Biosketch Professor Richard Boyd

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Richard Boyd is a Professor of Monash University, and Director of Monash Immunology and Stem Cell Laboratories (MISCL) (110 scientists), where he also Heads the Immune Regeneration laboratory of approximately 25 people. He is also Chief Scientific Officer of biotechnology company Norwood Immunology, and the newly formed Magellan who have supported the translation of his research to clinical trials in Australia and the US and who are developing stem therapies for Veterinary and human applications. His research has focussed on the formation and growth of the immune system and his group were the first to grow an organ from stem cells; they identified epithelial stem cells in the embryonic mouse, which could form a thymus after transplantation. His is also a Director of a new Hong Kong-based company, Pro-Stem, which, in a world first, is developing the technologies and infrastructure for cryopreservation banking of a broad range of newborn stem cells.

His laboratory has established an internationally recognised leadership position in understanding the nature and function of the thymic microenvironment. Recently they have developed technologies for reversing age-associated degeneration of the immune system, particularly the thymus, including making haemopoietic stem cell transplantation (HSCT) more efficient. Combining thymic regrowth and donor haematopoietic stem cells forms a platform for treating autoimmune diseases, as well as the ability to induce tolerance to donor grafts including therapeutic stem cell based therapies. For this reason, Richard's laboratory has been instrumental in creating the unique interface between immunology and stem cell research. His recent studies have harnessed the immunomodulatory and pro-reparatory properties of mesenchymal stem cells for the repair of immune system damage such as autoimmunity and immundeficiencies and particularly musculoskeletal and arthritic conditions. Richard has published over 250 papers and has had a major role in the education of undergraduate and over 100 postgraduate students at Monash University. He has also given many public lectures on immunology and stem cells.

He receives substantial funding for his research group's program from the National Health and Medical Research Council of Australia (NHMRC), the Australian Stem Cell Centre, Australian Research Council, Norwood Immunology and he has recently been awarded two prestigious grants from the Californian Institute for Regenerative Medicine.

Selected Recent Publications:

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Calder, A.E., Hince, M.N., Dudakov, J.A., Chidgey, A.P. and **Boyd, R.L. (2011).** Thymic involution: where endocrinology meets immunology. Neuroimmunoendocrinology (2011, in press)

Fletcher A., Calder, A., Hince, M.N., **Boyd, R.L.,** [1*] and Chidgey, A.P.[*] (2011). The contribution of thymic stromal abnormalities to autoimmune disease. Current Reviews in Immunology (In press).

Morison, J., Seach, N., Chidgey, A., **Boyd, R.** (2011) The Immunogenicity of stem cells and thymus-based strategies to minimise immune rejection. In, Dr P. Fairchild (ed) *Immunological Barriers to Regenerative Medicine,* Springer Verlag, UK

Boyd, N.R., **Boyd, R.L**, Simon, G.P. and Nisbet, D.R. (2011) Synthetic multi-level matrices for bone regeneration. In: "Tissue Engineering in Regenerative Medicine", Springer, (In Press),

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Heng, T.S.P, Chidgey, A.P., and Boyd, R.L., (2010) Getting back at nature: understanding thymic development and overcoming its atrophy. Curr Opin Pharmacol, 10: 1-9

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Chidgey, A.P., Layton, D.S., Trounson, A.O., **Boyd, R.L.,** (2008) Tolerance strategies for stem-cell-based therapies. Nature, 453, 330 – 337.

Sutherland, J.S., Spyroglou, L., Muirhead, J.L., Heng, T.S., Prieto-Hinojosa, A., Prince, H.M., Chidgey, A.P., Schwarer, A.P., and **Boyd, R.L.,** (2008) Enhanced immune system regeneration in humans following allogeneic or autologous hemopoietic stem cell transplantation by temporary sex steroid blockade. Clin Cancer Res, 14(4): 1138-1149

Barnard, A.L., Chidgey, A.P., Bernard, C.A., Boyd, R.L**.** (2008) Androgen depletion increases the efficacy of bone marrow transplantation in ameliorating experimental autoimmune encephalomyelitis. Blood 113: 204 - 213. 2008