JAMES RENNIE BEQUEST

REPORT ON EXPEDITION/PROJECT/CONFERENCE

Expedition/Project/Conference Title: International Society for Developmental Neuroscience (ISDN) meeting .....

Travel Dates: 24th to the 28th August 2006 .....

Location: Banff, Canada.....

Group Member(s): Sarah Maxwell, ISCR.....

Aims: To attend the ISDN meeting, meet other researchers in the field and present a poster of my work .....

OUTCOME (not less than 300 words):-

The ISDN biennial meeting took place from the 24th to the 28th August 2006 in the beautiful setting of Banff, Canada. The meeting program represented some of the most exciting areas in developmental neuroscience, which included growth factors and cell fate decisions, neural stem cells during embryogenesis and cancer stem cells. As well as two sessions per day with short talks around a specific theme there were seven plenary lectures given by distinguished scientists from around the world.

The talks I found of particular interest included Francois Guillemot (UK) on "Mechanisms underlying proneural protein function in telencephalic neurogenesis", where data on the differential binding of the proneural genes Mash1 and Ngn2 with the Notch ligand Delta was presented. These studies also revealed that the activation of Delta1 by Mash1 requires a synergistic interaction with Brn1 and Brn2, POU homeodomain proteins, and that these interactions may be relevant for the distinct roles of Mash1 and Ngn2, which specify cortical glutamatergic neurons and basal ganglia GABAergic neurons, respectively. Arnold Kriegstein's (USA) talk on "Neural stem and progenitor cells in cortical development" suggested a new mechanism for the generation of cell diversity and cell number in the developing cortex. His studies showed that radial glia (RG) may divide asymmetrically in a vertical cleavage plane at the ventricle to self renew and produce a neuron that will climb along the parent RG cell towards the cortex. At this position in the subventricular zone, these cells can act as intermediate progenitors to produce two neurons by dividing symmetrically in a horizontal cleavage plane. Furthermore, these studies have revealed the importance of communication via gap junctions in the RG mediated guidance of neurons to the cortical plate. On a similar theme, Wieland Huttner (Germany) talked about a novel neuronal progenitor population dividing at the basal side of the neuroepithelium and identified by their expression of Tis21. The expression of Tis21 determines whether a cell will divide symmetrically or asymmetrically, and the talk revealed some of the molecular mechanisms involved.

The session on "Nervous system tumours and cancer stem cells" was also of much interest. Peter Dirks' (Canada) lab has identified a subpopulation of brain tumour cells that have tumour initiating ability in vivo. The tumour initiating cells are positive for the neural precursor marker CD133 and these cells represent a minority of the total tumour but are capable of clonogenic activity in vitro as

neurospheres and tumour initiating activity in vivo. A further talk on this theme from Nancy Ratner (USA) suggested a similar phenomenon in peripheral nervous system tumours. They have isolated embryonic dorsal root ganlia progenitors and propagated them as self renewing spheres in vitro. In humans, a mutation in NF1 gene predisposes to incurable peripheral nerve tumours and mice with a targeted mutation in the Nf1 gene can produce embryonic DRG spheres with a greatly increased efficiency and this experimental system may lead to insights into human peripheral nerve tumours.

As well as the oral program, there were poster sessions every evening, comprising around 250 posters in all over the course of the meeting. This provided an opportunity to have informal discussions with other researchers about their work and build up contacts that may be useful in my future career. Furthermore, I presented a poster of my own work (see picture below) and received valuable comments and questions from scientists working in similar fields.

After the conference I spent a few days in Banff to check out the magnificent scenery and enjoy some outdoor activities. Overall, my experience of the ISDN meeting 2006 was excellent and I would like to thank the James Rennie Bequest for providing me with travel funds to attend this meeting.