

REPORT OF THE INAUGURAL 2003 MEETING



The Bodin Conference on Epithelial-Mesenchymal Transitions (EMT) was held on October 5th-8th 2003 at Port Douglas, Queensland. The meeting was convened locally by Don Newgreen (Murdoch Childrens Research Inst.), Erik Thompson (University of Melbourne), Guy Lyons (Sydney Cancer Centre) and Damien Harkin (Queensland University of Technology) with a powerful international committee chaired by Professor Elizabeth

Hay (Harvard Medical School, Boston, USA) and including US, Canadian, Japanese, German and French members. The conference was backed not only by the Potter Foundation (who provided Keynote speaker support), but also by the Australian Association of Science, the Queensland Cancer Foundation and a number of Australian research institutes. Major international support was provided by the NIH (USA).

EMT is the name given to a very complex set of changes in cell behaviour, involving differential expression of many genes and alterations in function of many cellular and extracellular molecules. The outcome of this is the transformation of cells arranged in a coherent layer of epithelial cells-- to more individualistic and potential motile cells of mesenchymal cells. EMT was recognised decades ago (by Prof. Hay) as a primary mechanism in embryogenesis for remodelling tissues. More recently EMT has been seen as crucial to the spread and invasion of carcinoma, and more recently still, various pathologies marked by fibrosis have had their resemblances to EMT explored. Despite the basic and clinical importance of EMT, this extremely rapidly growing field has never had a conference devoted to it, and indeed the disciplines of developmental biology, cancer and pathology rarely interact although they have much to share.

This Conference addressed these shortcomings by bringing together 120 international and Australian experts spanning each of these disciplines. Outstanding Keynote lectures were given by Professors Elizabeth Hay, Mary Hendrix (University of Iowa, USA) and Jean Paul Thiery (Inst. Curie, Paris, France), the latter receiving Potter Foundation support. The quality and standing of the speakers in the general sessions was also remarkably high, with thirty-seven of forty-six speakers international. This international attractiveness is a tribute to the timeliness of the meeting. Given the common interests, the sessions were intense and replete with new data, and the discussions were full and lively.

The same molecular families were repeatedly identified in examples from development, cancer and pathology, highlighting the similarity (but not identity) of EMTs in different biological contexts, both normal and pathological. These included the intercellular growth factor signals especially of the TGF-beta and Wnt families; their receptors on the cell surface and, within the cells, the signal transduction chains, Smads and beta-catenin. These exerted control of EMT by regulating expression of so-called master genes, whose protein products regulate and orchestrate transcription of other genes. Most attention was focussed on the Slug/Snail family which collaborate with the LEF/TCF gene family to control the expression of genes for EMT effector molecules. The coordinated functions of the numerous effector molecules was one of the recurrent themes, with particular attention on the cadherin system of cell-cell adhesion, and the cytoskeleton and its regulators of the Rac/Rho family. Taken together the talks emphasised the complex nature of the changes in EMT and hence the exquisite orchestration required to carry it out.

The basic science of EMT also highlighted key points where the process might be controlled clinically; and indeed there were exciting reports on the ability to halt and even reverse EMT in models of renal fibrosis. The medical implications of this are enormous, given the prevalence of fibrosis contributory to, for example, renal failure in human disease.

EMT is a dynamic process, and many of the talks, including that of Prof. Thiery, included spectacular state of the art time-lapse imaging. As well as being visually stunning, these gave insights into cellular processes which are otherwise difficult to comprehend.

This Boden Conference amply fulfilled its aims of bringing together in a cross-disciplinary forum, the worlds leading experts on a topic of enormous basic and clinical interest that is currently in a phase of rapid growth. As an indicator of the success of this conference, plans for future EMT Conferences were unanimously agreed upon during one of the open discussion sessions. These will be held at Vancouver, Canada, October 1-3, 2005 (Organizers: Shoukat Dedhar and Raghu Kalluri) and in Cracow, Poland, in 2007 (Organizer: Pierre Savagner).