Molecular Medicine Ireland was established under the Higher Education Authority’s Programme for Research in Third Level Institutions.
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MMI Highlights 2008

Molecular Medicine Ireland – formation and official launch

In 2008, the Dublin Molecular Medicine Centre became Molecular Medicine Ireland, with the National University of Ireland, Galway and University College Cork joining the partnership established originally by Trinity College Dublin and University College Dublin and which the Royal College of Surgeons in Ireland joined in 2005. The formation of MMI was supported by the award of funding under the Higher Education Authority’s Programme for Research in Third Level Institutions (PRTLI), Cycle 4. Molecular Medicine Ireland was officially launched by the Minister for Education and Science, Mary Hanafin TD on 7 April 2008 at the Royal College of Physicians in Ireland.

Clinician Scientist Fellowship Programme

The five MMI partner institutions are collaborating to train a key group in clinical and translational research through the MMI Clinician Scientist Fellowship Programme (CSFP) which was officially launched on 7 April 2008. Funded by the Higher Education Authority under PRTLI Cycle 4 and organised through Molecular Medicine Ireland, the objective of the CSFP is to train the next generation of clinician scientists with the unique and specialised knowledge essential to fulfil Ireland’s research needs in translational medicine. Two calls for the programme resulted in the award of 22 Fellowships in 2008. The MMI Fellows are conducting research in areas such as neuroscience, infection and immunity, cancer, regenerative medicine, respiratory medicine, and cardiovascular disease. The programme consists of a three year PhD with a shared national structured curriculum.

Irish Clinical Research Infrastructure Network

During 2008, ICRIN and MMI made considerable progress towards achieving the objectives of the preparatory phase initiated in 2007. Highlights include the completion of Clinical Research – Irish Situation Analysis 2008 and the preparation of a roadmap for the development of Clinical Research in Ireland. This year also saw the facilitation together with the State Claims Agency, of a national approach to clinical indemnity, and the provision of clinical research training and Good Clinical Practice training. A highlight on the calendar was the co-sponsorship of the IPPOSI conference on Clinical Research in Ireland on 13 May 2008. ICRIN lead authored two ECRIN standard operating procedures and contributed to the ECRIN Submission to the European Commission on revision of EU Clinical Trials Directive.
Dublin Centre for Clinical Research

April 2008 saw the recruitment of a Programme Manager and Finance Manager for the Wellcome Trust and HRB funded Dublin Centre for Clinical Research (DCCR). At St. James’s Hospital, the design of the 1,200m² Clinical Research Centre was finalised and planning permission was secured in September. The facility is expected to be completed by the end of 2010. An organisational and governance structure for the DCCR Network was approved by the Board. Disease groups formed in the areas of Diabetes and Respiratory Medicine, which included consultant clinicians from all the Dublin area teaching hospitals. These groups are moving ahead with city-wide clinical research studies and securing approvals from hospital Research Ethics Committees. Further disease groups were formed in the areas of Gastrointestinal Medicine and Rheumatoid Arthritis and Autoimmunity.

GeneLibrary Ireland

A key research highlight in 2008 was the development of the GeneLibrary Ireland Design Phase. GeneLibrary Ireland will be an all-island control biobank of 10,000 DNA and blood samples from healthy volunteers along with well annotated phenotypic data. This was a collaborative initiative coordinated by MMI involving seven universities and the patient organisations and commissioned by the HRB and HSC R&D Office. The report of the design phase, GeneLibrary Ireland an all-island biomedical research infrastructure was finalised by the end of 2008 and will be submitted to the funders in the first quarter of 2009.

MMI Courses & Workshops

2008 saw MMI Education & Training building on the DMMC’s unique and highly regarded programme of cross-institutional courses and workshops to develop an education programme that brings together the expertise of five Universities and Medical Schools. Highlights of the programme included the third running of both Drug Design & Delivery and MMI/Wyeth Molecules to Medicines courses. Together, these courses gave participants a broad overview of the concepts, strategies and research techniques used in drug discovery and delivery and an overview of biopharmaceutical discovery, development and manufacturing. MMI also widened participation by making selected UCD and TCD Postgraduate Education Modules available to the wider research community.
I was honoured to be appointed Chair of Molecular Medicine Ireland in December 2008, succeeding Dr Michael Kamarck who stepped down after four years. I would like to pay tribute to Mike’s outstanding leadership, first of the Dublin Molecular Medicine Centre (DMMC) - a collaboration between UCD, TCD and RCSI - and from April 2008, of Molecular Medicine Ireland with the inclusion of National University of Ireland, Galway and University College Cork.

During Mike's time as Chair, the DMMC and its member institutions secured funding from the Wellcome Trust and the Health Research Board to create the Dublin Centre for Clinical Research (€23m), from the Higher Education Authority under PRTLI Cycle 4 for the Clinician Scientist Fellowship Programme and the creation of Molecular Medicine Ireland (€11.2m) and from the Health Research Board and the Health Service Executive for the formation of the Irish Clinical Research Infrastructure Network (€5m). These funding commitments are enabling Molecular Medicine Ireland and its partners to put in place the infrastructure, training and systems that are necessary to ensure that Ireland can turn research ideas into new therapies and devices that benefit patients and that add value to Ireland’s knowledge economy.

Under Mike's chairmanship, the company became a strong, national collaboration for translational and clinical research. I would like to express the gratitude of all associated with Molecular Medicine Ireland to Mike for his unfailing courtesy and encouragement, his strong sense of strategy and his global perspective on the business of MMI collaboration.

During the year, Frank Kenny and Professor Brian Harvey stepped down as directors of the Board and I would like to acknowledge and thank them for their contribution. I would like to welcome Professor Gerry McElvaney, Royal College of Surgeons in Ireland and Dr Stevo Knezevic, Chief Medical Officer, Wyeth Europa, as Board directors.

A highlight of 2008 was the formal launch of Molecular Medicine Ireland on 17 April 2008 in the Royal College of Physicians in Ireland, graced by the presence of Mary Hanafin TD, Minister for Education and Science. On that occasion, the heads of the five partner institutions – Dr Pat Morgan, representing Dr Jim Browne, President of NUI Galway, Mr Michael Horgan CEO/Registrar of the Royal College of Surgeons in Ireland, Dr Michael Murphy, President of University College Cork, Dr Hugh Brady, President of University College Dublin and Dr John Hegarty, Provost of Trinity College Dublin formally established Molecular Medicine Ireland to promote research into the molecular basis of disease, to build capacity in Ireland for translational and clinical research, to facilitate the transfer of knowledge from molecular research into effective therapeutic strategies and products, and to develop postgraduate education and training.

Minister Hanafin, speaking on behalf of the Government, warmly welcomed the creation of MMI as an example of how Ireland’s leading medical schools and their affiliated hospitals could work together to build the country’s capacity and reputation in patient and disease focussed research. I am pleased to report that by the end of 2008, MMI had agreed its strategy to deliver on its objectives and was focussed on the added value of collaboration in a challenging economic and financial environment.

Clinicians know that carefully designed clinical trials provide the best way to assess the effectiveness and safety of clinical therapies and devices; basic scientists are well aware that these trials often allow access to precious clinical material for basic investigation and translational research; and participants acknowledge that clinical trials provide access to new therapies and procedures and the possibility of better outcomes. Yet, despite a general consensus of the value of clinical trials and translational research, implementation of such work remains hindered by at least 3 challenges: suboptimal patient participation, suboptimal training, and physician reluctance to engage in research or refer patients. These represent formidable challenges and going forward our MMI mission aims to address these challenges. Our plans are to mobilise the strengths of the five partner institutions and their associated hospitals to build a sustainable national system to coordinate, support and promote translational and clinical research. This will be achieved by
“I am pleased to report that by the end of 2008, MMI had agreed its strategy to deliver on its objectives and was focused on the added value of collaboration in a challenging economic and financial environment.”

connecting the key players in health, research and industry
attracting, training and retaining world-class researchers
working to provide state-of-the-art facilities,
- bio-resources and harmonised processes
representing Ireland in clinical and translational
research infrastructures/networks in Europe and internationally, and
building collaborative research initiatives and opportunities.

In the meantime, clinicians, researchers, and trainees should join in efforts designed to educate practitioners and potential participants about the benefits of clinical trials and about their impact on our ability to deliver care, but mostly, about how these programmes enhance our healthcare environment. Basic scientists should engage in collaborations with others involved in clinical research not just because of access to clinical material, but because of the unique perspective they bring to the research team. Students, SHO’s, and Registrars should demand training in clinical trial design and implementation in translational research to develop the next generation of clinician investigators and/or translational researchers. Ultimately, the Irish healthcare community as a whole should expect that medical and scientific communities work together with patients to foster clinical investigation.

Damian O’Connell MD BSc PhD is Executive Director, Clinical Research Group Head, Pfizer Clinical R&D, Sandwich, Kent, UK. Damian has been a Medical Faculty member of The University of Virginia Health Sciences Center as well as of the Clinical Pharmacology & Therapeutics Department at University College Cork. He started his career in industry with Elan Pharmaceuticals as Director of Clinical Research (US) and was previously Head of Experimental Medicine at the Pfizer Global Research & Development site in Sandwich (UK).
Message from the CEO

I would like to congratulate Dr Damian O’Connell on his appointment as Chair of Molecular Medicine Ireland and say how much the staff and I look forward to working with him in deepening the collaboration in translational and clinical research between the partners. May I join with the Chair in thanking Dr Michael Kamarck for his excellent chairmanship of DMMC/MMI and for his personal encouragement and support.

In 2008, the Dublin Molecular Medicine Centre became Molecular Medicine Ireland, with the National University of Ireland, Galway and University College Cork joining the partnership established originally by Trinity College Dublin and University College Dublin and which the Royal College of Surgeons in Ireland joined in 2005. The formation of MMI was supported by the award of funding under the Higher Education Authority’s Programme for Research in Third level Institutions (PRTLI), Cycle 4. The transition required the agreement of all partners to a new memorandum and articles of association and members’ agreement, the creation of a new company and approval as a registered charity, agreement to funding arrangements, a new corporate identity, a new strategy and a redevelopment of the website. By the end of 2008, all aspects of the creation of the new company were in place. I would like to acknowledge the contribution of John Coman, Secretary to the Board and Paul Barry, Finance and Operations Manager to the smooth transition from DMMC to MMI.

Another major achievement in 2008 was the commencement of the MMI Clinician Scientist Fellowship Programme (CSFP). The objective of the CSFP, funded under PRTLI Cycle 4, is to train the next generation of clinician scientists (academic medical leaders) with the unique and specialised knowledge essential to fulfil Ireland’s research needs in translational medicine. The CSFP, launched by Mary Hanafin TD, Minister for Education and Science on 17 April 2008, is training medical graduates through a structured PhD programme of three years in duration. During 2008, 22 medical graduates joined the programme and participated in three weeks structured teaching and learning, delivered by MMI’s partners and coordinated by MMI staff. I would like to acknowledge the contribution of Dr Mark Watson, Programme Manager, and the Education & Training Team to the success of the first year of the CSFP.

Significant progress was made during 2008 with deployment of the HRB/Wellcome Trust funded Dublin Centre for Clinical Research (DCCR), involving the building of a new clinical research centre at St James’s Hospital and the creation of a network for clinical and translational research across the city. Jeremy Towns was appointed Programme Manager of the DCCR and Paul Barry, Finance Manager. A management team, reporting to the Board of MMI, was established to provide governance and oversight of the DCCR and an operations team was put in place to ensure coordinated progress with implementation. As the year ended, a number of disease groups had formed and were proposing clinical studies to be carried out through the network. The research nurses in the network were also mobilising to address training issues and to raise the profile of research nursing.

MMI is funded by the Health Research Board and the Health Service Executive for the preparatory phase of developing the Irish Clinical Research Infrastructure Network (ICRIN) to facilitate national clinical studies across a range of diseases, taking advantage of the clinical research infrastructure being developed in Dublin, Cork and Galway. Important steps were taken during 2008 towards the objectives of the preparatory phase, including the compilation of a situation analysis of clinical research in Ireland, the agreement of a roadmap for moving clinical research in Ireland forward and the definition of the role ICRIN could play as a coordinating mechanism for academic-led, multi-site, trans-disease clinical research in Ireland. I am pleased to say that Enterprise Ireland recognised
“In 2008, the DMMC became Molecular Medicine Ireland, with the National University of Ireland, Galway and University College Cork joining the partnership established originally by Trinity College Dublin and University College Dublin and which the Royal College of Surgeons in Ireland joined in 2005”

the potential role ICRIN could play in supporting start-up and established companies to navigate the clinical research and regulatory environment and awarded MMI a contract to recruit a Clinical Trials Liaison Manager to work as part of the ICRIN team. I would like to pay special tribute to the commitment and hard work of Margaret Cooney in developing ICRIN during her time with MMI and wish her well in her new post as Clinical Director for Europe with Elan.

MMI, with Dr Peter Doran of UCD as principal investigator, was awarded funding in 2008 by the HRB and R&D Office Belfast to undertake the design phase for an all-island biobanking initiative, known as GeneLibrary Ireland. With input from over 80 experts in the MMI partner institutions, Queen’s University Belfast, the University of Ulster, patient organisations and industry representatives and with advice from an international scientific advisory committee, MMI completed the design phase by the end of 2008. The report highlights the contribution that GeneLibrary Ireland could make as a control biobank of samples and medical information from 10,000 volunteers, as a resource for genetic research related to the population on the island of Ireland and in creating an infrastructure for biobanking. I would like to acknowledge the contribution of Dr Jan Guerin, Programme Manager, Translational Research to coordinating the design phase and producing the report within budget and within the timeline agreed with the funders.

At the end of 2008, MMI looked forward to the announcement by the Minister for Education and Science of the Programme for Research in Third Level Institutions Cycle 5 and to the opportunity to prepare a proposal for graduate training in translational and clinical research that would build on the strengths of the partner institutions and take forward MMI’s strategic objective of training world-class researchers.

Ruth Barrington PhD
Chief Executive

Ruth Barrington took up her appointment as CEO of the DMMC/MMI in October 2007. She was previously CEO of the Health Research Board, a position she held from 1998 to 2007. She is a graduate of University College Dublin, the College of Europe in Bruges, Belgium and was awarded her doctorate by the University of London.
Molecular Medicine Ireland (MMI) is a collaborative biomedical research partnership between National University of Ireland Galway (NUI Galway), Trinity College Dublin (TCD), University College Cork (UCC), University College Dublin (UCD) and The Royal College of Surgeons in Ireland (RCSI). MMI, established in 2008, replaced the Dublin Molecular Medicine Centre.

MMI was established in response to the need to create in Ireland a critical mass of excellence in molecular medicine research and education and to deploy a clinical research infrastructure to facilitate the transfer of advances in molecular medicine into new and more effective diagnostics, therapies and devices for patients. MMI is committed to supporting ‘translational’ research, best described as research from ‘bench to bedside’ - ‘bench’ experiments being driven by clinical questions and findings at the ‘bench’ being put into practice through better diagnosis and treatment at ‘the bedside’ of the patient.

MMI is a joint venture company controlled by NUI Galway, TCD, UCC, UCD and RCSI and established with funding from the Higher Education Authority’s Programme for Research in Third Level Institutions, Cycle 4. Formally incorporated in 2008, MMI is a company limited by guarantee and has been registered without the world ‘Limited’ in its name. It is a registered charity founded for the promotion of molecular medicine research. MMI is governed by a Board of Directors (see page 12) supported by an Executive Management Team (EMT: see page 10) The EMT comprises the CEO of MMI and five directors who are leaders in medical research in the partner institutions. The strategic direction of MMI and the scientific excellence of joint programmes in molecular and clinical research are subject to independent and objective critique from an international Scientific Advisory Committee (see page ).

At the end of 2008, the business of MMI was supported by a staff of 10 people, of whom 3.5 were funded from sources other than by the partner institutions. MMI has been successful in attracting funding from the Health Research Board, the Health Service Executive and the European Union to develop clinical research capacity in Ireland. The staff of MMI are shown in the organisational diagram below and are listed on page 45. Staff work closely with senior investigators in the partner institutions and associated hospitals to put MMI programmes into effect, including the Clinician Scientist Fellowship Programme, MMI’s suite of courses and workshops, the deployment of the Dublin Centre for Clinical Research, the preparatory phase of ICRIN and the design brief for GeneLibrary Ireland.
VISION

In December 2008, MMI adopted a strategy to guide its direction and activities to the end of 2011. The strategic vision of MMI is improved healthcare through the development of diagnostics and therapies from concept to realisation.

The strategic mission of MMI is to mobilise the strengths of the five partner institutions and their associated hospitals to build a sustainable national system to coordinate, support and promote translational and clinical research.

MMI will achieve this mission by:

- connecting the key players in health, research and industry
- attracting, training and retaining world-class researchers
- working to provide state-of-the-art facilities, bio-resources and harmonised processes
- representing Ireland in clinical and translational research infrastructures/networks in Europe and internationally, and
- building collaborative research initiatives and opportunities.

The diagram below illustrates the virtuous circle that MMI is trying to create in translational research

OUTPUTS

- the creation of an internationally recognised community in molecular medicine and clinical research
- the creation of skilled translational and clinical researchers, both medical graduates and scientists
- the deployment of a clinical research infrastructure to support trans-disease, multi-site studies nationally and as part of the European Clinical Research Infrastructures Network
- the creation of high quality and standardised biological collections for patient and disease focussed research
- the generation of new intellectual property to fuel Ireland’s biotechnology, biomedical device and pharmaceutical industry
- new diagnostics, devices and therapeutics and more effective patient intervention strategies
The Executive Management Team (EMT) guides the scientific and operational strategy of Molecular Medicine Ireland. In addition to Molecular Medicine Ireland Chief Executive Officer, the EMT comprises five MMI Board members who are also key representatives of TCD, UCD, RCSI, NUI Galway and UCC:

Professor Dermot Kelleher
Head of the School of Medicine & Director of the Institute of Molecular Medicine, Trinity College Dublin & St James’s Hospital

Dermot Kelleher was appointed Wellcome Senior Fellow in Clinical Science in 1989 at Trinity College Dublin and subsequently Professor of Clinical Medicine in 2001. With specialist training in Gastroenterology, Prof Kelleher’s research has focused on the cell biology both of immune responses and of the inflammation-cancer sequence. He has pioneered interdisciplinary research into nanofluidic technology, high content analysis with siRNA screening, and nanoparticle delivery. Widely published and with 10 patents, Prof Kelleher has been successful in obtaining international funding from NIH, Wellcome Trust and the European Union and was instrumental in establishing the Dublin Molecular Medicine Centre.

Professor Bill Powderly
Head of the School of Medicine & Medical Science at University College Dublin, Professor of Medicine & Therapeutics at UCD and the Mater Misericordiae University Hospital and Chief Academic Officer of Dublin Academic Health Care

Bill G. Powderly has been actively involved in HIV-related clinical research for the last 20 years. Prior to his appointment in UCD he was Professor of Medicine and Chief of the Division of Infectious Diseases at Washington University School of Medicine in St. Louis, Missouri, USA. Prof Powderly was Vice-Chair of the US Adult AIDS Clinical Trials Group and Chair of it’s Scientific Steering Committee. He has sat on advisory groups for the National Institutes of Health and the Centers for Disease Control and Prevention and was the first Chairman of the US HIV Medicine Association. Prof Powderly is a Fellow of the Infectious Diseases Society of America, the Royal College of Physicians of Ireland and the American Association for the Advancement of Science. Widely published in the areas of HIV and AIDS, Prof Powderly’s recent research is focused on the emerging toxicities of treatment of HIV, especially the metabolic complications seen in patients receiving effective therapy, including the development of diabetes, lipid abnormalities, and bone disease.

Professor Gerry McElvaney
Professor of Medicine, Chairman of the Department of Medicine, Royal College of Surgeons in Ireland

Prior to returning to Ireland in 1996, Gerry McElvaney was Senior Investigator at the Pulmonary Branch of the National Heart, Lung and Blood Institute, National Institutes of Health in Bethesda, USA for 8 years and subsequently Assistant Professor at Cornell University Medical Center/Rockefeller University Hospital, New York. His pivotal research areas have been protease/anti protease interactions in the lung, signal transduction in bronchial epithelium, innate defenses of the lung, and gene therapy for lung diseases. In 1997 Professor McElvaney co-founded the Respiratory Research Unit in Beaumont Hospital. This Unit has attracted both national and international funding, including a recent series of grants from the Alpha One Foundation in the United States. Their work in lung defenses both in chronic disease and acute pneumonia has resulted in a large number of publications and also led to interactions with pharmaceutical companies interested in translational research.
Professor David Kerins
Associate Professor of Therapeutics at University College Cork, Consultant Physician at Mercy University Hospital, Dean of the Medical School of UCC and Vice Head of the College of Medicine and Health

David Kerins followed his internal medicine training at Cork University Hospital and sequential fellowships in Clinical Pharmacology and in Clinical Cardiology, with one year as a Special Lecturer in the Department of Medicine and Experimental Therapeutics at University College Dublin. He was appointed to the faculty of Vanderbilt University Medical Center and as a staff physician at Nashville Veterans Affairs in 2003 and subsequently as an Associate Professor of Medicine and Chief of the Cardiology Section at Nashville VA. He was a visiting scientist at the Cardiovascular Magnetic Resonance Center, Beth Israel Deaconess Medical Center at Harvard Medical School in 2002. Following a year as a Consultant Cardiologist at Wexford General Hospital and a further year at Vanderbilt University, he returned to Ireland to his current position. Professor Kerins is a fellow of the American Heart Association, the American College of Cardiology, the European Society of Cardiology and the American Society of Echocardiography. He is also a member of the Society for Cardiovascular Magnetic Resonance.

Professor Larry Egan
Professor of Clinical Pharmacology, Head of the Dept of Pharmacology and Therapeutics at NUI Galway, Consultant Clinical Pharmacologist with the HSE Western Region

Larry Egan has specialist experience in the areas of gastroenterology, internal medicine and clinical pharmacology and received American Board certification in each of these disciplines while training at the Mayo Clinic in Minnesota (1994 to 1999). Prof Egan undertook post-doctoral training from 2000 to 2002 in the Laboratory of Mucosal Immunology at the University of California before returning to the Mayo Clinic to take up a consultancy in gastroenterology, with joint appointment in the Dept of Molecular Pharmacology and Experimental Therapeutics. Prof Egan returned to Ireland in 2005. Currently, his research focuses on molecular characterization of signaling pathways involved in intestinal epithelial cell stress, death and malignant transformation.

The Scientific Advisory Committee (SAC) acts in an advisory capacity to provide independent and objective guidance on the strategic direction and the scientific performance of Molecular Medicine Ireland.

The SAC comprises:

- Professor Sir Gordon Duff (Florey Professor of Molecular Medicine, University of Sheffield, England)
- Professor Garrett FitzGerald (Professor of Cardiovascular Medicine & Professor of Pharmacology, School of Medicine, University of Pennsylvania, USA)
- Professor Peter Ghazal (Director, Scottish Centre for Genomic Technology & Informatics, University of Edinburgh, Scotland)
- Professor Stephen O’Rahilly (Department of Medicine & Clinical Biochemistry, Addenbrooke’s Hospital, Cambridge, England)
- Dr John Sims (Senior Scientific Director, Molecular Immunology, Amgen Corporation, Seattle, Washington, USA)
MMI Board of Directors

**CHAIR**

Dr Damian O’Connell  
Executive Director and Clinical Research  
Group Head, Pfizer

**DIRECTORS**

Dr Willard Dere  
Senior Vice-President and International Chief Medical Officer of Amgen

Prof Larry Egan  
Chair of Clinical Pharmacology and Head of the Department of Pharmacology and Therapeutics, NUI Galway

Prof Desmond Fitzgerald  
Professor of Molecular Medicine and Vice President for Research, University College Dublin

Dr Jackie Hunter  
Senior Vice-President of GlaxoSmithKline's Science Environment Development Division

Prof Dermot Kelleher  
Professor of Clinical Medicine and Head of the School of Medicine, Trinity College Dublin and Director of the Institute of Molecular Medicine, Trinity College Dublin and St James's Hospital

Prof Peter Kennedy  
Dean of Research, University College Cork

Prof David Kerins  
Associate Professor of Therapeutics at University College Cork, Consultant Physician at Mercy University Hospital, Dean of the Medical School of UCC and Vice Head of the College of Medicine and Health
Dr Stevo Knezevic  
Chief Medical Officer, Wyeth Europe, Middle East and Africa

Dr David Lloyd  
Head of the Molecular Design Group, School of Biochemistry & Immunology and Dean of Research, Trinity College Dublin

Prof Gerry McElvaney  
Professor of Medicine, Royal College of Surgeons in Ireland

Prof Tim O’Brien  
Professor of Medicine and Director of the Regenerative Medicine Institute, NUI Galway

Mr Barry O’Leary  
Chief Executive, IDA Ireland

Prof Bill Powderly  
Head of the School of Medicine & Medical Science at UCD and Professor of Medicine & Therapeutics at UCD and the Mater Misericordiae University Hospital

Prof Jochen Prehn  
Head of the Department of Physiology & Medical Physics and Director of the Centre for Human Proteomics, Royal College of Surgeons in Ireland

The Directors shown represent the structure of the MMI Board as of 31 December 2008. The following members stepped down from the Board during 2008:

Dr Michael Kamarck (Chair), Prof Brian Harvey, Mr Frank Kenny, Mr Michael Lyons

COMPANY SECRETARY
Mr John Coman  
Corporate & Legal Affairs Secretary, University College Dublin
NUI Galway, Regenerative Medicine Institute

The Regenerative Medicine Institute (REMDI) was established at NUI Galway in 2004 as a Science Foundation Ireland funded Centre for Science, Engineering and Technology with a central focus on the development of novel therapies for treating major human diseases involving adult stem cell therapy and gene therapy.

It has developed a translational research effort with an emphasis on the delivery of therapeutic products to patients and is an integral part of the National Centre for Biomedical Engineering Science. It consists of a large multidisciplinary team of scientists, clinicians, engineers, technicians and veterinarians lead by Professor Tim O’Brien (Director) and Professor Frank Barry.

REMDI has significant interest in addressing diseases of the vasculature and to this end, is currently looking at stents as a platform from which to deliver a therapeutic product to blood vessels. [www.nuig.ie/remedi/](http://www.nuig.ie/remedi/)

RCSI Research Institute

The RCSI Research Institute is a multi-site infrastructure encompassing the research activities of RCSI at the St Stephen’s Green campus and the RCSI Education and Research Centre (ERC) at Beaumont Hospital. This comprises a network of research centres and core facilities in peptide synthesis and labeling, solid phase chemistry, proteomics, clinical research and biobanking, molecular, live cellular and human imaging.

Through this infrastructure of laboratories, core technology platforms and staff, the RCSI Research Institute aims to facilitate and develop sustainable research programmes in translational research in the areas of Neuroscience, Cancer Cell Biology and Genetics, Vascular Biology, Imaging and Molecular Medicine, Population Health, Bio-Engineering, Infection and Immunity.

The Clinical Research Centre (CRC) at Beaumont Hospital, which combines dedicated research beds and laboratories equipped for cell and molecular biology, enables an integrated bench-to-bedside approach to biomedical research. [www.rcsi.ie/research](http://www.rcsi.ie/research)

TCD Institute of Molecular Medicine

The Institute of Molecular Medicine (IMM) was established in 2003 as a state-of-the-art facility housed in a 4,500 sq metre building within the Trinity Centre for Health Sciences at St James’s Hospital. IMM is primarily designed as a molecular research facility. To date, IMM has been successful in bringing key research groups into a single location promoting interdisciplinary and complementary synergies.

IMM is a facility dedicated to research into the molecular basis of human disease with significant core technology platforms in: High Content Screening Analysis in association with the siRNA Library, Cell Signalling, High Throughput Genomics, Transcriptomics and houses the Irish Gene Bank. IMM’s key research themes are: Infection & Immunity, Cancer and Neurosciences. IMM offers structured postgraduate education programmes in Molecular Medicine at Diploma, MSc, and PhD level, the latter a prestigious Health Research Board funded 4-year PhD scheme.

IMM’s location on the St. James’s Hospital site permits close interaction between basic
and clinical sciences promoting the bench to bedside approach in molecular medicine. IMM has strategically targeted the aggregation of research teams within the institute, and as a result, an excellent pool of academic researchers, clinician scientists, technologists and teaching resources has been assembled and aligned around a molecular level approach to medicine. Currently, IMM houses approximately 180 residents in 16 research teams. www.tcd.ie/IMM

UCD Conway Institute of Biomolecular & Biomedical Research

The UCD Conway Institute of Biomolecular & Biomedical Research is located on the Belfield campus of University College Dublin, the largest university in Ireland. This multidisciplinary centre for research brings together over 550 research staff from over the University and its associated teaching hospitals.

The research focus of UCD Conway Institute is the identification of molecular mechanisms underlying human and animal diseases primarily in the areas of Infection, Immunity & Repair; Diabetes & Vascular Biology and Neuroscience. The close collaboration of scientists and clinicians underpins the translational nature of this research from the ‘bench to bedside’ which is supported by world-class proteomic, bioinformatic and transcriptomic core facilities.

The longer term objectives of the Institute are set on the integration of the biological sciences with those sciences not traditionally associated with biology with a view to realising the synergistic benefits of such associations. These include computer science, applied mathematics, systems biology, engineering and economics. www.ucd.ie/conway

UCC BioSciences Institute

Basic and translational research at UCC has been greatly enhanced by the opening, in 2002, of the Biosciences Institute (BSI). The BSI provides research space for active investigators in the biomedical area and fosters, through its design, a collaborative and interdisciplinary approach to research questions.

The Institute incorporates six major research programmes, including Neuroscience, Cancer Biology, Cell Signalling and Cardiovascular Health, Plant Biotechnology and Integrative Genomics, Food for Health and Microbe Host Interaction. The BSI houses over 250 scientists from eight different departments, as well as three research centres (APC, CCRC and BIOMERIT). Technology platforms at the BSI include functional genomics, proteomics, bioinformatics, advanced microscopy, cell imaging and transgenics. In addition, BSI is also home to a number of state-of-the-art core facilities such as the Advanced Microscopy Unit, MALDI-TOF (mass spectrometry) and Flow Cytometry. The major unifying theme of the BSI is the improvement of quality of life for patients, while the underlying strategy that ties all research groups together is teamwork. Adjacent to the BSI, and directly linked to it, the School of Pharmacy incorporates a designated industry suite to allow transfer of new pharmaceuticals to industry. www.bsi.ucc.ie
On 7 April 2008, the formal surroundings of the Royal College of Physicians in Ireland was the setting for the official launch of Molecular Medicine Ireland. In the presence of Ms Mary Hanafin TD, the then Minister of Education and Science, the Heads of the five partner institutions - Dr Hugh Brady, President of University College Dublin; Dr John Hegarty, Provost of Trinity College Dublin; Mr Michael Horgan CEO/Registrar of the Royal College of Surgeons in Ireland; Dr Pat Morgan, representing Dr Jim Browne, President of NUI Galway and Dr Michael Murphy, President of University College Cork - formally signed the Member’s Agreement, heralding the creation of this new research partnership.

Molecular Medicine Ireland is a unique all-Ireland collaboration between the medical schools of each of these institutions together with their affiliated teaching hospitals which aims to create a centre of excellence in molecular medicine research and education in Ireland. In particular, MMI will facilitate the acceleration of the translation of recent rapid advances in science into new ways of understanding disease and new diagnostics, drugs and devices to treat illness and protect the health of the Irish people.

Funded by the Government’s Higher Education Authority under the Programme for Research in Third Level Institutions (PRTLI) Cycle 4, Molecular Medicine Ireland replaces the Dublin Molecular Medicine Centre which, since 2002, has coordinated collaborative biomedical research and education activities of Trinity College Dublin, University College Dublin and the Royal College of Surgeons in Ireland.

An estimated 150 people attended the launch including members from each of the five institutions as well as key personnel from the Irish health and education sectors.

"Molecular Medicine Ireland creates a critical mass of expertise and infrastructure in medical research. It sends a strong message that this country is a good place in which to do research."
Dr Mike Kamarck, Chair of Molecular Medicine Ireland and Executive Vice President of Wyeth

“Molecular Medicine Ireland will assist the institutions build a sustainable system of world class teams in biomedical research, which is a key goal of Government science and technology policy.”
Mary Hanafin TD, Minister for Education and Science

This occasion also heralded the launch of MMI’s Clinician Scientist Fellowship Programme (CSFP) and the award of the first 19 Fellowships under the scheme. The Fellows were in attendance along with family members.

The CSFP is an innovative programme funded under PRTLI Cycle 4 which seeks to train the next generation of clinician scientists, equipping them with the specialised knowledge required to meet Ireland’s research needs in translational medicine. (see page 9)

Referring to the CSFP, Minister Hanafin congratulated the fellows, saying that it is most encouraging that so many medical graduates are interested in undertaking PhDs to deepen their knowledge of the science underlying medicine.

“Increasing the number of people with PhDs and encouraging graduates to undertake PhDs in strategic areas such as health research, are vital for the next phase of our economic and social development.”
Mary Hanafin TD, Minister for Education and Science

“Molecular Medicine Ireland has taken the initiative, with its member institutions, to train tomorrow’s leaders in health research. With funding of €10m awarded by the Higher Education Authority, Molecular Medicine Ireland has put a fellowship programme in place to train medical graduates as clinician scientists.”
Dr Ruth Barrington, Chief Executive of Molecular Medicine Ireland

Above Left: Dr Ruth Barrington, Chief Executive of Molecular Medicine Ireland, addresses attendees at the launch. Above Right: Attendees at the launch including members of the five partner institutions and key personnel from the Irish health and education sectors.
Molecular Medicine Ireland has a well-developed Education & Training Programme that began in 2003 as a Dublin Molecular Medicine Centre initiative. Investment from PRTLI has resulted in the creation of a strong cross-institutional postgraduate and postdoctoral structured education and training platform that provides short MMI Courses and Workshops in translational biomedical research. In 2007, the five partner institutions of Molecular Medicine Ireland received funding from the HEA to organise through MMI a Clinician Scientist Fellowship Programme (CSFP). 22 MMI Clinician Scientist Fellowships were awarded in 2008.
The five Molecular Medicine Ireland partner institutions are collaborating to train a key group in clinical and translational research through the MMI Clinician Scientist Fellowship Programme (CSFP). Funded by the Higher Education Authority under PRTLI Cycle 4 and organised through Molecular Medicine Ireland, the objective of the CSFP is to train the next generation of clinician scientists with the unique and specialised knowledge essential to fulfill Ireland’s research needs in translational medicine. This training programme transcends institutional boundaries to give Fellows unparalleled access to the top biomedical researchers in the country and to state-of-the-art basic and clinical research facilities. The aim is to educate biomedical investigators who, motivated by the intellectual challenge of understanding disease at the molecular level, will lead the quest for new therapeutic strategies. The programme provides a systematic way to train this essential group of clinician researchers through a structured three year PhD programme for medical graduates.

National Selection Process
MMI issued two calls for the CSFP, in November 2007 and September 2008. A competitive selection process was organised by MMI, involving candidates and their sponsoring institutions assessed by a selection panel including international experts. In the first call, 75 Expressions of Interest were received and 40 candidates were interviewed. 9 Fellowships were awarded after the first call, and the MMI Clinician Scientist Fellows began their PhD studies, based in the five partner institutions, in July 2008. The second call for the programme was issued to fill three remaining Fellowships, based at UCC. The successful candidates will begin their studies in January and July 2009.
Clinician Scientist Fellowship Programme

Photos above: The Launch of MMI Clinician Scientist Fellowship Programme on 17 April 2008

From L to R: Dr Damian O’Connell, Chair of MMI; Dr Ruth Barrington, CEO of MMI; Dr Michael Murphy, President of UCC; Dr Daniel Schmidt, MMI Clinician Scientist Fellow; Dr Deirdre Murray, CSFP Supervisor, UCC; Dr Liam Fanning, CSFP Supervisor, UCC.
Official Launch

The Clinician Scientist Fellowship Programme was launched by Mary Hanafin TD, Minister for Education and Science, at the official launch of Molecular Medicine Ireland at the Royal College of Physicians in Ireland on 17 April 2008. The event was attended by the Heads of the five partner institutions and representatives of the medical schools, as well as by the Fellows and their families and research supervisors.

Research Projects

The MMI Clinician Scientist Fellows are conducting research in areas in which Irish universities and academic hospitals are strong such as neuroscience, infection and immunity, cancer, regenerative medicine, respiratory medicine, and cardiovascular disease. Details of all MMI Fellows, their supervisors and their research projects are available on the MMI website.

National Structured training

The Clinician Scientist Fellowship Programme consists of a three year PhD in the host institutions and shared national structured training. This national element to the CSFP, coordinated by MMI, comprises a structured taught course curriculum, delivered by experts in biomedical research and also providing important ancillary professional skills. These courses are complemented by annual meetings of Fellows and their supervisors. The programme is developed by an Education Committee that includes representatives from each MMI partner institution.

MMI CSFP Structured Training held in 2008:

<table>
<thead>
<tr>
<th>Date</th>
<th>Module</th>
<th>Venue(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-5 July 2008</td>
<td>Introduction to Research and Laboratory Methods</td>
<td>UCD Catherine McAuley Centre, Mater Hospital</td>
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<tr>
<td></td>
<td>Writing &amp; Communication Skills</td>
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<tr>
<td></td>
<td>Translating your Research into the Clinical Setting</td>
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<tr>
<td></td>
<td>Integrity in Scientific Research</td>
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<tr>
<td>16-26 September 2008</td>
<td>Introduction to Bioinformatics</td>
<td>TCD Institute of Molecular Medicine</td>
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<tr>
<td></td>
<td>Molecular Biology of Disease</td>
<td>UCD Conway Institute</td>
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<tr>
<td></td>
<td>Animal models of Disease</td>
<td>RCSI</td>
</tr>
<tr>
<td></td>
<td>Information Retrieval</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Project Management</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Core Technology Facilities</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Self-directed learning module on the biology underlying various diseases</td>
<td></td>
</tr>
</tbody>
</table>

Fellows will be held in NUI Galway in July 2009.

For more information on the MMI Clinician Scientist Fellowship Programme, please visit the Education section of the MMI website.
The MMI cross-institutional Courses & Workshops Programme, funded originally as a DMMC activity in PRTLI Cycle 3, has built on the research and teaching strengths of the partner institutions and the clinical expertise in the affiliated teaching hospitals.

With the official launch of Molecular Medicine Ireland on 17 April 2008, we are building on earlier participation from individual researchers based in NUI Galway and University College Cork to develop an education programme that brings together the expertise of five institutions and their Medical Schools.

MMI Courses (lecture-based and practical courses of 3-35 contact hours) are designed specifically for a cross-institutional audience, are delivered by faculty from multiple institutions (including international keynote lecturers and industry representatives), and are coordinated via a dedicated administrative infrastructure, with continual course development assisted by participant feedback. Courses have been specifically designed and delivered to make accessible various technologies, including proteomics and genomics; and to address translational research in various disease areas.

At the end of 2008, 1558 individuals in total have attended one or more DMMC/MMI Courses and Workshops since they began in 2003 (there were 2655 attendances in this period).

Since 2003, 184 individuals have assembled as faculty on over 50 courses, with many contributing to several courses.
### Courses & Workshops Programme

<table>
<thead>
<tr>
<th>MMI/DMMC Course / Workshop Title</th>
<th>Dates</th>
<th>Venue</th>
<th>No. of Attendee(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drug Design &amp; Delivery</td>
<td>17-18 &amp; 21-22 Apr 2008</td>
<td>RCSI</td>
<td>54</td>
</tr>
<tr>
<td>Population Genetics &amp; SNP Analysis</td>
<td>10 Jun 2008</td>
<td>RCSI</td>
<td>48</td>
</tr>
<tr>
<td>Population Genetics &amp; SNP Analysis Workshop</td>
<td>11 Jun 2008</td>
<td>IMM, St. James's Hospital</td>
<td>27</td>
</tr>
<tr>
<td>Molecules to Medicines-How Biopharma delivers</td>
<td>15 Oct 2008</td>
<td>IMM, St. James's Hospital</td>
<td>62</td>
</tr>
<tr>
<td>Molecules to Medicines How Biopharma delivers Workshop</td>
<td>16 Oct 2008</td>
<td>IMM, St. James's Hospital</td>
<td>27</td>
</tr>
<tr>
<td>Techniques &amp; Strategies in Molecular Medicine</td>
<td>11-12 &amp; 15-16 Dec 2008</td>
<td>TCD (Main campus)</td>
<td>95</td>
</tr>
</tbody>
</table>

Chart Above: 240 individuals attended one or more MMI Courses and Workshops during 2008 (there were 313 attendances in this period). Of these, 201 were new users.

### Total attendee breakdown for 2008: Institutional Affiliation

![Pie chart showing institutional affiliations]

Amongst ‘Other’ Attendees, 7 were affiliated to NUI Galway and 9 to UCC. These two Institutions joined RCSI, UCD & TCD on 17 April 2008 to form Molecular Medicine Ireland.

### Highlights 2008

Highlights of the 2008 programme included the Drug Design & Delivery and MMI/Wyeth Molecules to Medicines courses, which both ran for the third time this year. This year, the MMI Courses & Workshops Programme benefited from sponsorship from Affymetrix and Illumina.

The Drug Design & Delivery course considers how the interaction of a drug target with a small molecule or a macromolecule can be optimised to develop a pharmaceutical or biopharmaceutical agent, and the challenges associated with drug delivery. Also covered are important factors in developing a commercial product, including protection of intellectual property and regulatory affairs. Lectures were from faculty based in RCSI, TCD, UCC and UCD including members of the SFI funded Irish Drug Delivery Network. Perspectives from industry were provided by speakers from Servier and Sanofi-Aventis.

The MMI/Wyeth Course Molecules to Medicines:
How Biopharma Delivers took place over two days. Day 1 comprised an intensive lecture course on biopharmaceutical discovery, development and manufacturing delivered by staff from Wyeth, with a clinical perspective provided by academic clinician scientists. An additional presentation this year was given by Dr Ken Seamon (University of Cambridge) on biological therapeutic regulation, with key examples illustrating the complexities in regulating products developed with new technologies. Day 2 comprised a workshop for PhD students designed to facilitate discussion of key issues arising during biopharmaceutical discovery, development, and manufacturing. A visit to the Wyeth campus at Grange Castle also formed part of this course.

Feedback from participants on the Molecules to Medicines course was very positive:
“This lecture series was exactly what I had hoped for. It gave a clear and in-depth explanation of industrial processes to produce a product.”

“After a brilliant day of lectures the workshop surpassed my expectations. Interacting with the staff of Wyeth has been a brilliant experience and I’m very glad I attended this course.”

2008 also saw the sixth run of Techniques & Strategies in Molecular Medicine, regarded as an essential introductory course for postgraduates. The course is designed to give bioscientists and clinicians a broad overview of research techniques and their application. This course attracts a large audience each year and 95 people attended in 2008. Attendees heard lectures from 17 speakers over the four morning sessions, with lecturers coming from UCD, RSCI, TCD and NUI Galway.

**Widening participation**

MMI Education & Training made places on selected institutional Postgraduate Education modules available to the wider research community (see table above).

In 2008, advertising and administration by MMI resulted in over 135 attendances from individuals in addition to those registered by the host Institutions. A joint MMI-UCD completion of assessments certificate was awarded to attendees of the Molecular Neuroimmunology course who satisfactorily completed the examination. MMI also part-funded an RCSI Postgraduate Careers Seminar on 22 May 2008, involving talks from leading professionals, designed to provide insight into various employment opportunities following Masters and PhD degrees.

For more information on MMI Courses & Workshops please visit the MMI website at: www.molecularmedicineireland.ie/education/courses

**TABLE**

<table>
<thead>
<tr>
<th>Course/Module Title</th>
<th>Dates</th>
<th>Venue</th>
<th>Number who attended (one or more sessions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction to Proteomics</td>
<td>20 &amp; 27 Feb 2008</td>
<td>Conway Institute, UCD</td>
<td>32</td>
</tr>
<tr>
<td>Introduction Genomics &amp; Transcriptomics</td>
<td>5 &amp; 12 Mar 2008</td>
<td>Conway Institute, UCD</td>
<td>28</td>
</tr>
<tr>
<td>Advanced Imaging Technologies</td>
<td>19, 26 Mar &amp; 2 Apr 2008</td>
<td>Conway Institute, UCD</td>
<td>27</td>
</tr>
<tr>
<td>Molecular Neuroimmunology</td>
<td>26 Mar - 28 May (Weekly sessions)</td>
<td>Conway Institute, UCD</td>
<td>18</td>
</tr>
<tr>
<td>High Content Screening Technologies</td>
<td>9-15 Feb 2008</td>
<td>Trinity Centre for Health Sciences</td>
<td>30**</td>
</tr>
</tbody>
</table>

**Number of expressions of interest received by MMI and forwarded to course coordinator**

For more information on MMI Courses & Workshops please visit the MMI website at: www.molecularmedicineireland.ie/education/courses
This section provides an overview of some of the significant research highlights of investigators at MMI partner institutions for 2008, many of which have involved cross-institutional collaboration. A key research highlight coordinated by MMI in 2008 was the development of the GeneLibrary Ireland Design Phase, an all-island collaboration involving seven institutions and the patient organizations and commissioned by the HRB and HSC R&D Office. The technology platforms across MMI partner institutions have matured and developed further in 2008 supporting cross-institutional collaborations in translational research and post graduate programmes. A technology platform from each of our partner institutions is featured in this section to demonstrate the breadth of technologies available and associated expertise. MMI proposes to map the technology platforms and associated expertise available across our partner institutions in 2009 and to develop a portal on the MMI website which will provide a central location to promote and showcase these technology platforms.
GeneLibrary Ireland

In 2008 Molecular Medicine Ireland in association with Queen’s University Belfast, with Dr. Peter Doran of UCD as Principal Investigator, was awarded the contract by the Health Research Board (HRB) and the Health and Social Care Research and Development Office (HSC R&D Office) to undertake the design phase of an all-island control biobank of volunteer DNA and blood samples and phenotypic data known as GeneLibrary Ireland. The University of Ulster has since joined this collaboration, ensuring that this initiative involves all the leading academic institutions in biomedical research and their associated hospitals on the island of Ireland.

In order to deliver on the design phase of GeneLibrary Ireland, MMI, on behalf of the collaborating institutions, convened Working Groups involving over 80 experts in genetics, translational research, epidemiology, ethics, law, finance, biobanking, laboratory science and communications across the seven collaborating academic institutions and patient organisations in Ireland and Northern Ireland. These Working Groups have examined and made recommendations on the construction of this valuable bio-resource for the benefit of researchers, both academic and industry, and people on the island of Ireland. A Scientific Advisory Board, consisting of international experts in biobanking has guided the preparation of the design phase and much has been learned from site visits to similar biobanks, for example Generation Scotland.

The establishment of GeneLibrary Ireland as a
biomedical research infrastructure will enable and support the continued development of translational and genetic research on the island of Ireland. The biobank of 10,000 DNA and blood samples from volunteers on the island, together with key phenotypic information will serve as a control population to study the genetic determinants of common diseases, which significantly impact patients in Ireland and Northern Ireland. These diseases include cardiovascular disease, cancer, diabetes, arthritis, respiratory disease and cognitive disorders along with key disease areas that are over represented in the population such as coeliac disease, multiple sclerosis, cystic fibrosis and haemachromatosis. In addition, this collection will provide a valuable resource to study the genetic background of the population on the island of Ireland.

Professor Kurt Zatloukal, a member of the GeneLibrary Ireland Scientific Advisory Board and the lead Co-ordinator of the pan-European Biobanking and Biomolecular Resources Research Infrastructure, has stated that ‘the design phase of GeneLibrary Ireland is an excellent plan how to establish a world-class all-island biomedical research infrastructure that is well embedded in the emerging European research infrastructure landscape’.

The creation of GeneLibrary Ireland as a biomedical research infrastructure will provide researchers on the island of Ireland with a significant bio-resource to investigate the roles that genes play in health and disease which, in turn, will lead to discoveries of disease mechanisms, potential new therapeutics, pharmacogenomics, biomarker discovery and personalised medicine.

The report of the design phase of GeneLibrary Ireland was finalised by the end of 2008 and will be submitted to the funders in the first quarter of 2009. The next phase of this project, if funded, would involve the development of an implementation plan to establish GeneLibrary Ireland as an all-island biomedical research infrastructure. Having assembled the necessary teams to deliver the design phase of GeneLibrary Ireland, involving six Working Groups, a Steering Group and an international Scientific Advisory Board, Molecular Medicine Ireland looks forward to the opportunity to develop the implementation phase of GeneLibrary Ireland in association with collaborating institutions in Ireland and Northern Ireland.

**Biobanking and Biomolecular Resources Research Infrastructure**

During 2008 developments in biobanking abroad have gathered momentum through the Biobanking and Biomolecular Resources Research Infrastructure (BBMRI) established through Seventh Framework Programme (FP7) to create a harmonised pan-European network of biobanks. In order for Irish researchers to compete and contribute to large international statistically powered studies the need to address biobanking at a national level in Ireland has been highlighted. To meet this challenge MMI and its partner institutions have joined this European biobanking initiative to ensure that Irish researchers have access to international bio-collections and that Irish biobanks can learn from international best practice and implement these standards. In addition, MMI has secured the involvement of key leaders of BBMRI in the GeneLibrary Ireland Scientific Advisory Board to ensure that the establishment of GeneLibrary Ireland will be harmonised with international best practice and cognisant of biobanking developments in Europe.
Research highlights across MMI partner institutions

SCOPE - SCreening fOr Pregnancy Endpoints
Dr Louise Kenny (UCC)

University College Cork are part of the SCOPE (SCreening fOr Pregnancy Endpoints) programme which aims to recruit 10,000 patients globally, taking samples from mothers, fathers and babies to build a pregnancy biobank. The overall aim of the SCOPE scientists is to develop predictive tests for common disorders of late pregnancy.

SCOPE Ireland is funded by the HRB and is directed by Dr Louise Kenny, a HRB Clinician Scientist and a Senior Lecturer and Consultant Obstetrician and Gynaecology at the Anu Research Centre. UCC are contributing a total of 3000 women to the global SCOPE biobank. The research on the biobank at UCC is focused on discovering and developing predictive tests for pre-eclampsia and intra-uterine growth restriction. Dr Richard Horgan, a HRB Clinical Training Fellow undertaking a PhD with Dr Kenny is using a variety of mass spectrometry techniques allied to advanced machine learning to discover novel metabolomic biomarkers in pregnancies complicated by intrauterine growth restriction and pre-eclampsia. Early results are extremely encouraging and Dr Kenny has recently been awarded a Translational Award from the Wellcome Trust to develop a platform that will form the basis of a clinically useful commercial test.

Prostate Cancer Biomarker Discovery: a programme of the Prostate Cancer Research Consortium
Prof William Watson (UCD) and Prof Mark Lawler (TCD)

Prostate cancer is a significant cause of illness and death in Irish males, with the annual incidence of prostate cancer in Ireland at approximately 1,300 and a mortality of 520 cases per annum. The Prostate Cancer Research Consortium (PCRC) is a multi-disciplinary, trans-institutional collaboration created in October 2003 in association with the DMMC through funding from the Irish Cancer Society. The PCRC has established a Bio-resource which currently has over 350 tissues with matched serum/plasma samples and over 90 urine samples with comprehensive clinical information and follow up data. Funding from the HRB has resulted in the establishment of a trans-institutional database which has centralised the recording and tracking of samples from the federated Bio-resource.

This valuable Bio-resource has fuelled a number of research studies in proteomics, epigenomics and biomarker discovery which has advanced the understanding of the underlying molecular mechanisms of disease in prostate cancer. In particular an initial discovery study was undertaken using proteomic analysis of serum from patients from the PCRC Bio-resource with different grades of prostate cancer (Gleason score 5 and 7). Serum samples were subjected to immunoaffinity depletion and protein expression analysis using 2D-Difference Gel Electrophoresis. Image analysis isolated 63 spots that displayed differential expression between the Gleason score 5 and 7 cohorts, 13 of which were identified as statistically significant using two independent image analysis packages. Identification of differentially expressed spots was carried out using liquid chromatography-mass spectrometry techniques. Because of their functional relevance and potential significance with regards to prostate cancer progression, two of these proteins, pigment epithelium derived factor (PEDF) and zinc-R2-glycoprotein (ZAG), underwent extensive validation in serum and tissue samples from the original cohort and also from a larger independent cohort of patients from the Bio-resource of the consortium. These results have indicated a panel of serum biomarkers including PEDF as accurate predictors of early stage prostate cancer. This work was published in the Journal of Proteome Research. International collaborations have been established with the Australian Prostate Cancer Bio-resource and the Austrian Tyrol screening programme to undertake an independent international validation of the panel.
The Annual Scientific meeting of the PCRC was held in MMI in December 2008 which shared the developments of the therapeutic, biomarker, pathology, research nurse and data management groups within the Consortium. Towards the end of 2008 discussions were initiated, facilitated through MMI, to expand the Dublin city wide PCRC nationally with the inclusion of Galway and Cork.

CERVIVA - (Irish Cervical Screening Research Consortium - ICSRC)
Dr Cara Martin & Prof John O’Leary (TCD & The Coombe Women’s Hospital)

The CERVIVA consortium, funded by the HRB, is a multi-investigator collaboration encompassing researchers at seven Irish universities, eight hospitals and ten commercial diagnostic/ biotechnology companies. CERVIVA aims to instigate and advance high quality peer-reviewed research programmes that provide the best possible information and guidance in the delivery of cervical screening services to women living in Ireland.

Since its launch in 2006, significant progress has been made in many areas of research including; the introduction of automated imaging in cervical cytology, the development of a digital EQA system for cervical cytology and the prevalence of Human Papillomavirus (HPV) in the Irish cervical screening population. CERVIVA for the first time in Ireland can report a HPV prevalence rate across the whole of Ireland, of 18.5% in a population of over 1,400 women screened to date. HPV16 (29.7%) was the most common type detected, followed by HPV39 (12.2%), HPV18/31/66 (11.8%) and HPV 51 (11.4%). These findings are of particular importance in the context of the Government strategy for a cervical cancer vaccination programme for all 12-year-old girls.

With the introduction of CervicalCheck the National Cervical Screening Programme in September 2008, an increase in the number of referrals to colposcopy was expected. CERVIVA are investigating the utility and cost effectiveness of incorporating HPV DNA and mRNA testing into the management of women in colposcopy, in particular in the post treatment setting. Data collected to date indicates a high risk HPV DNA prevalence rate of 77% in women prior to treatment, while post colposcopic follow up of these women, at 6-12 months post treatment, indicates HPV persistence in 24% of cases. This evaluation is ongoing.

In partnership with the National Cancer Registry CERVIVA has completed a survey of over 800 GP’s looking at the GP’s knowledge, views and practices regarding cervical screening and HPV infection, testing and vaccination. The results of this survey are timely, with the proposed introduction of a national cervical screening programme and will help in developing health education and information initiatives around cervical screening, HPV testing and the HPV vaccination as well as identifying GPs demands for guidelines or policies. The Consortium is about to commence a GP intervention study, which is aimed at improving knowledge and changing practices among GPs in the area of cervical cancer prevention. In addition CERVIVA has commenced a population based survey of women’s attitudes to cervical screening, HPV testing and HPV vaccination.
Genome-wide association study for coeliac disease

Dr Ross McManus, Prof Dermot Kelleher, Prof Con Feighery, Dr Graham Turner, Dr Tony Ryan, Ms Valerie Trimble (TCD and St James Hospital) and Dr Colm O’Morain, Dr Fiona Stevens (NUI Galway)

Research by Dr Ross McManus, in collaboration with a number of European investigators has identified new genes implicated in coeliac disease, which is particularly common in Ireland with around 1% of the population susceptible to developing the condition. Following on from earlier work which identified the region encoding the Interleukin 2 IL2/IL21 genes on chromosome 4q as contributing to the susceptibility to this common disease, this group followed up on a number of significant associations in several Irish, Dutch and a second UK coeliac cohort. This has led to the discovery of seven new chromosomal regions which are significantly linked to coeliac disease. Moreover six of the regions encode highly plausible candidate genes with functions in the adaptive immune system, while the seventh (LPP) encodes a gene expressed in smooth muscle which may also represent an attractive candidate. These candidate genes implicated have been identified on chromosomes 1, 2, 3, 6 and 12, all of which are known or presumed to function in the adaptive immune system. This work was published in the journal Nature Genetics in 2008. The SH3B2 gene on chromosome 12 has previously been implicated as a causative gene for type-1 diabetes (which is known to be more common in coeliac patients and vice versa) the group compared findings in a joint study led by Prof. J Todd from the University of Cambridge, UK which uncovered several other genes involved in coeliac disease and type-1 diabetes causation including strong evidence implicating the Cytotoxic T-Lymphocyte Antigen 4 (CTLA4) gene which was previously thought to be susceptibility gene for coeliac disease. This study was published in the New England Journal of Medicine. This showed that RGS1, TAGAP and IL18RAP are also associated with type-1 diabetes while PTPN2 was newly associated with coeliac disease.

Psychosis Research Group

Professor Michael Gill, Dr. Aidan Corvin and Dr Louise Gallagher (TCD)

In 2008 significant progress was made in the understanding of the genetic basis of the major mental disorders, schizophrenia and bipolar affective disorder. Psychosis (schizophrenia and bipolar disorder) is heritable and affects more than one in 50 Irish adults. The Psychosis Research Group (led by Dr Aiden Corvin) from the Neuropsychiatric Genetics Laboratory at TCD, in collaboration with international colleagues, reported significant breakthroughs in the journals Nature and Nature Genetics.

Exploiting advances in high-throughput genomic technologies, the team reported a small but significant excess of rare chromosomal copy number variation in the genomes of people with schizophrenia. Three specific genomic regions of risk were identified, two of these were novel. A separate study, involving Professor Michael Gill and Dr Louise Gallagher from the Neuropsychiatric Genetics Laboratory identified one of these regions as contributing more broadly to developmental disorders and was reported in the New England Journal of Medicine.

The Psychosis Group also contributed to the identification of novel risk genes implicated in both schizophrenia and bipolar disorder (reported in Nature Genetics). Dr Corvin is principal investigator for a large genomic study of Schizophrenia as part of the Wellcome Trust Case Control Consortium 2, which should be completed in mid-2009. The group are actively involved in functional studies to interpret these findings and identify the underlying molecular mechanisms contributing to these serious disorders. Funding for this research has been received from Science Foundation Ireland, the Health Research Board, Wellcome Trust and National Institute for Mental Health (US).
Bone abnormalities and HIV infection
Professor Bill Powderly and Dr Peter Doran (UCD)

Recent studies have suggested an association between bone abnormalities, including osteoporosis, osteopenia, and osteolysis, and human immunodeficiency virus (HIV) infection. However, the molecular and cellular mechanisms underpinning these HIV associated changes in bone biology remain unclear, with some, but by no means all, studies linking these abnormalities with the use of potent antiretroviral medications.

Ongoing research, led by Professor Bill Powderly and Dr Peter Doran at the UCD Clinical Research Centre, is focused on identifying the drivers of bone density changes in HIV infection. Normal skeletal homeostasis is controlled, at least in part, by the maturation and activity of mature osteoblasts. Previous studies by the UCD team have demonstrated the ability of HIV proteins and HIV treatment to perturb osteoblast function.

More recent investigations have attempted to further dissect the effect of HIV infection on mesenchymal stem cells (MSCs), the precursors of osteopblasts. In differentiating MSCs, exposure to HIV proteins caused significant changes in both the timing and magnitude of key osteogenic events and signals. Treatment with the HIV protein REV increased the overall rate of mineralization, and induced earlier increases in connective tissue growth factor (CTGF) levels, Runx related transcription factor 2 (RUNX-2) activity and bone morphogenetic protein-2 (BMP) secretion, than those observed in the normal course of differentiation. In contrast, the HIV proteins p55-gag reduced the overall level of osteogenesis, and reduced BMP-2 secretion, RUNX-2 activity, CTGF levels and alkaline phosphatase activity at many of the timepoints examined.

These data demonstrate that the effect of HIV proteins on bone is dependent on the differentiation status of the cells that they are in contact with. The effect on bone cell signalling provides insights into the mechanism of HIV induced decreases in bone mineral density. This work has been published in the journals BMC Musculoskeletal Disorders and AIDS Research and Human Retroviruses.

Gene eluting stents and stent thrombosis
Faisal Sharif, Seán Hynes, Ronan Cooney, Linda Howard, Jill McMahon, Kieran Daly, Jim Crowley, Frank Barry and Tim O’Brien (REMEDEI, NUI Galway)

Drug-eluting stents for coronary artery disease results in inhibition of smooth muscle cell (SMC) and endothelial cell proliferation and increased expression of endothelial nitric oxide synthase (eNOS) which may increase the risk of stent thrombosis. In an HRB-funded study, researchers at REMEDI attempted to enhance re-endothelialisation and reduce intimal hyperplasia by overexpression of endothelial nitric oxide synthase (eNOS) delivery in the vasculature using an adenovirus gene-eluting stent. Re-endothelialisation was significantly greater in vessels obtained from normocholesterolemic animals and hypercholesterolemic animals at day 28 with adenovirus-mediated delivery of eNOS (AdeNOS)-eluting stents. Treatment with the HIV protein REV increased the overall rate of mineralization, and induced earlier increases in connective tissue growth factor (CTGF) levels, Runx related transcription factor 2 (RUNX-2) activity and bone morphogenetic protein-2 (BMP) secretion, than those observed in the normal course of differentiation. In contrast, the HIV proteins p55-gag reduced the overall level of osteogenesis, and reduced BMP-2 secretion, RUNX-2 activity, CTGF levels and alkaline phosphatase activity at many of the timepoints examined.

These data demonstrate that the effect of HIV proteins on bone is dependent on the differentiation status of the cells that they are in contact with. The effect on bone cell signalling provides insights into the mechanism of HIV induced decreases in bone mineral density. This work has been published in the journals BMC Musculoskeletal Disorders and AIDS Research and Human Retroviruses.

Awaiting research highlight from RCSI? (leave space for 10 lines)
A featured technology platform from each of our partner institutions is highlighted below which demonstrate the breadth of technologies available and associated expertise. This list is merely a representative sample of the technology platforms that are available with further information on all facilities available at individual institutions' websites.

NUI Galway, BioMechanics Technology Platform

The BioMechanics Technology Platform is located in the National Centre for Biomedical Engineering Science (NCBES) and has evolved to support the rapid expansion in biomechanics research internationally fueled by an increased focus on health in society. Biomechanics is now an integral part of newly developing areas such as cell mechanics, tissue engineering and medical device design. In the NCBES biomechanics research is focused on the areas of cardiovascular and pulmonary biomechanics, orthopedic biomechanics and cardiovascular medical device analysis and design.

The BioMechanics Technology Platform range of equipment includes Axial / Torsion Servo hydraulic Testing System, Mechanical Thermal Analyser, Fatigue and Impact tester and Rapid Prototyping System. Axial / Torsion Servohydraulic Testing System with Environmental Chamber. The BioMechanics Technology Platform is available for use through collaboration with other universities and institutions and is also used under commercial service arrangements with industry.

Contact: Prof Peter McHugh and Liam Brennan. Email peter.mchugh@nuigalway.ie and william.brennan@nuigalway.ie

RCSI, Peptide Synthesis Laboratory

The Peptide Synthesis Laboratory at RCSI, established in January 200 under HEA PRTLl cycle 1, is located in the Department of Pharmaceutical & Medicinal Chemistry. This facility is one of the Core Technologies of the Programme for Human Genomics funded by the HEA PRTLl cycle 3 and is also involved in the National Biophotonics & Imaging Platform Ireland funded under HEA PRTLl cycle 4. This laboratory is also part of the Centre for Synthesis and Chemical Biology (CSCB), a collaboration in the chemical sciences between UCD, TCD and RCSI and is also part of the SFI Strategic Research Cluster, Irish Drug Delivery Network.

The facility is dedicated to the (solid phase) synthesis, modification and labelling of peptides and peptidomimetics. Peptides have an important potential in medicine, not only as investigation tools in life science research, but also as drug candidates in their own right and for the production of prodrugs and drug delivery systems. Their clinical use may require their translation into peptidomimetics, non-peptide structures which retain the biological activity of the parent sequence.

The mission statement of the laboratory is to provide an expertise in peptide chemistry and solid phase synthesis and to support collaborative projects based on peptide synthesis and modification. The services provided routinely include the synthesis of peptides (biotinylated, phosphorylated, lipophilic, fluorescently labelled, homodetic, heterodetic and non-ribosomal) and peptidomimetics. The facility is equipped with three peptide synthesisers (2 Applied Biosystems 433A and 1 Advanced ChemTech 396W). Two fully automated high performance liquid chromatography (HPLC) systems, equipped with analytical and semi-preparative columns, are used for the analysis and purification of the macromolecules prepared and freeze-dryers are available for the lyophilization of the final products.

Since January 200, the laboratory has established more than 20 national collaborations with groups from DCU, RCSI, TCD, UCD and University of Limerick, 2 international collaborations with the Pasteur Institute in Paris and INSERM Angers in France and 1 industrial collaboration, in research areas including infection and immunology, cardiovascular, neurodegeneration, oncology, drug delivery and imaging. On average, 10 post-graduate and post-doctoral researchers from these groups are working part-time in the Peptide Laboratory each year. The laboratory is also the scientific coordinator of the MMI Course on Drug Discovery & Delivery.

Contact: Marc Devocelle. Email: mdevocelle@rcsi.ie

Trinity High Content Analysis (HCA) Facility, Institute of Molecular Medicine, TCD

High Content Analysis/ Screening (HCA/S) technologies are becoming increasingly utilised in both early drug-discovery
Research Technology Platforms

and basic research. These research automated platforms offer the capability of defining the functions of individual genes, proteins and other bio-molecules in intact cells, in a multiplexed and high throughput format. HCA/S involves the integration of a number of preparation steps which include; cell-sample preparation, fluorescent labeling, image acquisition, image processing, image analysis, information management and knowledge mining.

The High Content Screening facility based at the Institute of Molecular Medicine, Trinity College was initially set up in 2004 as part of a larger strategic plan for Trinity College’s Department of Clinical Medicine. Since then the utilisation of this research facility has grown to a point where it now plays a central role in numerous research projects and collaborations, which take place in both the national and international scientific arenas. Over the last five years the reputation of this facility has grown to a point where it is now considered to be an international centre of excellence for both its technical expertise and advanced training. The success of this facility has been underpinned by the efforts of our dedicated team of scientific specialists, whose primary research goal is the advancement of these technologies and their applications. The HCA/S facility services projects, ranging from genome scale gene silencing (siRNA) screens, setup to characterize the function of individual genes in the human genome to nano-biology, were the facility has developed highly advanced techniques for the large scale testing of a wide range of nano-materials, for both their risk to human health as well as any therapeutic potential. In addition to this there are numerous projects in the areas of infection and immunity, cell signaling, lung, gut and prostate cancer, heart disease, drug discovery and applied computing.

The HCA/S facility has recently successfully completed the third year of a HCA/S masters module, which is the world’s first academic course in High Content Analysis and Screening which has drawn students from Europe, America and Asia.

Contact: Anthony Davies. Email: amitche@tcd.ie

UCC Electron Microscopy and BioSciences Imaging Facility, BioSciences Institute

The Electron Microscopy (EM) Facility, which is a section of the Advanced Microscopy Research Facility (AMRF) at the BioSciences Institute UCC, was developed by Anatomy/Neuroscience and the Materials Section of the Chemistry Department in a joint interdepartmental initiative.

The EM Facility houses a Transmission Electron Microscope (JEOL 2000FXII) and a Scanning Electron Microscope (JEOL S510). The JEOL S510 SEM is equipped with an Oxford Instruments EDS Microanalysis System with INCA Energy Software and both microscopes are capable of digital imaging.

The EM Facility provides training and assistance in both Transmission and Scanning Electron Microscopy and welcomes not only on-campus researchers, but also investigators from other third level institutes and the private sector. The EM Facility has the capacity to undertake a limited amount of service work, as well as offering assistance or advice in the following areas:

- Transmission and Scanning Electron Microscopy
- Standard TEM and SEM sample preparation
- Negative staining
- Specimen coating
- Energy Dispersive X-Ray Spectroscopy (EDX) elemental analysis
- Immunocytochemistry in conjunction with Electron Microscopy
- Morphometry and stereology

Services provided by the EM Facility staff can be tailored to the needs of the investigator. The examination of a broad range of specimens from cultured cells to polymers, and from
nanoparticles to botanical samples can be carried out in the EM Facility.

In addition, the BioSciences Imaging Facility can provide collaborative assistance with a wide range of applications in brightfield, fluorescence, confocal and two photon microscopy. Expertise and facilities for tissue processing, live cell imaging and image analysis are also available.

Contact: Suzanne Crotty. Telephone: +353 21 4901350, Email: s.crotty@ucc.ie for general queries about these facilities and Myriam Cotter. Telephone: +353 21 4901391, Email: m.cotter@ucc.ie for training or becoming a user.

UCD Conway Institute Mass Spectrometry Resource

The Proteome Research Centre (PRC) created in 2003 applies leading-edge proteomic technologies to biological research and in particular to the identification of diagnostic and prognostic biomarkers of disease and potential targets for therapeutic intervention in human diseases.

The facility is equipped with state-of-the-art instrumentation and software, as part of the mass spectrometry and separations laboratories which support a number of complementary proteomic workflows. The resources in the mass spectrometry laboratory include a MALDI-Tof/ToF mass spectrometer with autoloader for high throughput MALDI-MS/MS and off-line liquid chromatography (LC) MS/MS workflows. There are three linear ion trap electrospray mass spectrometers. The resources in the separations laboratory include instrumentation for 1-D gel electrophoresis, 2-D gel electrophoresis (2-DE), image scanners including a three colour laser fluorescence scanner (Typhoon), which supports the use of the latest three colour difference in gel electrophoresis (DIGE) 2-DE. LC based workflows are supported by the availability of a multi-dimensional LC system and a nano-LC system. The latter is coupled to a MALDI target loading robot to support off-line LC MALDI-MS.

The facility also includes a recently acquired triple quadrupole mass spectrometer with nano-flow liquid chromatography and ChipCube interface (also with a rapid resolution liquid chromatography and JetStream electrospray source) which combined with a Q-Tof instrument supports advanced LC-MS proteomics discovery (label-free and isotope labeling) and protein quantification.

The PRC not only supports a diverse range of research projects within UCD but its facilities are also open to other academic institutions and commercial companies worldwide.

Contact: Dr Giuliano Elia. Telephone: +353-766986/674. Email Giuliano.elia@ucd.ie
In June 2006 a DMMC bid involving TCD, RCSI and UCD, and led by Prof Dermot Kelleher succeeded in securing a multi-million Euro investment from the Wellcome Trust and the Health Research Board for the Dublin Centre for Clinical Research (DCCR). The aim of the DCCR is to provide the infrastructure – the physical space, facilities and the expertise – needed to support collaborative clinical research studies across Dublin. The investment is of the order of €23m over five years, with the Wellcome Trust covering the build and equipment costs for the Clinical Research Centre at St. James's Hospital and the HRB supporting the running costs of the St. James's facility as well as the costs of the DCCR network, which includes the RCSI Clinical Research Centre at Beaumont Hospital and the UCD Clinical Research Centres at Mater and St. Vincent's University Hospital.

2008 saw the recruitment of a Programme Manager and Finance Manager for the DCCR. Jeremy Towns joined the DCCR as Programme Manager in April 2008 and he was preceded by the recruitment of Paul Barry as Finance Manager. The remainder of the year saw progress on two fronts. At St. James's Hospital, the design of the CRC was finalised and planning permission secured for the 1,200m² Clinical Research Facility in September. The facility will include a Neurophysiology Assessment Suite, an Exercise Physiology Laboratory, Gene Therapy Pharmacy, Clinical assessment rooms, four inpatient rooms and a six bed day-ward for research patients. In the Autumn progress was made towards finalising the Tri-Partite Wellcome Trust agreement between TCD, St. James's Hospital and The Wellcome Trust. With this, St. James's Hospital will be in a position to start construction during the Summer of 2009 and the facility is expected to be completed by the end of 2010.

Below: Floorplan of Wellcome Trust-HRB CRC at St. James's Hospital
Secondly, the DCCR Network also started to take shape during 2008. An organisational and governance structure for the DCCR Network was approved by the Board. The DCCR Programme is overseen by the Board of MMI. The DCCR Management Team is Chaired by Dr. Ruth Barrington and includes Professor Dermot Kelleher as the Principle Investigator, Professor Dermot Kenny representing RCSI, Professor Michael Keane representing UCD and Professor John Nolan representing TCD. It also includes Mr. Jeremy Towns, DCCR Programme Manager and Mr. Paul Barry, DCCR Finance Manager. The Management Team and Disease Groups are supported by the DCCR Operations Team, chaired by Mr. Jeremy Towns and includes representatives from the CRCs. These include Ms. Ailbhe Cullen & Ms. Deirdre Hyland from RCSI at Beaumont, Dr. Peter Doran representing the two UCD CRCs and Ms. Sharon Thompson from St. James’s Hospital and Mr. Paul Barry.

Over the Summer disease groups were formed in the areas of Diabetes and Respiratory Medicine, which included consultant clinicians from all the Dublin area teaching hospitals. Throughout the remainder of 2008 these groups started to move ahead with city-wide clinical research studies and began securing hospital Research Ethics Committees approvals. At the same time further groups were formed in the areas of Gastrointestinal Medicine, chaired by Dr. Ross McManus and Rheumatoid Arthritis and Autoimmunity, chaired by Professor Doug Veale and exploratory talks were initiated with Neuropsychiatrists, Neurologists, the Prostate Cancer Research Consortium and Infectious Diseases specialists.
In 2007, with funding awarded by the Health Research Board and the Health Service Executive, the MMI partners initiated the preparatory phase of the Irish Clinical Research Infrastructure Network (ICRIN).

The objectives of the two year preparatory phase are:

- To engage with the constituent teaching hospitals in the process of developing a national clinical research infrastructure in Ireland in order to perform cutting edge clinical research in a safe and regulated environment so that patients benefit from the best interventions carried out under the best international standards of ethics and Good Clinical Practice.

- To provide the framework for the harmonisation of different operating norms in to a common, European connectable system

- To ensure that education and training programmes are put in place for clinical and nursing staff that allow standards to be updated and constantly improved

- To allow Irish academic and non-academic clinical investigators to participate in multi-centred clinical studies.

- To drive a standardised approach to biobanking at all sites.

- To drive harmonisation of procedures with respect to informed Consent, Ethical Review, Data Monitoring, Adverse Event Reporting

ICRIN is the Irish partner in the European Clinical Research Infrastructures Network – ECRIN, funded under the EU’s 7th Framework Programme to develop a European-wide infrastructure to support clinical trials and biotherapy. ICRIN is responsible for co-chairing two of the ECRIN working parties for this important initiative –

- Working party on Capacity Building and Development of Services
- Working Party on Support to pilot projects

The Working Party on Capacity Building will focus on developing and strengthening the capacity of national networks to support local investigators and sponsors as well as investigators and sponsors in other European countries. The Working Party on Pilot Projects will initiate a small number of clinical research projects using the ECRIN infrastructure. These pilot studies will test the organisation and capacity of each of the participating national networks to participate in a European-wide study.

In January 2008, Siobhan Gaynor was recruited as ICRIN Senior Associate and ECRIN Correspondent to ensure delivery of ICRIN objectives and ICRIN’s obligations as a member of ECRIN.
ICRIN highlights in 2008

During 2008, ICRIN and MMI made considerable progress towards achieving the objectives of the preparatory phase. Highlights include

• Clinical Research – Irish Situation Analysis 2008 completed

• Roadmap for the development of Clinical Research in Ireland prepared with stakeholder input

• Facilitated, with the State Claims Agency, a national approach to clinical indemnity

• Two ECRIN standard operating procedures (monitoring and vulnerable populations) lead authored by ICRIN.

• ICRIN contribution to ECRIN Submission to European Commission on revision of EU Clinical Trials Directive

• Clinical research training provided to Medical Research Charities Group, Irish Platform for Patients, Science and Industry; GCP training provided for St. Vincent’s Hospital, NUI Galway.

• ICRIN awarded the HRB/R&D Office grant to fund the design phase of the all-Island control biobank and population health study entitled GeneLibrary Ireland. ICRIN also participated in the preparatory phase of the EU FP7 funded Biobanking and Biomolecular Resources Research Infrastructure (BBMRI)

• Co-sponsorship of IPPOSI conference on Clinical Research in Ireland, 13 May 2008

Photo Above: Ms Margaret Cooney, ICRIN, Dr Peter Doran, UCD Clinical Research Centre and Dr Ruth Barrington, Molecular Medicine Ireland
ICRIN is quickly becoming recognised as the means to coordinate clinical research activity in Ireland. It is increasingly being contacted as the central point by industry, academia, Enterprise Ireland, IDA and Forfás. In 2008, Enterprise Ireland awarded funding to MMI/ICRIN to recruit a clinical trials liaison officer to engage with start up companies that need access to clinical research facilities to test new diagnostics, therapies and devices.

The Irish Pharmaceutical Healthcare Association (IPHA), the Irish Platform for Patients Organisations, Science and Industry (IPPOSI), and the Medical Research Charities Group (MRCG), have recognised ICRIN as a potential means to coordinate clinical research nationally. In 2008, the IPHA recommended that ICRIN take the initiative to accredit medical laboratories for the purposes of clinical research and organise Good Clinical Practice (GCP) Training programmes nationally for those involved in clinical research. In response to the need for GCP training, ICRIN prepared a business plan for the provision of such to the clinical research community which was approved by the Board in December 2008. The first ICRIN GCP course will be offered in February 2009.

The preparatory phase of ICRIN is demonstrating its potential to become the national coordinating centre for trans-disease, multi-site clinical research in Ireland. ICRIN can address current deficits in support for clinical research such as shared information systems, agreed standards and protocols, common training programmes, monitoring and indemnity for academic sponsors. At the end of 2008, Molecular Medicine Ireland agreed in principle the business case for the development of ICRIN along these lines. MMI proposes to make the case to the HRB and the HSE for investment to establish ICRIN on these lines.

MMI would like to acknowledge the outstanding contribution made by Margaret Cooney as ICRIN Coordinator during her time with the company. Margaret left ICRIN and MMI at end of 2008 to take up a position in the pharmaceutical industry.
MMI Submission on the Health Information Bill

During 2008, the Department of Health and Children published a discussion document on a proposed Health Information Bill and invited submissions from interested parties. MMI responded with a submission, which made the following points:

• MMI welcomes the proposed introduction of a Health Information Bill to overcome the current obstacles to the use of information to improve the quality of care for patients, to protect the health of the population and to build capacity for health research that will benefit patients and facilitate economic and social development.

• The legislation should provide an effective legal framework for the sharing and use of individual health information in the common good.

• The Bill should provide for the establishment and maintenance of a patient registry without individual consent (on the model of the National Cancer Registry), if certain criteria are met.

• The Bill should provide for the establishment and maintenance of biobanks if not provided for in the Human Tissue Bill.

• The Bill should provide for a single ethical opinion for all clinical research, 6-8 approved and independent research ethics committees and a central office to support and supervise research ethics committees. The Bill should facilitate the introduction of a unique health identifier and its use to link data to improve patient care and facilitate evaluation, audit and research.

• MMI welcomed the commitment, in the Government’s Building Ireland’s Smart Economy - A Framework for Sustainable Economic Renewal published in December 2008, that delays in the conduct of clinical trials and other research due to the process of ethical approval would be addressed in the Health Information Bill that was in preparation.
New MMI Website

On the 17 April 2008 Molecular Medicine Ireland replaced the Dublin Molecular Medicine Centre (DMMC). Building on the success of the DMMC website, the new MMI website (www.molecularmedicineireland.ie) has been developed as an interactive platform for researchers spread across multiple universities and hospitals, providing them with the latest news, events, education and career opportunities. All users are now able to register and maintain an up-to-date research profile and publications list, as well as apply for MMI Courses and Workshops. Collaborative groups working under the auspice of MMI can communicate and share documents via dedicated secure areas on the website. A new online MMI Newsletter has been developed, to appear quarterly on the website from January 2009.

Traffic on the MMI Website

*September figure is low due to testing on the new website development. During this month the site was shared across 2 servers, one of which had no statistics package running.
Key elements of the MMI website

Education & Training
These pages allow easy access to details on all MMI Courses and Workshops, including schedules, abstracts and other course materials. Application to attend courses and workshops is via an easy on-line procedure.

ICRIN
Information and latest news on the Irish Clinical Research Infrastructure Network (ICRIN) can be found on this section of the MMI website.

DCCR
The Dublin Centre for Clinical Research (DCCR), overseen by the Board of Molecular Medicine Ireland, displays any relevant news and information on these pages.

Research
These pages allow users to explore the breadth and depth of research ongoing throughout Molecular Medicine Ireland partners, including contact details and publications of researchers.

News, Events & Careers
These pages list news, events and careers information items of relevance to the entire biomedical research community. News items of particular interest and impending events are regularly highlighted on the home page of the MMI website.

MMI Online Newsletter development
The MMI newsletter will feature updates on all areas of MMI activity and will be a forum for the molecular medicine research community in Ireland to present the latest developments of interest to a local and international audience.

The first issue will be published in January 2009 and will be disseminated to all MMI contacts. Registered users on the MMI website will be invited to subscribe to the newsletter.
INCOME AND EXPENDITURE ACCOUNT
Year Ended 30th September 2008

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<td><strong>TOTAL EXPENDITURE</strong></td>
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| Profit / Loss for Year                      | 0.00 |

* unaudited
MMI Directorate

Dr Ruth Barrington  
Chief Executive

Margaret Cooney  
ICRIN Coordinator

Paul Barry  
Financial and Operations Manager

Dr Mark Watson  
Programme Manager  
Education & Training

Gaël Parent  
Administrator  
Education & Training

Dr Jan Guerin  
Programme Manager  
Research

Dr Claire Twomey  
Programme Officer  
Education & Training

Siobhan Gaynor  
ICRIN Senior Associate

Jeremy Towns  
Programme Manager  
Dublin Centre for Clinical Research

Virginia Walls  
PA to Chief Executive

CONTACT INFORMATION

DMMC formally became Molecular Medicine Ireland on 17 April 2008 when University College Cork and NUI Galway joined the DMMC partner institutions, Trinity College Dublin, Royal College of Surgeons Ireland and University College Dublin.

Molecular Medicine Ireland  
Newman House  
85a St. Stephen's Green  
Dublin 2, Ireland  
Tel: (+353 1) 477 9820  
Fax: (+353 1) 477 9823  
Email: info@molecularmedicineireland.ie  
Web: www.molecularmedicineireland.ie
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<td>Adenovirus-mediated delivery of eNOS</td>
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<td>AMNCH</td>
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<td>Mass Spectrometer</td>
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<tr>
<td>MSCs</td>
<td>Mesenchymal Stem Cells</td>
</tr>
<tr>
<td>NICRN</td>
<td>Northern Ireland Clinical Research Network</td>
</tr>
<tr>
<td>NNI</td>
<td>National Neuroscience Network</td>
</tr>
<tr>
<td>NUI</td>
<td>National University of Ireland</td>
</tr>
<tr>
<td>OLHSC</td>
<td>Our Lady's Hospital for Sick Children</td>
</tr>
<tr>
<td>PCRC</td>
<td>Prostate Cancer Research Consortium</td>
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<tr>
<td>PEDF</td>
<td>Pigment Epithelium Derived Factor</td>
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<tr>
<td>PHG</td>
<td>Programme for Human Genomics</td>
</tr>
<tr>
<td>PI</td>
<td>Principal Investigator</td>
</tr>
<tr>
<td>PRC</td>
<td>Proteome Research Centre</td>
</tr>
<tr>
<td>PRTLI</td>
<td>Programme for Research in Third Level Institutions</td>
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<tr>
<td>RCSI</td>
<td>Royal College of Surgeons in Ireland</td>
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<tr>
<td>REMEDI</td>
<td>Regenerative Medicine Institute</td>
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<td>RPGi</td>
<td>Resource for Psychoses Genomics, Ireland</td>
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<td>Runt Related Transcription Factor 2</td>
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<tr>
<td>SAC</td>
<td>Scientific Advisory Committee</td>
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<tr>
<td>SCOPE</td>
<td>Screening for Pregnancy Endpoints</td>
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<tr>
<td>SHO</td>
<td>Senior House Officer</td>
</tr>
<tr>
<td>St. James's</td>
<td>St James's Hospital</td>
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<tr>
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<td>TEM</td>
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<tr>
<td>ZAG</td>
<td>Zinc-R2-glycoprotein</td>
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