Second Summer Conference on “Molecular Mechanisms of Development”


The Second Summer Conference on “Molecular Mechanisms of Development” (http://www.lab.anhb.uwa.edu.au/hb308/conference_pending.htm) was held at the University of Western Australia on the banks of the Swan River from January 31-February 1, 2004. This annual meeting is part of a third year summer course (HB308) held at University of Western Australia covering topics ranging from pattern formation to whole organ development and generation of transgenic mice, and aims at introducing students to scientific presentation of data. The course is organized by Prof. Miranda Grounds from the School of Anatomy and Human Biology at the University of Western Australia and by Profs. Rupert Hallmann and Lydia Sorokin both from Lund University, Sweden.

Highlights of the meeting included the presentation by Patrick Tam from University of Sydney on germ layer development in early mouse embryos. Professor Tam described the elegant germ layer transplantation experiments in his laboratory that have revealed the importance of BMP4 and Wnt3 gradients in defining mesoderm and neuroectoderm, as well as experiments defining the role of Brachyury in germ cell determination. The theme of germ cell determination was continued in the presentation by Ralph Rubsam from the University of Erlangen-Nuremberg, Germany, who presented novel data on the role of the cytoskeleton on oocyte determination in Drosophila. Local student, Robert White from Edith Cowan University, gave an impressive presentation of his Honours project, which demonstrated the use of the Australian yabbie, Cherax destructor, for developmental studies. Sergey Parinov from the Institute of Molecular and Cell biology in Singapore described the advantages of using the Zebra fish as model system for studies of vertebrate development. He reported on the outcome of an enhancer trap mutagenesis screen carried out using an enhancer trap carrying the eGFP gene controlled by a portion of the keratin 8 promoter: the resulting 65 mutants showed eGFP expression in different patterns in various organs, in particular in the nervous system, permitting anatomical details of the mutants to be determined in the normally transparent embryos.

Development of organ systems was also a major theme of this two day meeting, with talks on development and differentiation of the vascular endothelium, the peripheral nervous system, lung, liver and thymus. Rupert Hallmann and Manuel Selg, both from Lund University, Sweden, presented exciting data on factors that define tissue-specific characteristics of vascular endothelium and the use of the embryoid body culture system for studies of blood vessel and lymphatic endothelial cell development. Vance Matthews from the Department of Biochemistry at the University of Western Australia, described the role of oval cells in liver development and regeneration. Michael Sixt from Lund University presented data on the novel extracellular matrix of the thymus and its role in antigen transport in T cell “education” during development. Basement membrane-like
structures that act as conduits for transport of small soluble molecules were described, a
central component of which is the laminin 10 molecule. Laminin 10 was also the central
molecule in the presentation by Pritinder Kaur from the Peter MacCallum Cancer Center,
Melbourne, who provided evidence for its role in the maintenance of a skin stem cell
population.

Development of many systems was described using a diverse range of animal models
from mouse, sheep, drosophila and zebra fish to the more unusual arthropod (the
Australia yabby *Cherax destructor*) and marsupials (the bandicoot *Isoodon obesulus*)
Scientists and students from local and interstate Universities presented excellent work,
and a lively discussion made this informal conference a success.

We look forward to the next Summer Conference and next 3rd year course in
Developmental Biology (HB308) which will take place in January 2005 at the School of
Anatomy and Human Biology, and is open to all interested scientists and students.
Further information is available on [http://www.lab.anhb.uwa.edu.au/hb308/default.htm](http://www.lab.anhb.uwa.edu.au/hb308/default.htm)
Rupert Hallmann and Lydia Sorokin in front of the Leonard French mural *Emergence*, in the courtyard outside the conference venue at UWA.