+} exchangers and we believe these proteins may be involved in the removal of Ca^{2+} from the cytoplasm. During this time we discussed my work in which I am currently transforming several deletion mutants with aequorin to allow measurement of cytosolic free Ca^{2+}. In addition to this we also discussed the possibility of Barry creating several strains in which these transporters are labelled with GFP which he would send to us to identify their subcellular distribution.

In the final afternoon of concurrent sessions I had been invited to give an oral presentation of my work in the “Fungal Response to Stress” session. After overcoming some initial technical problems with the projector I was able to present my work on “How fungi feel – Touch Mediated Ca^{2+} signalling in *Neurospora crassa* in response to mechanical perturbation.” This was an excellent opportunity to inform a diverse audience of the work I have been doing in my PhD and the talk itself went very well. After the talk I was then asked a series of questions and given several interesting opinions on my work from people who had worked with similar techniques.