Biological solutions... using the body’s natural repair and defence mechanisms to make the body smarter and more effective in fighting disease.
The following is a report on the research activities of the MMRI in 2007

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A team of 100 at the MMRI plus more than 65 collaborators at 50 institutes or hospitals in seven different countries.
Why we do what we do

Dr Georgina Clark, MMRI research team leader

“Patients and clinicians dream of ways to cure disease. As research scientists, we provide the new knowledge, the new reagents, the new understanding of biological processes to make these dreams a reality.”

Sharyn Tauro, PhD student

“Diseases like AIDS, malaria, typhoid, Inflammatory Bowel Disease rob young kids of life, especially those in the poorer nations. Everyone deserves a chance to live a long happy life, to fall in love, to have families. The only way these kids can get this chance is by providing them with better and cheaper cures which can be obtained by scientific research. This is what motivates the work that I do.”
Sonia Hancock, Research Nurse

“If I can make a difference to one patient, it means the world of difference to me. When one patient smiles and says thank you for making me better, millions of thank yous are heard. My commitment to improve outcomes for patients is a passion, a passion that knows no ends. As a research nurse, the bench literally comes to the bedside!”

Dr Raj Eri
Research Fellow, Mucosal Diseases Program

“Changing career from being a vet to a full time scientist has worked for me because as a scientist, I am in a position to discover something new, enjoy the excitement of seeing live molecules in action and inspired by the thought of making a difference to human health. Best of all, after my retirement (if there is one), I can proudly do a pubmed search and look for my contribution to humanity through scientific research.”

Robert Wadley, Flow Cytometry Technician

“My inspiration to do medical science came from men who had worked in the most primitive conditions in the jungles of Asia & Africa. I work at the cutting edge of modern technology, yet it is still true that one simple idea can change the world.”
DC Antigens

Team Leader
Dr David Munster

Team members
Dr Yonghua Sheng, Senior Research Officer
Dr Anna Palkova, Research Assistant
Mr John Wilson, PhD Student

The DC Antigens Team aims to discover, characterise and develop applications for new molecules associated with dendritic cells. As DC are involved in many aspects of immune function, the team’s work can potentially impact on numerous diseases and conditions, but current work is directed towards DC immunotherapy for cancer and graft versus host disease (GVHD).

Projects
- Therapeutic anti-DC antibody development – CMRF-44, CD83
- Monitoring of activated DC for prediction of GVHD
- Human-(NOD-)SCID mouse models of GVHD and leukaemia

2007 highlights
- We obtained key in vivo evidence that, unlike current immunosuppressants, anti-DC therapy does not impair protective and therapeutic immunity in bone marrow transplantation.
- We successfully adopted phage display technology for engineering anti-DC antibodies.

Goals for 2008
- To have our preclinical humanised SCID mouse model of GVHD manuscript published in a high impact journal.
- To have developed CD83 and affinity matured CMRF-44 mAbs ready for humanisation.

DC Cancer Team

Team Leader
Dr Kristen Radford

Team members
Dr Sarah Jongbloed, Research Officer
Mr Andrew Kassianos, PhD Student
Ms Melinda Hardy, PhD Student
Dr Annelie Vulink, PhD Student

Immunotherapy using the patient’s own DC instructed ex vivo to initiate and direct anti-cancer immune responses is a new non-toxic strategy with potential to treat a variety of malignancies. However, suboptimal DC preparations and a lack of target tumour associated antigens (TAA) are key limitations that need to be overcome in order to improve efficacy and broaden the applicability of DC immunotherapy to a wide range of malignancies.

Understanding fundamental human DC biology will allow us to realise the potential of these cells and lead to improvements of this therapy. Our findings will be directly incorporated into future clinical trials to provide new treatment options for cancer patients.

Projects
- The role of DC produced cytokines in the induction of T lymphocyte responses
- Discovery of new TAA using a novel E.coli-based screening strategy
- Selection of prostate-antigens for DC immunotherapy

2007 highlights
- We developed methods to isolate the extremely rare CD141+ blood DC subset and study their function for the first time.
- We demonstrated that small percentages of NK cells can enhance the induction of tumour specific immune responses by DC. This has important implications for immunotherapy.
- We identified a new target for prostate cancer immunotherapy that induces robust immune responses.
Goals for 2008

• Further elucidate the function of rare blood DC subsets by examining their capacity to induce immune responses.

• Apply our novel TAA screening strategy to Acute Lymphoblastic Leukaemia (ALL).

• Further develop our novel prostate cancer TAA for inclusion in clinical trials.

Immunoregulation Team

Team Leader
Dr Georgina Clark

Team members
Dr Xinsheng Ju, Senior Research Officer
Ms Courtney Modra, MBBS/PhD Student

The Immunoregulation Team studies the human CD300 molecules – CD300a, CD300b, CD300c, CD300d, CD300e, CD300f – found on the surface of white blood cells. These proteins have the ability to regulate white blood cell response and amplify or diminish an immune response.

By studying the biology of the CD300 molecules, we will determine what role CD300 molecules play in the common chronic inflammatory skin disease, psoriasis, and how they may be used for targeted treatment of Acute Myeloid Leukaemia (AML).

Projects
• CD300 molecules as regulators of DC function
• CD300f as a target for antibody mediated therapy of AML
• Technologies to study human CD300 molecules
• CD300 molecules in psoriasis
• CD300e as a monocyte selection marker

2007 highlights

• There is a significant difference in the level of expression of CD300a/c molecules on the surface of some leucocytes. We have shown the ratio of CD300c and CD300a levels differs between psoriasis and normal donors in some white blood cells.

• We demonstrated that signals through CD300a/c molecules during the cell activation result in an increase in the production of Type I IFNα and a decrease in the production of TNFα. We have also found preliminary data showing that signals through CD300a/c molecules are different in psoriasis patients.

• We established that CD300a/c expressing plasmacytoid DC (pDC) are present in tonsil and that these cells also expressed a number of other pDC markers as expected. We identified a subpopulation of BDCA-4+ pDC from tonsils that did not express the CD300a/c molecules. Thus we have subdivided tonsil pDC on the basis of CD300a/c expression.

Goals for 2008

• Show the mechanism by which CD300a/c molecules contribute to the inflammatory response found in psoriasis.

• Identify the ligand for the CD300a molecule and also understand the mechanism by which CD300f makes cells migrate more specifically.
Growth and Differentiation Team

Team Leader
Dr Slavica Vuckovic

Team Members
Mrs Dalia Khalil, Research Assistant
Dr Lisa Freeman, Post Doctoral Research Officer
Ms Melinda Dean, PhD Student
Mr Adam McKinlay, PhD Student

The Growth and Differentiation Team is focused on investigating the human DC system in healthy conditions and applying this knowledge to cancer and Type 1 Diabetes Mellitus (T1DM).

Projects
- Targeting human DC in a multiple myeloma huNOD/SCID model
- DC biology in T1DM
- Mannose binding lectin (MBL)

2007 highlights
- Produced a new multiple myeloma xenograft-NOD/SCID mouse model that recapitulates the clinical manifestations of multiple myeloma and eliminates the major limitations associated with the published multiple myeloma xenograft-mouse model.
- Discovered early phase of allo-T cell responses occurs in the bone marrow in allotransplant recipients.

Goals for 2008
- To define activity of human bone marrow-resident DC in the context of multiple myeloma development and allotransplantation.
- Address whether defects in number of blood DC and T cell regulatory cells is primary to pathogenesis of juvenile T1DM.

Gene Discovery Team

Team Leader
Dr Masato Kato

Team Members
Ms Elisabetta D’Aniello, Research Assistant
Mr Neil Doyle, Honours Student

DC reside in peripheral tissues, take up pathogens as antigens, process them, and migrate to lymph nodes for presenting the processed antigens to other immune cells such as T cells and B cells for the antigen-specific immune responses.

The Gene Discovery Team investigates molecular mechanisms of DC function, particularly the functions of novel C-type lectin molecules (DEC-205 and DCL-1) discovered by MMRI. These molecules appear to function in antigen uptake and processing, pivotal steps for efficiently eliciting immune responses.

Projects
- Biology of a novel C-type lectin receptor, DCL-1 (CD302)
- DEC-205-mediated antigen loading to DC using immunoliposomes
- Biology of a novel intracellular protein AHCYL1

2007 highlights
- Publishing the first comprehensive article in the Journal of Immunology on DCL-1 (CD302), suggesting it played a role in adhesion.
- Creating two new experimental models involving CD302 and AHCYL1 knockout (gene deleted) mice.

Goals for 2008
- Dr Masato Kato has left the MMRI to commence a medical degree. The work of this team will be continued and incorporated into the DC program.
Adult Stem Cell Team

**Team Leader**
Professor Kerry Atkinson

**Team members**
Dr Gary Brooke, Senior Research Officer
Dr Chris Blair, Research Officer
Tony Rossetti, Research Assistant
Dr Rebecca Pelekanos, Research Assistant
Matt Cook, PhD Student
Kate Kollar, PhD Student
Celena Heazlewood, Honours Student
Rachel Han, Honours Student

The Adult Stem Cell team is focused on the cellular and molecular biology of mesenchymal stem cells (MSC) and their application for the repair and regeneration of tissues and organs.

**2007 Highlights**
We created a robust murine model of acute myocardial infarction (AMI) to study molecular mechanisms of MSC migration to sites of acute inflammation such as infarcted myocardium and to determine if MSC lodge in the heart and improve cardiac function after AMI. We have found that:

- MSC home preferentially to sites of acute inflammation, and that intravenously or intra-coronary injected MSC can be detected in the heart after myocardial infarction.
- MSC homing mechanisms differ from those of haematopoietic stem cells (HSC) with regard to selectin and adhesion molecule usage but appear to share chemokine/chemokine receptor pathways. Murine MSC from bone marrow are more immunosuppressive in vitro than organ-specific stem cells. Human MSC from placenta and marrow have a similar phenotype and both are immunosuppressive of T cell function in vitro.

**Goals for 2008**
- To further elucidate molecular homing mechanisms of MSC to sites of acute inflammation such as an acute myocardial infarction and to enhance migration of MSC to target organ by forced surface ligand expression or upregulation of molecules that regulate cell migration.
- To determine if cloned or bulk-cultured MSCs repair cerebral tissue injured by stroke.
- To determine if MSC accelerate haematopoietic engraftment after allogeneic haematopoietic stem cell (HSC) transplantation.
- To determine the immunosuppressive potential of MSC in treating human graft versus host disease following allogeneic HSC transplantation.
- To compare murine MSC with organ-specific stem cells at the transcriptome, proteome, secretome, cell surface array and functional levels.
- To determine if adult MSC can be used as a source for pluripotent induced stem cells capable of generating ectodermal and endodermal tissues as well as mesodermal tissues.
- To compare murine HSC with murine MSC for repair of cardiac damage after AMI.
- To develop automated large-scale closed cGMP technology for manufacturing MSC.
Biotherapy Program (continued)

Program Head: Professor Kerry Atkinson

Bone Marrow Transplant Team

Team leader
A/Professor Alison Rice

Team members
Dr Hannah Cullup, Research Officer
Ms Laura Sinfield, Research Assistant
Mr Andy Hsu, PhD Student
Ms Brie Turner, PhD Student
Ms Melinda Kambouris, PhD Student

Haematopoietic Stem Cell Transplantation (HSCT) improves leukaemia patients’ chances of survival but requires intensive chemotherapy and radiotherapy to eradicate the underlying disease. This is followed by infusion of healthy stem cells to provide an anti-leukaemic effect (Graft versus Leukaemia [GVL]) and restore healthy normal blood cells.

We are investigating therapeutic cell based strategies designed to prevent Graft versus Host Disease (GVHD) and leukaemic relapse to allow engraftment of a healthy donor blood system.

Projects
• Minimising GVHD
  o Effects of pretransplant conditioning on GVHD onset
  o Dendritic cell (DC) depletion to control GVHD
  o Mesenchymal stem cell (MSC)-mediated immunosuppression of GVHD

• Optimising GVL

2007 highlights
• We have developed functional, clinically relevant transplant models that allow us to delineate the mechanism of delayed onset GVHD in Reduced Intensity Conditioning (RIC) transplant recipients.
• Using our transplant models we showed that depletion of all DC does not prevent GVHD. We are now focussing on the effect on GVHD of selective depletion of activated DC.
• We have generated anti-leukaemic cytotoxic T lymphocytes (CTL) that specifically recognise the leukaemic target cells but spare healthy autologous or allogeneic cells. When these cells are injected into NOD-SCID with leukaemia, they alter the kinetics of Acute Lymphoblastic Leukaemia (ALL) growth in the mouse.

Goals for 2008
• Delineating the mechanism of delayed onset GVHD in RIC transplant recipients should generate opportunities to monitor and predict GVHD in RIC HSCT recipients, providing a window for early intervention. We plan to identify the mechanism of the transient MSC-mediated immunosuppression seen in transplant recipients who have received MSC.
• Continue with our work to determine the effect of depletion of activated DC on GVHD and the subsequent immune response.
• Continue to improve the in vivo efficacy of the anti-leukaemic CTL by co-administration of DC and transfect the ALL xenografts with luciferase to enable real time monitoring of leukaemic growth as a result of anti-leukaemic CTL administration.
Haematopoietic Stem Cell (HSC) Team

Team leader
A/Professor Jean-Pierre Levesque

Team members
Dr Ingrid Winkler, Senior Research Officer
Ms Bianca Nowlan, Research Assistant
Ms Valerie Barbier, Research Assistant
Falak Helwani, Research Officer
Maria-Anna Agnela D’Souza, Masters Student
Ms Yi Shen, PhD Student

Haematopoietic stem cells (HSC) are responsible for making all blood and immune cells. These very rare cells reside in the bone marrow and their development, migration and growth are very tightly regulated to keep the number of adequate red cells and white cells in the blood in a very narrow range. This is necessary to prevent leukaemia, anaemia, and immune and bone disorders and is made possible by very specialised microdomains of the bone marrow called “niches” (kennel in French), which fine tune all aspects of HSC behaviour. We are studying these niches at the molecular level in order to understand how HSC are regulated at the molecular level and identify new therapeutic targets to treat blood, bone and immune diseases.

Projects
• Mobilisation of HSC
• Regulation of HSC
• Mesenchymal stem cells

2007 highlights
• We discovered that the cell adhesion molecule E-selectin regulates HSC turn-over and sensitivity to chemotherapy in the bone marrow.

Goals for 2008
• Test whether drugs which interfere with E-selectin can increase the resistance of HSC to high dose chemotherapy and radiotherapy used in cancer patients.

Solid Organ Transplant Team

Team Leader
Dr Steve McTaggart

Team Members
Mr Ben Jones, PhD Student
Dr Chris Tracey, Urology Research Fellow

The Solid Organ Transplant Team is investigating important pathways involved in the immune response following transplantation with a view to developing novel therapies for use in clinical solid organ transplantation.

The team’s aim is to discover ways to manipulate the immune system during the early stages of a transplant so that an individual becomes ‘tolerant’ to the transplant organ, without the need for ongoing drug therapy.

Projects
• Mesenchymal stem cells (MSC) in the prevention of solid organ transplant rejection
• Dendritic cells and immunological tolerance – the paradox of pregnancy

2007 highlights
• Our group has been exploring the potential of MSC to prevent rejection of solid organ transplants. Utilising placental MSC isolated according to protocols developed by the Adult Stem Cell Team at MMRI, we showed in the laboratory that MSC suppress the immune responses. However, in live animals, MSC were unable to prevent rejection of a kidney transplant.

Goals for 2008
• Continue to examine the interaction between MSC and the immune system by looking at the pathways that connect the immune response to renal injury. This is important in the field of transplantation but also has broader applications, including the common clinical syndrome of acute ischaemic kidney injury.
Mucin Research Team

Team Leader
A/Professor Mike McGuckin

Team Members
Dr Sara Linden, Research Fellow
Dr Penny Jeffery, Research Officer
Ms Debbie Roche, Research Assistant
Ms Kim Miles, Research Assistant
Ms Thu Tran, Research Assistant
Mr Chad Heazlewood, PhD Student
Ms Sharyn Tauro, PhD Student
Ms Samia Taufiq, Masters Student

The Mucin Research Team is investigating the biology and clinical applications of a family of genes/proteins known as mucins. We have shown that mucins are a critical component of the barrier to bacterial and viral infection and that mutations in mucin genes can lead to inflammatory disease.

Our major current goal is to increase our understanding of the mucosal barrier that separates the body from the outside world. Specifically, how it keeps bacteria from infecting the body, how inappropriate inflammation is initiated causing chronic disease, and how this chronic inflammation leads to cancer.

Projects
- Characterisation of the role of cell surface and secreted mucins as a fundamental component of the mucosal barrier to infection
- MUC2 misfolding, endoplasmic reticulum stress in goblet cells and Inflammatory Bowel Disease (IBD)
- Examination of the role of cell surface mucins in regulating growth and metastasis in adenocarcinomas
- New therapeutics for IBD

2007 highlights
- In 2007 we demonstrated for the first time that cell surface mucins are a vital component of defence against bacterial infection.

Goals for 2008
- To capitalise on our discovery of the importance of aberrant assembly of mucin proteins and ER stress in IBD.
Inflammatory Bowel Disease (IBD) Team

**Team Leader**
Professor Tim Florin

**Team Members**
Dr Raj Eri, Research Fellow  
Ms Rachel Adams, Research Assistant  
Mr Chin Wen Png, PhD Student  
Ms Iulia Oancea, Masters Student

Inflammatory bowel diseases (IBD) will affect about 0.4% of the Australian population at some time in their life. Fortunately, not all sufferers will be severely affected, but more than half will experience debilitating or chronic symptoms. The Mater Health Services’ Adult Hospital is a tertiary centre for the treatment of IBD with over 900 patients attending its IBD clinics. Because our clinics are linked to a patient research database and laboratories including those at the MMRI, we are able to offer the best treatments to our patients.

Our clinical and linked laboratory research is based on the platform of a detailed clinical database that is linked to a de-identified genetic database/DNA bank, and tissue banks.

**Projects**
- Understanding of the pharmacology of drugs that are used to treat IBD
- Discovery of the major environmental factors that may be important in IBD
- Elucidation of the mucus barrier that is the first line of defence against infection by gastrointestinal mucosal bacteria
- Serological tests for Crohn’s Disease

**2007 highlights**
- We have designed and implemented a clinical database being used by peak body concerned with the study of IBD in Australia.
- We have a growing body of evidence that small mutations in the main secreted mucin, Muc2, is one of the most important pathological factors in UC.
- We have shown that novel serological tests developed in our lab are significantly better than the currently available ASCA test (antibodies against mannan) and even the newly designed test against flagellin molecules derived from a species of *Clostridium coccoides* bacteria.

**Goals for 2008**
- Conduct both basic science and clinical studies in this area, including genetic studies in IBD patients.
One of the most promising approaches for new effective treatments for prostate cancer (PC) is the use of dendritic cell (DC) vaccines. By modulating the patient's own immune system using our novel blood DC based therapies, there is real potential to overcome the patient's failed immune surveillance and allow the patient's immune system to attack PC cells.

Projects
- Prostate carcinoma BDCA-1+ blood dendritic cell (BDC) clinical trial
- Monitoring of immune response following BDC vaccination
- Prostate carcinoma CMRF-56+ BDC clinical trial
- KLK4 tumour antigen discovery and validation

2007 highlights
- We made progress in our Phase I clinical trial of a BDC preparation for the immunotherapy of metastatic hormone refractory PC, with an additional three patients receiving the vaccine and completing the trial. This bought the number of patients who have completed the trial to eight out of the required 12.

Goals for 2008
- To complete the vaccination schedule for all 12 patients on the current Phase I BDC clinical trial. In addition, we plan to complete the analysis of the data collected during the trial and determine the outcomes from the trial.
- Commence a new clinical trial in PC using our novel DC immunoselection platform. This method for isolating DC has been developed by the MMRI and we believe it has significant advantages over other methods for BDC immunoselection as it allows us to purify the cells in a single step. This trial will be a world first application of this new approach to DC selection.
- Continue with our basic science program and incorporate new findings into the clinical studies with the aim to develop better immunotherapeutic approaches for potential treatment of prostate cancer.
Multiple Myeloma Project
Management Team

Team Members
Professor Derek Hart, Principal Investigator
Dr Frank Vari, Senior Research Officer
Mrs Hui Tong, Research Assistant
Ms Sonia Hancock, Clinical Trials Nurse

Multiple myeloma (MM) is a rare progressive blood cancer that is a malignancy of plasma cells, the cells which make antibodies that help to fight infections. In this disease malignant plasma cells accumulate in huge numbers in the bone marrow. Their abnormal growth can result in significant bone loss, particularly in the vertebrae, leaving the patient severely handicapped and, if left untreated, in considerable pain.

While MM generally affects males and females in their middle age with the greatest incidence in the 60 to 70 years age range, there has recently been incidence of MM increasing in younger people aged 35-45 years. Although the current treatment usually induces remission for between two and five years, the disease almost always reappears and is usually fatal. We hope to either eliminate the disease or significantly prolong survival by using immunotherapy to target myeloma during this remission phase.

Highlights for 2007
• Refined for clinical application an immunoselection platform for blood CMRF56+DC from MM patients.
• Generated CTL from MM patients against novel MM tumour associated antigens (TAA).
• Developed a method for the expansion of anti-myeloma CTL from peripheral blood and bone marrow mononuclear cells using immobilised CD3/CD28 beads in media supplemented with IL-2. In our hands, this protocol expanded peripheral blood T cell on average 100 fold and bone marrow T cells 50-100 fold.
• Developed a preclinical laboratory model which replicates the features of MM in the clinical situation. This model will be critical in future assessments of the efficacy of anti-myeloma immunotherapies.

Goals for 2008
• Prepare for an immunoselected CMRF-56+ blood dendritic cell (BDC) clinical trial for MM immunotherapy.
• Test in vivo the new targets we have discovered for myeloma immunotherapy.
• To improve myeloma treatment by combining passive (T cells) and active (DC) immunotherapy and testing it in vivo.
Mesenchymal Stem Cells (MSC) Team

Project Management Team
- Professor Kerry Atkinson, Principal Investigator
- Dr Gary Brooke, Production Manager
- Mr Tony Rossetti, Project Management Team Leader
- Ms Sonia Hancock, Clinical Research Nurse
- Ms Nina Ilic, Quality Manager
- Ms Patricia Murray, Quality Officer
- Dr Rebecca Pelekanos, Production Scientist

A strength of the Adult Stem Cell Team is our parallel clinical trial program to explore the potential role of MSC in a number of clinical settings.

2007 highlights
- We initiated our clinical grade MSC manufacturing program to supply MSC for our clinical trial program.
- We manufactured 4.5 billion human MSC derived from two placenta donors and our first Phase I clinical trial using these cells has been HREC-approved and indemnified at MHS Brisbane, at Westmead Hospital Sydney and at Sydney Childrens Hospital.
- The MSC manufactured at the MMRI have been shipped to Westmead Hospital, Sydney, for infusion into recipients of umbilical cord blood and bone marrow transplants.

Goals for 2008
- Continue our first Phase I clinical trial – A multi-centre, open label dose-escalation study of unrelated, MHC-unmatched, placenta-derived MSC in recipients of unrelated umbilical cord blood HSC transplants.
- Initiate our second Phase I clinical trial – A multi-centre, open label, dose-escalation study of unrelated, MHC-unmatched placenta-derived MSC for the treatment of steroid-refractory acute graft versus host disease.
- Initiate our third Phase I clinical trial – A multi-centre, open label, dose-escalation study of unrelated, MHC-unmatched placenta-derived MSC for the prevention of cardiac failure after severe acute myocardial infarction.
- Develop an automated, large scale, cGMP closed system manufacturing process for producing clinical grade human placenta-derived MSC for regenerative medicine and treatment of inflammatory diseases.

Palliative Care Team

Team Leader
Professor Janet Hardy

Palliative care is defined as the care of patients with active, progressive, far advanced disease, for whom the prognosis is limited and the focus of care is the quality of life. Our research program aims to improve the quality of life of these patients including studies of supportive care, the control of pain and other symptoms and research to improve the care of patients in the terminal phase of disease.

Title
A randomised, double-blind, active-controlled, double-dummy, parallel group study to determine the safety and efficacy of oxycodone / naloxone prolonged release tablets in subjects with moderate to severe, chronic cancer pain (Phase III).

Investigators
J Hardy

Lead Agency
Mater Health Services

Funding Body
Mundipharma Research

Purpose
To determine whether the combination of naloxone and oxycodone can prevent constipation.
A double-blind dose ranging study to determine the optimal dose of oral morphine or oxycodone needed to treat breakthrough pain for people on regular opioids in the palliative care setting

**Investigators** J Hardy, D Currow, C Sanderson, D Cherry, G Gourlay, J Plummer, B Fazekas  
**Lead Agency** Flinders University  
**Funding Body** JP Kelly Mater Research Fund  
**Purpose** Optimise treatment of breakthrough pain

Evaluating novel methods for delivering non-pharmacological interventions for dyspnoea in patients with lung cancer

**Investigators** P Yates, J Hardy, A Clavarino, K Fong, G Mitchell, H Skerman  
**Lead Agency** Queensland University of Technology  
**Funding Body** NHMRC  
**Purpose** Evaluate non-pharmacological management of dyspnoea

A randomised, double-blind placebo controlled study of subcutaneous ketamine in the management of cancer pain

**Investigators** J Hardy, D Currow, B Fazekas, T Shelby-Jones, M Ashby et al  
**Lead Agency** Palliative Care Clinical Studies Collaborative – PaCCSC  
**Funding Body** DOHA  
**Purpose** Evaluate the effectiveness of ketamine in cancer pain

A double-blind, placebo-controlled cross-over study of the effect of corticosteroids on sleep quality – a pilot study in patients with advanced cancer

**Investigators** J Hardy, T Nordoey, R Norris  
**Lead Agency** Mater Health Services  
**Funding Body** JP Kelly Mater Research Fund  
**Purpose** To determine the effect of steroids on sleep quality

A pilot study of an integrated intervention for managing nausea in patients with advanced cancer

**Investigators** P Yates, J Hardy, A Clavarino, G Mitchell  
**Lead Agency** Queensland University of Technology  
**Funding Body** NHMRC  
**Purpose** To evaluate the feasibility of undertaking a larger RCT

Randomised control trial of oral risperidone, oral haloperidol, and oral placebo with rescue subcutaneous midazolam in the management of delirium in palliative care inpatients

**Investigators** J Hardy, D Currow, B Fazekas, T Shelby-Jones, M Ashby et al  
**Lead Agency** Palliative Care Clinical Studies Collaborative – PaCCSC  
**Funding Body** DOHA  
**Purpose** To improve the pharmacological management of delirium in palliative care patients

An evaluation of the validity of measuring salivary oxycodone concentrations for pharmacokinetic studies in palliative care patients

**Investigators** J Hardy, R Norris, B Charles  
**Lead Agency** Mater Health Services  
**Funding Body** Palliative Care funds  
**Purpose** To assess the validity of using saliva concentrations as a alternative to plasma sampling

Using single patient trials to determine the effectiveness of psychostimulants in fatigue in advanced cancer patients

**Investigators** G Mitchell, J Hardy, R Vora  
**Lead Agency** University of Queensland  
**Funding Body** NHMRC  
**Purpose** To evaluate the effectiveness of methylphenidate in relieving fatigue

A randomised double blind placebo controlled trial of infusional subcutaneous octreotide in the management of malignant bowel obstruction at the end of life (Phase III)

**Investigators** D Currow, J Hardy  
**Lead Agency** PaCCSC  
**Funding Body** DOHA  
**Purpose** To compare the efficacy of subcutaneous octreotide relative to placebo in the setting of parenteral ranitidine, dexamethasone and hydration in the treatment of malignant bowel obstruction in people with advanced cancer
Pharmacogenomics

Team Leader
Professor Ross Pinkerton

Team Members
Dr John Duley

The basis of pharmacogenetics is the variation between individuals in how they respond to drugs. The genetic variation can be caused by rare mutations, but there are also a large number of very common mutations (polymorphisms) that affect drug response.

Some well-known examples are differences in response of individuals to alcohol and paracetamol. About 1 in 100 Caucasians are highly sensitive to alcohol, and suffer from what is called the ‘flushing syndrome’: after even a small alcoholic drink they feel ill and flush in the face. This is caused by genetic variation in a gene called aldehyde dehydrogenase, and it affects about 50% of Asian people. Paracetamol, a widely-used analgesic (for headache, pain), is effective for most people but a small proportion do not gain any relief from this drug.

The pharmacogenomics team is concerned with differences in response to more serious drugs: those used for treating cancer. For some patients, these drugs can cause life-threatening or disabling reactions. In other patients, there can be a lack of response, which means the cancer is not attacked by the drug and is able to grow uninhibited.

2007 highlights
• Successfully completed a collaborative research project with a team of clinical psychologists at Sydney University, studying adherence of children taking anticancer drugs for leukaemia treatment.

Other projects
• Genetics and treatment of severe neurological disease known as “Art’s Syndrome”
• Treating mitochondrial neurogastro-intestinal encephalopathy (MNGIE)

Goals for 2008
• To continue our research into pharmacogenetics of thiopurines and fluoropyrimidines.
Cooperative Research Centre for Biomarker Translation (CRC-BT)

The CRC-BT (trading as TransBio Ltd) will develop antibodies directed against therapeutic and diagnostic targets (biomarkers) present on cells that play a key role in major diseases, including autoimmune disease (especially rheumatoid arthritis) and cancers (haematological, colorectal, breast and prostate).

Outputs from the CRC-BT will transform the management of these diseases through the development of exquisitely specific and sensitive diagnostic tests and new therapeutics associated with novel cell surface molecules, which we refer to as “Membrane Biomarkers”, identified on cancer cells and human leucocytes.

It is anticipated that CRC-BT will reduce overall cost of the treatment and management of diseases such as autoimmune, transplantation and cancer by $50 million/year (0.1% of $50 billion) by 2018 through the clinical use of the therapeutic agents and diagnostic tests that are developed, and the training of medical staff in the use of these new therapies and tests.

CRC – BT Partners
Participants in the CRC-BT are:
- La Trobe University
- Women’s and Children’s Health Research Institute
- Burnet Institute
- Mater Medical Research Institute
- Mater Misericordiae Health Services
- Becton Dickinson Biosciences (USA)
- Amgen (USA)

Research Programs
- Membrane Protein Biomarker Discovery
- Binding Reagent Generation
- Pre-clinical Evaluation; correlation of biomarker with disease
- Diagnostic Evaluation
- Therapeutic Evaluation

The MMRI’s role in the CRC – BT
As a partner in the CRC-BT the MMRI will host research on dendritic cells (DC) and potentially other cells as well as play an active role in their diagnostic and therapeutic evaluation.
The MMRI believes the continued development of researchers will aid scientific discovery. Each year the Institute hosts two scientific symposia and weekly seminars for leading scientists from Australia and around the world to present their findings. Invitations to these events are open to any interested scientists or clinicians from any facility.

**MMRI 9th Annual DC Symposium**  
“Dendritic Cell Immunotherapy”  
21-22 June 2007, Brisbane, Australia

Keynote speaker: Dr Jim Young, Memorial Sloan-Kettering Cancer Center, USA

**Platinum Sponsor**  
Miltenyi Biotec

Also supported by:  
Gambro  
International Society for Cellular Therapy (ISCT)

**4th Annual Stem Cell Symposium**  
14-15 June 2007, Brisbane Australia  
“Bone – the Stem Cell Nirvana”

Key note speakers:  
Frank Barry, National University of Ireland  
Katarina Le Blanc, Karolinska University Hospital Huddinge, Sweden

**Sponsors**  
Miltenyi Biotec

Also supported by:  
Australian Stem Cell Centre  
Becton Dickinson

**MMRI student program**

Since the MMRI was founded in 1998, it has established a vibrant student population.

Throughout 2007 the Institute has hosted 25 PhD, Honours and Masters students and our numbers are frequently boosted by student visitors from interstate and overseas.

**2007 Honours Completions**

Neil Doyle (Gene Discovery) Results unknown  
Rachel Han (Adult Stem Cell) 1A  
Celena Heazlewood (Adult Stem Cell) 2A

**2007 PhD Students Completions**

Brie Turner (BMT)  
John Wilson (DC Antigens)

**2007 Education Committee**

Dr Steven McTaggart (Chair)  
A/Prof Jean-Pierre Levesque (Deputy Chair)  
Janine Richards (Jan – Aug)  
Nicole Shively (Oct – Dec)  
Dr Sara Linden  
Dr Gary Brooke (Jan – Jun)  
Dr Hannah Cullup (Jul – Dec)  
Melinda Kambouris (student)

**Seminars and Symposia**

Since 1998, the MMRI has hosted 16 international symposia covering dendritic cells, stem cells, mucosal diseases and renal research and held over 100 external seminars.
### 2007 Seminar Series

<table>
<thead>
<tr>
<th>Date</th>
<th>Speaker</th>
<th>Institute</th>
<th>Title</th>
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<tbody>
<tr>
<td>09.02.07</td>
<td>Dr Norbert Kienzle</td>
<td>QIMR</td>
<td>IL-4 impairs tumour immunity</td>
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<tr>
<td>16.02.07</td>
<td>Rebecca Pelekanos</td>
<td>MMRI</td>
<td>Determining a novel mechanism of growth hormone receptor dimerization and activation</td>
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<tr>
<td>23.02.07</td>
<td>Dr Ray Steptoe</td>
<td>DI</td>
<td>Targeting antigens for induction of tolerance in memory T cells.</td>
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<tr>
<td>09.03.07</td>
<td>Dr Nigel McMillan</td>
<td>DI</td>
<td>Silence of the Genes. RNA interference for cancer therapy</td>
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<tr>
<td>16.03.07</td>
<td>Dr Vicki Whitehall</td>
<td>QIMR</td>
<td>Molecular pathways to colorectal cancer</td>
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<tr>
<td>23.03.07</td>
<td>Dr Ross Pinkerton</td>
<td>MMRI/MHS</td>
<td>Overview of clinical and biological prognostic factors in childhood non Hodgkins lymphoma</td>
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<tr>
<td>13.04.07</td>
<td>Dr Falak Helwani</td>
<td>MMRI</td>
<td>Roles for actin regulatory machinery in adherens junction formation in epithelial cells</td>
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<tr>
<td>20.04.07</td>
<td>Prof Tom Gonda</td>
<td>DI</td>
<td>The MYB oncogene in human breast cancer</td>
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<td>11.05.07</td>
<td>Dr Michelle Wykes</td>
<td>QIMR</td>
<td>Malaria vs Immunity</td>
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<tr>
<td>18.05.07</td>
<td>Prof Brent Reynolds</td>
<td>QBI</td>
<td>Cancer stem cells</td>
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<tr>
<td>01.06.07</td>
<td>Prof Malcolm West</td>
<td>UQ</td>
<td>Aortic aneurysm disease</td>
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<tr>
<td>08.06.07</td>
<td>Prof Adrian Herington</td>
<td>QUT</td>
<td>The ghrelin axis and hormone-dependent cancers</td>
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<td>06.07.07</td>
<td>Prof Julie Campbell</td>
<td>AIBN</td>
<td>Cellular plasticity: monocyte/macrophages to smooth muscle</td>
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<td>13.07.07</td>
<td>Prof Ramesh Akkina</td>
<td>Colorado State University</td>
<td>Modeling stem cell-based gene therapy for AIDS</td>
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<td>13.07.07</td>
<td>Dr Matthew Sweet</td>
<td>IMB</td>
<td>Targeting histone deacetylases in inflammation</td>
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<td>20.07.07</td>
<td>Dr Dave Kilpatrick</td>
<td>Scotland Blood Service</td>
<td>Clinical significance of the pattern recognition receptors, mannan-binding lectin and L-ficolin</td>
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<td>03.08.07</td>
<td>Dr Kevin Spring</td>
<td>QIMR</td>
<td>BRAF (V600E) mutation and serrated neoplasia of the colon</td>
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<td>10.08.07</td>
<td>Prof Kerry Atkinson</td>
<td>MMRI/MHS</td>
<td>And now for something completely different...!</td>
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<td>17.08.07</td>
<td>Dr Gethin Thomas</td>
<td>DI</td>
<td>New genes in skeletal disease</td>
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<td>07.09.07</td>
<td>A/Prof Glenda Gobe</td>
<td>UQ</td>
<td>Molecular dynamics of the aging kidney</td>
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<td>14.09.07</td>
<td>A/Prof Michael Poulsen</td>
<td>QRI</td>
<td>The principles of radiation treatment</td>
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<td>21.09.07</td>
<td>Dr Nick Saunders</td>
<td>DI</td>
<td>E2Fs modulate keratinocyte differentiation and are novel anticancer targets</td>
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<td>05.10.07</td>
<td>Prof Jeffery Frelinger</td>
<td>University of North Carolina</td>
<td>Immune evasion by francisella tularensis – central role for PGE2?</td>
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<td>12.10.07</td>
<td>Dr Sarah Jongbloed</td>
<td>MMRI</td>
<td>Plasmacytoid DC regulate breach of self-tolerance in autoimmune arthritis</td>
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<td>19.10.07</td>
<td>Dr Kate Schroder</td>
<td>IMB</td>
<td>Regulation of toll-like receptor-9 signalling in macrophages: mechanisms controlling ligand sensitivity and cell-type specific signalling</td>
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<td>02.11.07</td>
<td>Dr Joan Li</td>
<td>IMB</td>
<td>Stem Cell Research – from heart to kidney</td>
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<td>QUT</td>
<td>The PSA-related kallikrein proteases in prostate and ovarian cancer</td>
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<td>Prof Lyn Griffiths</td>
<td>Griffith University</td>
<td>Molecular genetics of migraine</td>
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QIMR – Queensland Institute of Medical Research  
MMRI – Mater Medical Research Institute  
DI – Diamantina Institute  
MHS – Mater Health Services  
QBI – Queensland Brain Institute  
UQ – University of Queensland  
QUT – Queensland University of Technology  
AIBN – Australian Institute for Bioengineering and Nanotechnology  
IMB – Institute for Molecular Bioscience  
QRI – Queensland Radium Institute
Key Affiliates
Mater Health Services
University of Queensland
UniQuest

AMGEN
Australian Red Cross Blood Service
Gambro
Guy’s and St Thomas’ Hospital, London
Milenyi Biotec
QGEN Pty Ltd
University of Queensland, School of Pharmacy

Dr Alfred Lam, Griffith University
Dr Allison Pettit, IMB
Dr Andre Dubois, Uniformed Services University of the Health Sciences, Bethesda, USA
Dr Andreas Obermair, Queensland Centre for Gynaecological Cancer
Dr Andrew Cotterill, Mater Children’s Hospital
Dr Andrew Zannettino, Institute for Medical and Veterinary Science and the Hanson Institute
Dr Anthony Moreman, University of Georgia, Atlanta, USA
Dr Arjan de Brouwer, St Radboud Hospital, Nijmegen, The Netherlands
Dr Chris Pyke, Mater Health Services
Dr David Roberts, Centre for Cancer Research, Bethesda, Maryland, USA
Dr David Thornton, Wellcome Trust Centre for Cell Matrix Research, Manchester (UK)
Dr Faten Zaibak, University of Melbourne
Dr Graham Radford-Smith, RBH, QIMR
Dr Kathleen Braet, UQ
Dr Liza Raggatt, IMB
Dr Ljubov Simson, ANU
Dr Louise Purton, Massachusetts General Hospital, Boston, USA
Dr Matt Cook, ANU

Dr Matt Sweet, IMB
Dr Natalie Sims, St Vincent’s Institute
Dr Nick Timmins, AIBN
Dr Niclas Karlsson, University of Galway, Ireland
Dr Peter Swindle, Mater Health Services
Dr Phil Sutton, University of Melbourne
Dr Richard Lock, Children’s Cancer Institute Australia for Medical Research
Dr Robyn Rodwell, Queensland Cord Blood Bank
Dr Ross Norris, Mater Health Services
Dr Victoria Korolik, Institute for Glycomics, Griffith University
Dr Tracey O’Brien, Sydney Children’s Hospital
Mr Geoff Osborne, QBI

A/Professor Darren Higgins, Harvard Medical School
A/Professor Ernst Wolvetang, AIBN
A/Professor Geoff Hill, QIMR
A/Professor George Mendz, University of NSW
A/Professor Glenda Gobe, UQ
A/Professor J Alejandro Lopez, QIMR
A/Professor Ken Bradstock, Westmead Millennium Institute
A/Professor Ross Barnard, UQ
A/Professor Sean Grimmond, IMB
A/Professor Steve Mahler, AIBN
A/Professor Yin Xiao, QUT

Professor Anne Dickenson, University of Newcastle-Upon-Tyne
Professor Brent Reynolds, QBI
Professor Christopher Goodnow, ANU
Professor Christopher Parish, ANU
Professor Cornelis Melief, Leiden University
Professor David Gottlieb, Westmead Hospital
Professor David Johnson, Princess Alexandra Hospital
Professor Francesco Dazzi, Imperial College, London
Professor Heddy Zola, Child Health Research Institute, Adelaide
Professor John Christodoulou, Westmead Children’s Hospital
Professor Judith Clements, School of Life Sciences, QUT
Professor Lars Nielsen, AIBN
Professor Melissa Little, IMB
Professor Michael Feneley, VCCRI, Sydney
Professor Michael Waters, IMB
Professor Ranjery Thomas, DI
Professor Richard Harvey, VCCRI
Professor Robert Williamson, University of Melbourne
Professor Thomas Boren, Umea University, Sweden
Professor Pascale Cossart, Institute Pasteur, Paris, France
Professor Perry Bartlett, QBI
Professor Peter Gray, AIBN

AIBN – Australian Institute for Bioengineering and Nanotechnology
ANU – Australian National University
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QIMR – Queensland Institute of Medical Research
QRI – Queensland Radiation Institute
QUT – Queensland University of Technology
UQ – University of Queensland
VCCRI – Victor Chang Cardiac Research Institute
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<th>Funding Body</th>
<th>Chief Investigators</th>
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<td>Australian Stem Cell Centre</td>
<td>Atkinson, Kerry</td>
<td>Project Funding</td>
<td>Biotherapy</td>
<td>Determination of molecular homing mechanisms of MSC to infarcted myocardium and assessment of impact of cardiac function</td>
<td>2006-2008</td>
<td>$738,444.00</td>
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<td>Australian Stem Cell Centre</td>
<td>Kollar, Katerina</td>
<td>PhD Top Up Scholarship</td>
<td>Biotherapy</td>
<td>Analysis of the molecular homing mechanisms of MSC to damaged organs, using acute myocardial infarct as a model and the ability of MSC to improve cardiac function after AMI</td>
<td>2007-2009</td>
<td>$18,000.00</td>
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<td>Charities Aid Foundation America</td>
<td>Prue, Rebecca</td>
<td>Seed Grant</td>
<td>Clinical Trials Centre</td>
<td>Purchase of two Miltenyi BDCA-1 kits</td>
<td>2007</td>
<td>US $20,000</td>
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<td>Golden Casket Foundation</td>
<td>Hart, Derek</td>
<td>Project Funding</td>
<td>Dendritic Cell</td>
<td>Evaluation of combined active DC and passive cytotoxic T cell immunotherapy for multiple myeloma</td>
<td>2007</td>
<td>$227,272.00</td>
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<td>Inner Wheel Australia</td>
<td>Atkinson, Kerry</td>
<td>Project Funding</td>
<td>Biotherapy</td>
<td>Treatment of steroid-refractory acute GVHD occurring after unrelated cord blood transplantation by infusion of human mesenchymal stem cells</td>
<td>2007</td>
<td>$65,000.00</td>
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<td>John P Kelly Foundation</td>
<td>Hardy, Janet</td>
<td>Seed Grant</td>
<td>Palliative Care</td>
<td>A double-blind dose ranging study to determine the optimal dose of oral morphine or oxycodone needed to treat breakthrough pain for people on regular opioids in the palliative care setting</td>
<td>2007</td>
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<td>Leukaemia Foundation of Australia</td>
<td>Freeman, Jennifer</td>
<td>PhD Scholarship</td>
<td>Clinical Trials Centre</td>
<td>Proof of Principle for the use of CTL induced by RNA loaded CD34+ stem cell derived DC to eradicate leukemia post transplantation</td>
<td>2005-2007</td>
<td>$120,000.00</td>
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<td>Leukaemia Foundation of Australia</td>
<td>Hsu, Andy</td>
<td>PhD Scholarship</td>
<td>Biotherapy</td>
<td>Potential new target molecules for AML treatment: the role of the 3S-LS molecule</td>
<td>2005-2009</td>
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<td>Leukaemia Foundation of Australia</td>
<td>Medra, Courtney</td>
<td>PhD Scholarship</td>
<td>Dendritic Cell</td>
<td>Priming and enhancement of immunity to tumours using in vivo strategies</td>
<td>2006-2008</td>
<td>$50,312.00</td>
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<td>Leukaemia Research Foundation (UK)</td>
<td>Hart, Derek</td>
<td>Project Funding</td>
<td>Dendritic Cell</td>
<td>A Phase 1 clinical trial of a human chimeric anti-activated DC antibody to prevent AGVHD in high risk allo-HSCT</td>
<td>2007-2009</td>
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<td>National Health and Medical Research Council</td>
<td>Hart, Derek, Kenneth Munster, David</td>
<td>Project Funding</td>
<td>Dendritic Cell</td>
<td>Cytokine production by human DC – is less more?</td>
<td>2006-2008</td>
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<td>National Health and Medical Research Council</td>
<td>Jeffery, Penny</td>
<td>Fellowship (Peter</td>
<td>Dendritic Cell</td>
<td>Cell surface mucins modulate epithelial cell growth and apsoposis of normal mucosal wound repair and epithelial cancers</td>
<td>2006-2009</td>
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<td>National Health and Medical Research Council</td>
<td>Jones, Ben</td>
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<td>Dendritic Cell</td>
<td>Mechanisms of indoleamine 2,3-deoxosgenase mediated immunosuppression by mature DC</td>
<td>2006-2007</td>
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<td>National Health and Medical Research Council</td>
<td>Kassianos, Andrew</td>
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<td>The development of a DC-based strategy for the discovery of breast cancer antigens for immunotherapy</td>
<td>2007-2009</td>
<td>$65,598.00</td>
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<td>National Health and Medical Research Council</td>
<td>Kato, Masato, Hart, Derek</td>
<td>Project Funding</td>
<td>Dendritic Cell</td>
<td>Biology of the novel C-Type lectin receptor DCL-1 in innate and adaptive immune response</td>
<td>2005-2007</td>
<td>$432,750.00</td>
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<td>National Health and Medical Research Council</td>
<td>Levesque, Jean-Pierre &amp; Winkler, Ingrid</td>
<td>Project Funding</td>
<td>Biotherapy</td>
<td>Mechanisms of HSC mobilisation: Role of the cross-talk between bone marrow and bone</td>
<td>2007-2009</td>
<td>$443,250.00</td>
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<td>National Health and Medical Research Council</td>
<td>McGuckin, Michael, Sutton, Philip</td>
<td>Project Funding</td>
<td>Mucosal Diseases</td>
<td>Mucins in gastrointestinal barrier function</td>
<td>2006-2008</td>
<td>$512,625.00</td>
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<td>National Health and Medical Research Council</td>
<td>Munster, David, Barnard, Ross</td>
<td>Development Grant</td>
<td>Dendritic Cell</td>
<td>Production of a novel humanised anti DC therapeutic antibody for graft versus host disease</td>
<td>2007</td>
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<td>National Health and Medical Research Council</td>
<td>Rice, Alison, Munster, David, Akkinson, Kerry</td>
<td>Project Funding</td>
<td>Biotherapy</td>
<td>Antibody-mediated DC depletion to attenuate GVHD</td>
<td>2007-2009</td>
<td>$417,900.00</td>
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<td>National Health and Medical Research Council</td>
<td>Vuckovic, Slavica, Catley, Laurence, Frank</td>
<td>Project Funding</td>
<td>Dendritic Cell</td>
<td>Targeting human DC in a multiple myeloma humanized NOD/SCID model</td>
<td>2007-2009</td>
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<td>Windker, Ingrid, Levesque, Jean-Pierre</td>
<td>Project Funding</td>
<td>Biotherapy</td>
<td>Role of selectins and their receptors in the regulations of the haemopoietic system</td>
<td>2005-2007</td>
<td>$465,750.00</td>
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<td>Perpetual Charitable Planning Services</td>
<td>Rice, Alison</td>
<td>Project Funding</td>
<td>Biotherapy</td>
<td>Immunotherapy to treat children who relapse with leukaemia after transplantation</td>
<td>2006-2007</td>
<td>$50,909.00</td>
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<td>Perpetual Trust</td>
<td>Hart, Derek</td>
<td>Equipment Grant</td>
<td>BD FACSCanto II Flow Cytometer 3 laser (4-2-2) System, including High Throughput Sampler and Service Agreement</td>
<td>2007</td>
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<td>Perpetual Trust</td>
<td>Jeffery, Penny</td>
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<td>Mucosal Diseases</td>
<td>Novel applications of Ghrelin Peptides in Inflammatory Bowel Disease</td>
<td>2007</td>
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<td>McGuckin, Michael</td>
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<td>Mucosal Diseases</td>
<td>Investigations of endoplasmic reticulum stress in patients with ulcerative colitis</td>
<td>2007</td>
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<td>Queensland State Government – Growing the Smart State PhD Funding</td>
<td>Jones, Ben</td>
<td>Project Funding</td>
<td>Biotherapy</td>
<td>The role of mesenchymal stem cells in attenuation of small organ allograft rejection</td>
<td>2006-2008</td>
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<td>Susan G. Komen Breast Cancer Foundation (USA)</td>
<td>Kennedy, Derek, Hart, Derek</td>
<td>Project Funding</td>
<td>Dendritic Cell</td>
<td>Developing anti-breast cancer therapies based on G3BP</td>
<td>2006-2008</td>
<td>$247,478.00 (USD)</td>
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<td>The Cancer Council Queensland</td>
<td>Levesque, Jean-Pierre</td>
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<td>Biotherapy</td>
<td>Basic Biology of the haemopoietic system and therapeutic applications for the treatment of cancers</td>
<td>2006-2010</td>
<td>$555,229.00 (USD)</td>
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<td>The Cancer Council Queensland</td>
<td>McGuckin, Michael</td>
<td>Fellowship</td>
<td>Epithelial Cancer and Mucosal Biology</td>
<td>Cell surface mucins in adenocarcinomas</td>
<td>2003-2007</td>
<td>$477,845.00</td>
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<td>The Cancer Council Queensland</td>
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<td>Biotherapy</td>
<td>Farning the fire: combination immunotherapy to treat relapsed leukaemia post transplant</td>
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<td>$153,000.00 (USD)</td>
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<td>United States Army (USA)</td>
<td>Hart, Derek</td>
<td>Project Funding</td>
<td>Clinical Trials Centre</td>
<td>A Phase 1 clinical trial of a CMRF-56+ blood DC preparation for the immunotherapy of metastatic hormone refractory prostate cancer</td>
<td>2005-2007</td>
<td>$999,423.00 (USD)</td>
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# MMRI Patent Portfolio

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<thead>
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<tr>
<td>A Method of characterising DC</td>
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<td>A method of immunomodulation</td>
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<td>A method of immunomodulation</td>
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<td>Binding partners of antibodies specific for DC antigens</td>
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<td>DCL-1 and uses thereof</td>
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<tr>
<td>DEC-205 (Ly 75) / DCL-1 intergenic splice variants associated with Hodgkin’s disease, and uses thereof</td>
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<tr>
<td>DC receptor</td>
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<tr>
<td>DC specific antibodies</td>
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<td>DC specific antibodies and methods for their preparation</td>
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<td>In Vitro Immunization</td>
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<td>DC specific antibodies</td>
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<td>Isolated CD4+ T Cells Defined by CMRF-35 and CD45RO</td>
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<tr>
<td>Method for culturing DC</td>
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<td>Therapeutic and diagnostic agents</td>
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<td>Treatment and prophylaxis</td>
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2007 MMRI Staff Publications

1. Adams RJ, Heazlewood SP, Gilshenan KS, O’Brien M, McGuckin MA, Florin THJ. IgG antibodies against common gut bacteria are more diagnostic for Crohn’s Disease than IgG against Mannan or Flagellin. Am J. Gastroenterol. 2007; Epub ahead of print.


42. Jones BL, Brooke G, Atkinson K, McTaggart SJ. Immunosuppression by placental indoleamine 2,3-dioxygenase: a role for mesenchymal stem cells. Placenta. 2007; 281174-81

Book Chapters


In Press


