



Profile of the Adelaide Centre for the Molecular Genetics of Development¹

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The Centre for the Molecular Genetics of Development (CMGD) was established in 2000 at the University of Adelaide through the Special Research Centre scheme of the Australian Research Council. The CMGD was established to work towards a molecular understanding of the rules and mechanisms that govern the behaviour of cells during development. The research centre, funded for nine years by the Australian Research Council encompasses researchers from the University's Departments of Genetics and Biochemistry and leading to the employment of new researchers. South Australia's biotechnology industries will be boosted by the centre's work, which will offer more sophisticated genetic technologies to tackle problems ranging from stock improvement to human developmental disorders. Research aimed at generating specific tissue types for therapeutic use will also be an important part of the research to be carried out by the centre.

In 2002, the Centre is expanding to include developmental studies being carried out at the Australian National University. The Centre has a focus on the use of model organisms, notably the fly, *Drosophila melanogaster*, the zebrafish, *Danio rerio*, the chick, *Gallus domesticus*, and the mouse, *mus musculus*. The

Centre has also recently supported research into the development of the primitive coral building animal, *Acropora millepora*, as part of an effort to develop this organism as a model cnidarian for the investigation of developmental mechanisms and their evolution.

A key focus of the research of the Centre is to investigate molecular processes that underpin cell behaviour during development. Professor Robert Saint and Dr. Stephen Dalton are investigating cell cycle regulatory mechanisms within the developmental contexts of *Drosophila* and the mouse. Dr. Stephen Wood is exploring the role of protein stability in early mouse development and Dr. Murray Whitelaw is investigating the molecular basis of action of the PAS/bHLH group of transcription factors. The Centre boasts a very strong cell therapy group headed by Professor Peter Rathjen, defining and characterising the factors that influence differentiation of mouse embryonic stem cells. The developmental neurobiology research effort is

Abbreviations used in this paper: CMGD, Centre for the Molecular Genetics of Development.

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1. Note: In the logo of the Centre for the Molecular Genetics of Development illustrated above, the circle of the C represents the egg while the line and star are derived from the image of a homunculus, a centuries old and notoriously incorrect explanation of the inheritance of form in individuals. Animal form is, of course, generated by the encoded genetic programme that unfolds during embryogenesis. In true Australian style, we have used the fallacious concept of the homunculus to remind us that we seek to elucidate the nature of the genetic programmes that underpin animal development.

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(Left) The new Molecular Life Sciences Building on the city campus of the University of Adelaide, which houses the Adelaide laboratories of the CMGD.



(Right) The Research School of Biological Sciences at the Australian National University, site of the ANU laboratories of the CMGD.

headed by Dr. Michael Lardelli and Dr. Simon Koblar, with interests in novel zebrafish screens for new genes involved in neural development and in the Eph/Ephrin family of intercellular signalling molecules. The CMGD also has key interests in the application of Developmental Biology research to problems in human health and development. Dr. Timothy Cox and Associate Prof. Robert Richards are investigating the relationship between developmental mechanisms and human diseases such as craniofacial malformations and cancer. The research of the CMGD is backed up by access to state of the art infrastruc-

ture facilities, including confocal and deconvolution microscopy, microarrayer facilities, tissue culture facilities and mouse transgenesis and knockout facilities.

In addition to its research activities, the Centre provides a focus for developmental biology-related activities in Australia. It sponsors workshops, courses and conferences, all aimed at strengthening the expertise of Developmental Biologists and stimulating interest in Developmental Biology within Australia. More information and contact details can be found on the CMGD website, <http://www.cmgd.adelaide.edu.au>