JAMES RENNIE BEQUEST

REPORT ON EXPEDITION/PROJECT/CONFERENCE

Expedition/Project/Conference Title: 15th Congress of the International Society of Developmental Biologists 2005.....

Travel Dates: 3rd - 7th September 2005 .....

Location: Sydney, Australia.....

Group Member(s): Robert Dewhurst (PhD student in Val Wilson's lab, ISCR) .....

Aims: To expand my knowledge and understanding of the field of developmental biology and present a poster of my PhD work.....

OUTCOME (not less than 300 words):-

The travel prize I received from the James rennie Bequest Fund enabled me to attend the Congress of the International Society of Developmental Biologists (ISDB) in Sydney, Australia in September 2005. The conference, which ran over four full days, consisted of 14 plenary lectures, some delivered by Nobel laureates such as Sydney Brenner and John Gurdon, and 21 symposia covering a range of topics of which many were interesting and highly relevant to my own work on early vertebrate development and stem cells. In addition, over 300 posters were displayed during two evening viewing sessions.

My own PhD project involves examining the behaviour of progenitor cells as they exit the primitive streak and differentiate during extension of the mouse anteroposterior axis. There is evidence for the existence of stem cells that give rise to the entire postcranial anteroposterior axis. I aim to investigate the roles of candidate genes involved in maintenance and differentiation of these axial stem cells. I presented my data in the form of a poster at the conference, providing an invaluable opportunity to discuss my data with other developmental biologists.

Although some talks were appallingly delivered, many were definitely worth hearing. Below is a brief outline of a selection of presentations I found particularly enjoyable and relevant.

Janet Rossant from the University of Toronto talked about how three stem cell lines derived from the blastocyst (ES, TS and XEN cells) can be used to understand development of the various lineages (epiblast, primitive endoderm and trophectoderm) in the pre-implantation mammalian embryo. The lab focuses on TS cell formation and the role of the transcription factor Cdx2 in segregating inner cell mass (ICM) and trophectoderm (TE) cells in the morula. She also showed that Cdx2 acts at the blastocyst stage to inhibit the ICM markers Oct4 and nanog in the outer cells (TE).

Olivier Pourquie from the Stowers Institute for Medical Research in Kanas City presented data on somitogenesis in the mouse embryo. As this is closely related to my own work on elongation of the anteroposterior axis, the talk was very relevant. He spoke about the segmentation clock and the FGF wavefront, which translates the clock's oscillations of gene expression into definitive somite boundaries. The FGF wavefront is formed by a novel mechanism involving fgf8 mRNA decay, which establishes a gradient of Fgf8 protein at the extreme posterior end of the chick embryo. He also talked about the link between segmentation/somitogenesis and patterning of the anteroposterior axis by the activation of Hox genes.

Eddy De Robertis from the University of California, Los Angeles talked about his work on morphogenetic fields in the Xenopus embryo that function to pattern the dorsal-ventral axis. The dorsal Spemman organiser secretes BMP and Wnt anagonists, and ADMP (a BMP family member). At the opposite pole, the ventral gastrula organising centre secretes a confusing set of factors that interact with those secreted from the dorsal spemann organiser to establish morphogenetic fields in the marginal zone, enabling patterning of the mesoderm.

The timing of the conference coincided with the end of the second year of my PhD, which enabled me to enter my third year with fresh ideas and renewed enthusiasm. I would like to thank the James Rennie Bequest Fund for providing money for me to attend the meeting, thus giving me this opportunity.