

The
ISICR
Awards#

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2011

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2011 Milstein Award Winner



Professor Douglas Hilton
Walter and Eliza Hall Institute of Medical Research
Melbourne, Australia

Douglas Hilton was born in the United Kingdom in 1964 and migrated to Australia with his family in 1970 where he grew up in the idyllic outer suburb of Warrandyte, in the lower Yarra Valley, just north east of Melbourne.

He was educated at Warrandyte Primary School and East Doncaster High School, where he recalls being inspired by “a fabulous biology teacher”. As a 19-year-old Monash University undergraduate, Hilton was introduced to the amazing world of blood cells when he spent the summer holidays in Ian Young’s laboratory at the John Curtin School of Medical Research in Canberra. In his Honours year and as a PhD student, Hilton worked at the Walter and Eliza Hall Institute with two giants of molecular haematology, Professors Don Metcalf and Nicos Nicola, to purify and patent a messenger protein called LIF, which is used by laboratories around the world to culture mouse embryonic stem cells.

After his PhD, Professor Hilton spent two formative years as a postdoctoral fellow at the Whitehead Institute, Massachusetts Institute of Technology, in Cambridge, Massachusetts, with Professor Harvey Lodish. During this time, he worked on trying to understand how the dedicated receptor on the surface of red blood cells recognises the hormone erythropoietin (EPO), famous for its clinical use in patients with renal failure and infamous for its illicit use by athletes.

Since returning to Australia in 1993, Professor Hilton has continued his research at the Walter and Eliza Hall Institute on communication between cells, discovering several hormone receptors and an entirely novel family of STOP signals named the Suppressors of Cytokine Signalling proteins or SOCS proteins. In recent years, together with Professor Warren Alexander and Dr Benjamin Kile, Professor Hilton has established a new program using large-scale mouse genetics and genomics to identify which of the 30,000 genes in the genome regulate blood cell formation. The purpose of the program is to identify targets for the development of new medicines.

Professor Hilton has received many prizes and awards for his contribution to medical research, including the Amgen Medical Researcher Award, the inaugural Commonwealth Health Minister’s Award for Excellence in Health and Medical Research and the GlaxoSmithKline Australia Award for Research Excellence. In 2004 he was elected a Fellow

of the Australian Academy of Science and currently serves on this organisation's council. In 2010 he was elected as a Fellow of the Academy of Technological Sciences and Engineering. Throughout his career, Professor Hilton has been actively involved in the application of research through collaboration with industry. He is an inventor on more than 20 patent families, most of which have been licensed. He co-founded the biotechnology company Murigen Therapeutics, a company developing treatments for inflammatory diseases, cancer, thrombocytopenia and thalassemia and actively collaborates with CSL, a company focused on human health with more than 90 years experience in the development and manufacture of vaccines and plasma protein biotherapies.

In addition to his scientific achievements and accomplishments, Professor Hilton has been very active in promoting science and research to young people. He was a key speaker at many Future Leaders Forums in which several hundred high-achieving secondary school students are exposed to leaders in many walks-of-life. He has been a scientist in residence at secondary schools and is a member of curriculum committee of the Gene Technology Access Centre (GTAC), which was established by the Victorian Government to promote excellence and innovation in secondary science education. Professor Hilton also piloted and established Australia's most successful program to provide tertiary science students with a taste of life as researcher. Based on the eponymous MIT program started in 1969, the Undergraduate Research Opportunities Program (UROP) pairs talented second and third year tertiary students to the laboratories of first class researchers, where they are given their own research project. Since its inception in 1998, when one student worked in his lab, the Program has expanded into five states, involves all of Australia's leading medical research institutions and has provided initial research experiences to hundreds of students, most of whom have gone on to PhDs.

Professor Hilton became the sixth director of the Walter and Eliza Hall Institute of Medical Research in its 95-year history on 1 July 2009. The Institute is affiliated with The University of Melbourne and The Royal Melbourne Hospital and offers postgraduate training in the Department of Medical Biology of The University of Melbourne. Professor Hilton serves as Professor and Head of the Department of Medical Biology at the University of Melbourne. He continues to live in Warrandyte with his wife Adrienne, sons Josh and Zeph, and their Kelpie, Jessie.

2011 ISICR Honorary Membership Award Winner

Dr. Ara Hovanessian



With a tenured position as a Director of Research at France's National Center of Scientific Research, Ara Hovanessian conducted his research activities in Paris at the Institut Pasteur (1978-2004) and at the Université Paris Descartes (2004-2011) focusing mainly on the mechanism of action of interferon and HIV research. He holds BSc and MSc degrees from the American University of Beirut (1972, 1974) and a Ph.D. in biochemistry from King's College, London (1978); with a research project that described for the first time the dsRNA activated enzymes induced by interferon, the protein kinase PKR and the 2',5'-oligoadenylate synthetase. This work conducted with Ian Kerr was carried at the National Institute for Medical Research in Mill Hill, in the same laboratory where Isaacs and Lindenmann described interferon in 1957. For his pioneering work on the mechanism of action of interferon, Ara Hovanessian has received in 1990 the "European Award for Interferon Research" and the "ISICR Milstein Award", while the French government has bestowed on him the rank of Chevalier in the National Order of Merit for his scientific accomplishments on HIV research. Although recently retired, Ara Hovanessian follows actively two of his recent research projects: on the surface-nucleolin antagonist, HB-19 and related Nucant pseudo-peptides, that are now in Phase II clinical trials as nontoxic agents in cancer therapy; and on the mixture of synthetic peptides, overlapping the CBD1 epitope in HIV-1 gp41, as a potential HIV-1 vaccine that gives a significant protection against mucosal SHIV challenge in macaques.

2011 ISICR Distinguished Service Award Winner

Dr. Philip Marcus



Board of Trustees Distinguished Professor of Molecular and Cell Biology in the College of Liberal Arts and Sciences, Dr. Marcus received his Ph.D. from the University of Colorado Medical Center in Microbiology/Biophysics.

At the age of 28, Phil Marcus developed a method to grow colonies, or clones, from single mammalian cells with his Ph.D. advisor. This was the first practical and efficient method for growing colonies from individual animal cells, and it is still used today in laboratories around the world. Known as a “clonogenic assay,” it is often used in cancer research to isolate a few drug, virus, or radiation-resistant cells to study the molecular basis of the resistance.

Today, his laboratory is working on ways to control the spread of chicken influenza virus to reduce the chances of a pandemic. His research has centered on interferon, a protein produced by animals that activates a cell’s anti-viral response. He has discovered, in collaboration with Dr Margaret J. Sekellick, a procedure that can overcome virus resistance to the action of interferon. Their technique essentially overwhelms the ability of a virus to block the antiviral action of interferon.

Dr. Marcus was chosen for the second ISICR Distinguished Service Award based on his long term guidance of the Journal of Interferon and Cytokine Research as well as his leadership of the ISICR Publications Committee.

2011 Milstein Young Investigator Award Winners



Volker Fensterl, Ph.D.
Senior Fellow
Cleveland Clinic Lerner Research Institute
Cleveland, Ohio, USA

Dr. Fensterl's research is focused on investigating cellular functions of the *ISG56/Ifit1* family of genes. In mammals, these genes are strongly induced after exposure to interferons or viruses, and antiviral functions of their protein products begin to be uncovered. Dr. Fensterl is using various *ISG56* family gene knock-out mice to identify novel antiviral activities of the family member *ISG54* and he has discovered that, although ubiquitously inducible in the mouse, an interferon-induced gene may exert its antiviral function in an organ-specific manner.

Dr. Fensterl graduated in virology/microbiology at the Institute of Virology, University of Bremen, Bremen, Germany in 2002. He continued his work in the field of innate immunity in the lab of Prof. Dr. Angelika Vallbracht by examining how hepatitis A virus suppresses the induction of interferons, and received his doctoral degree in the natural sciences (Doctor rerum naturalium) from University of Bremen in 2006. In 2006, Dr. Fensterl took up his current postdoctoral fellow position at Lerner Research Institute in Cleveland, Ohio, USA in the lab of Dr. Ganes C. Sen.

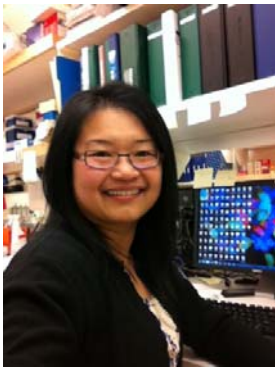


Ole Jensen Hamming, Ph.D.
Postdoctoral Research Fellow
Department of Molecular Biology and Genetics
University of Aarhus
Aarhus, Denmark

Dr. Hamming's current research focuses on understanding cytokine stability, proper membrane localization and signaling. He is especially interested in finding ways to use structural information to answer questions about the function and signaling of cytokines. Dr. Hamming received his Ph.D. in 2011 from the Department of Molecular Biology (now the Department of Molecular Biology and Genetics) at the University Of Aarhus, Denmark.

Working in the group of Associate Professor Rune Hartmann, Dr. Hamming's main focus was the structure and function of interferons (IFN), particularly IFN lambda. He participated in solving the structure of IFN lambda and used the structural information to address the mechanism behind activation of the IFN lambda receptor complex and subsequent cellular signaling. He solved the structure of zebra fish IFN omega 1 and IFN omega 2, and used the structural information to conclusively demonstrate that zebra fish interferons are closely related to mammalian type I interferons. His work demonstrated that type I IFN is a monophylogenetic family from telost fish and upwards.

Following his doctoral training, Dr. Hamming remained in the Hartmann laboratory in order to complete a highly interesting study on the involvement of sugars in the structure and function of class I cytokine receptors. He solved the crystal structure of IL-21 bound to the extracellular domain of IL-21R1. In this structure, a sugar chain bridging the two domains of the IL-21R1 is clearly seen. Interestingly this sugar connects with the highly conserved class I cytokine receptor motif (WSXWS).



Yueh-Ming (Ming) Loo, Ph.D.
Research Assistant Professor
Department of Immunology
University of Washington
Seattle, Washington, USA

Dr. Loo's current research is focused on understanding the mechanisms by which RNA viruses trigger and control innate immune signaling through the RIG-I-like receptors and MAVS. A major focus of her studies is to define novel antiviral targets for the development of effective immunotherapies to control virus infection.

Dr. Yueh-Ming (Ming) Loo received her Ph.D. in Microbiology and Immunology from the State University of New York at Buffalo where her training with Dr. Thomas Melendy focused on virus-host interactions required for papillomavirus DNA replication. She pursued her post-doctoral training with Dr. Michael Gale Jr. at the University of Texas Southwestern Medical Center at Dallas, where she identified MAVS as the target for immune regulation by the hepatitis C virus (HCV), a human pathogen of global public health concern. Her studies showed that HCV expresses a protease NS3/4A that specifically targets MAVS for proteolytic cleavage and abrogates interferon production, thus allowing the virus to evade the host innate immune response to establish chronic infection. Importantly, she showed that NS3/4A-specific protease inhibitors not only rescued MAVS from cleavage, but further restored interferon production and the innate antiviral response in infected cells, providing strong evidence identifying MAVS as a potential therapeutic target for the prevention of

HCV infection. Additionally, Dr. Loo has contributed to numerous studies characterizing the innate immune signaling action of RIG-I-like receptors and signaling regulation by pathogenic viruses.

Dr. Loo was previously a recipient of the Christina Fleischmann Award, sponsored by the International Society of Interferon and Cytokine Research (ISICR). She has co-authored several scientific publications, including a book chapter describing the mechanisms by which RNA viruses regulate host innate immune defenses, and a review on signaling by the RIG-I-like receptors. She is currently a Research Assistant Professor in the Department of Immunology at the University of Washington.



Mehul Suthar, Ph.D.
Senior Fellow
Department of Immunology
University of Washington
Seattle, Washington, USA

Dr. Suthar is currently applying an innovative systems biology approach to understand the complex and dynamic signaling networks that control innate immunity to virus infection. Using a combination of high-throughput technology, computational analysis, and pathway-specific modeling, these studies are aimed at revealing tissue and cell-specific gene regulatory signaling networks and antiviral effector genes that control virus infection and regulate innate antiviral immunity.

Dr. Mehul Suthar received his Ph.D. in 2007 in Microbiology and Immunology from the University of North Carolina-Chapel Hill under the supervision of Dr. Mark Heise. Dr. Suthar's graduate research focused on defining the molecular determinants of alphavirus pathogenesis. Through these studies, he identified an important virulence determinant that regulates induction of type I interferon responses of the infected cell.

Dr. Suthar continued on with his interests in studying viral pathogenesis and is currently a Senior Fellow in the Department of Immunology at the University of Washington School of Medicine in the laboratory of Dr. Michael Gale, Jr. His research has focused on defining the host innate immune response programs that control West Nile virus infection. His recent work, now published in *PLoS Pathogens*, demonstrated the importance of the RIG-I like receptor (RLR) signaling pathway in eliciting effective and integrated innate and adaptive immune responses to WNV infection. The key findings from this study demonstrate that: 1) RLR signaling through IPS-1 is required for triggering an innate response to WNV in the key target cells of infection; and 2) loss of RLR signaling causes dysregulation of cell-mediated and humoral adaptive immune responses, characterized by uncontrolled expansion of virus-specific CD8⁺ T cells, reduced T-regulatory cells, and altered humoral immunity. This study

revealed that the RLR signaling pathway mediates an important interface in coordinating innate and adaptive immunity against viral infection by regulating both the quantity and quality of the immune response. Dr. Suthar has continued to study the role of the RLR pathway in directing immunity to WNV infection, focusing on the roles of each RLR within the RLR family, including RIG-I, MDA5, and LGP2. In addition, Dr. Suthar has published a number of collaborative studies describing the role of innate immune signaling factors, including IRF-1, IRF-3, IRF-5, IRF-7, TLR3, MyD88, and NOS2, in regulating WNV infection and immunity.



Gijs A. Versteeg, Ph.D.
Research Fellow
Department of Microbiology
Mount Sinai School of Medicine
New York, New York, USA

Dr. Versteeg's current research focuses on the 70+ member family of TRIM proteins. A few TRIM proteins had already been implicated in antiviral defense and innate immunity. However, by cloning and subsequent systematic analysis of all 75 human TRIMs, Dr. Versteeg has demonstrated that nearly half of them positively regulate innate immune responses. Subsequent knock-down analysis in non-immune cells and primary dendritic cells showed that most TRIM proteins function in different parts of the innate immune cascade and some of them are cell type specific. This work demonstrated for the first time such a prodigious dedication of a large protein family to the regulation of innate antiviral responses and supports the notion that many human TRIM proteins rapidly evolved and expanded as part of the innate immune system.

Dr. Versteeg has had a long-standing interest in investigating how viruses interact with their hosts and negate their innate immune responses. His bachelor's work under the supervision of Dr. Willy Spaan at Leiden University (The Netherlands) focused on identifying markers in hepatitis C virus that could predict the outcome of treatment with ribavirin and interferon. His master's studies were conducted in the laboratory of Dr. Peter Sarnow at Stanford University and concentrated on translation regulation by cricket paralysis virus. In 2008, Dr. Versteeg received his Ph.D. from Leiden University after studying how coronaviruses regulate innate immune responses.

Following the unifying theme of virus-host interactions, Dr. Versteeg joined the group of Dr. Adolfo García-Sastre at Mount Sinai School of Medicine in New York in 2008. Here he has identified and characterized small-molecules that activate antiviral host responses, a report of which was recently accepted for publication in *Nature Chemical Biology*.

2011 Milstein Travel Award Winners

72 recipients, 19 countries

Yasuhiro Abe, National Institute of Medical Innovation, Japan

Jeonghyun Ahn, University of Miami School of Medicine, USA

Aoi Akitsu, The Institute of Medical Science, Japan

Betsy Barnes, New Jersey Medical School, USA

Daniel Burke, University of Toronto, Canada

Eliseo Castillo, University of New Mexico Health Science Center, USA

Marta Catalfamo, NIAID/NIH, USA

Jorge Cervantes, University of Connecticut Health Center, USA

Mounira Chelbi-Alix, CNRS, France

Ana Costa-Pereira, Imperial College London, United Kingdom

Patrizia De Sarno, University of Alabama at Birmingham, USA

Hadar Eini, Ben-Gurion University of the Negev, Israel

Marilena Paola Etna, Istituto Superiore di Sanità, Italy

Karin Fink, University of Montreal, Canada

Alessandra Fragale, Istituto Superiore di Sanità, Italy

Padmaja Gade, University of Maryland, USA

Carole Galligan, Toronto General Research Institute, Canada

Michael Gantier, Monash Institute of Medical Research, Australia

Elena Giacomini, Istituto Superiore di Sanità, Italy

Jessica Grieves, Ohio State University, USA

Ioannis Grivas, Hellenic Pasteur Institute, Greece

Delia Gutman, University of Miami, USA

Craig Hawkshaw, University of Toronto, Canada

Markus Hofer, University of Marburg, Germany

Stacy Horner, University of Washington, USA

Mikkel Ibsen, Aarhus University, Denmark

Aaron Irving, Monash University, Australia

Brendan Jenkins, Monash University, Australia

Vladimir Jurisic, University of Kragujevac School of Medicine, Serbia

Tomonori Kaifu, IMSUT, University of Tokyo, Japan

Jing Jing Khoo, Monash University, Australia

Arun Kumar, University of Helsinki, Finland

Mi Jin Lee, Ajou University School of Medicine, South Korea

Chien-Kuo Lee, National Taiwan University, Taiwan

Yuk Yu Leon, The University of Hong Kong, Hong Kong, China

Wen Li, The University of Sydney, Australia

Helene Minyi Liu, University of Washington, USA

Barbora Lubyova, 1st School of Medicine Charles University, Czech Republic

Giorgio Mangino, University Roma Tre, Italy

Arun Mankan, University of Bonn, Germany

Isabelle Marie, NYU School of Medicine, USA

Takumi Maruhashi, The University of Tokyo, Japan

Belinda Parker, Peter MacCallum Cancer Centre, Australia

Dane Parker, Columbia University, USA

Leesa Pennell, University of Toronto, Canada

Olivia Perwitasari, University of Washington, USA

Hongwei Qin, University of Alabama at Birmingham, USA

Chander Raman, University of Alabama at Birmingham, USA

Hilario Ramos, University of Washington, USA

Ulfert Rand, Helmholtz Centre for Infection Research, Germany

Nupur Raychaudhuri, Kellogg Eye Center, USA

Fabiana Rizzo, Istituto Superiore di Sanità, Italy

Giovanna Romeo, The Sapienza University of Rome, Italy

Anthony Sadler, Monash Institute of Medical Research, Australia

Shamith Samarajiwa, Cambridge University, United Kingdom

Gretja Schnell, University of Washington, USA

Martina Severa, Istituto Superiore di Sanità, Italy

Evgenia Solodova, Helmholtz Centre for Infection Research, Germany

Marcin Stawowczyk, Stony Brook University, USA

Sebastian Stifter, Monash Institute of Medical Research, Australia

Ce Tang, University of Tokyo, Japan

Emmanuel Thomas, NIDDK/NIH, USA

Cristina Tomás dos Santos, Imperial College London, United Kingdom

Chafia Touil-Boukoffa, University of Sciences and Technology HB, Algeria

Sonia Ventura, Instituto Gulbenkian de Ciência, Portugal

Deborah Vestal, University of Toledo, USA

Ben Wang, University of Toronto, Canada

Sen Wang, Fudan University, China

Gudrun Weiss, Copenhagen University, Denmark

Christine White, Cleveland Clinic, USA

Hiroki Yoshida, Saga University Faculty of Medicine, Japan

Chanyu Yue, Temple University, USA

Christina Fleischmann Award Winner



Dr. Claudia Nold
Ritchie Research Fellow
Monash Institute of Medical Research

After graduating in pharmacy at the University of the Saarland, Saarbruecken, Germany, Dr. Claudia Nold applied for a PhD Fellowship at the Pharmazentrum Frankfurt (Centre for Pharmacology and Toxicology, head of department Prof. J. Pfeilschifter). In 2002 she was awarded a competitive three year Ph.D. Fellowship of *the Deutsche Forschungsgemeinschaft* in collaboration with the Institute of Asthma and Allergy of the *Karolinska Institute* in Stockholm, Sweden. During a student exchange program in those three years, she spent five months at the Karolinska Institute in Stockholm working on human cord mast cells investigating the influence of hypoxia on prostanoid synthesis.

From 2006 until 2009 Dr Nold took up a Post-doctoral position in Denver Colorado, USA in the laboratory of Prof. Charles A Dinarello. During her post-doctoral fellowship Dr. C Nold's discovery of the function of IL-37 has had a major impact on the interleukin field, leading to a fundamental reorganization of the nomenclature of the IL-1 family of cytokines.

In 2009 she accepted an offer from The Ritchie Centre / Monash Institute of Medical Research (MIMR) to move her research to Melbourne where she is now a Ritchie Research Fellow.

The Sidney and Joan Pestka Award Winners



Dr. John Schoggins
Postdoctoral Fellow
The Rockefeller University

Dr. Schoggins received his Ph.D. in 2007 from the Weill Cornell Graduate School of Biomedical Sciences. Under the mentorship of Dr. Erik Falck-Pedersen, he used adenovirus vectors as a model to study virus-host cell interactions, with an emphasis on the role of capsid proteins in viral gene delivery and immune activation. His graduate work resulted in the publication of a series of four papers in *The Journal of Virology* and *Virology*.

Building on his interests in the host response to viral infections, Dr. Schoggins joined the laboratory of Dr. Charles Rice at The Rockefeller University. As a postdoctoral fellow, he has been studying how the antiviral IFN system uses a complex network of hundreds of interferon-stimulated genes to inhibit virus replication. Dr. Schoggins developed a comprehensive cell-based screen to test more than 380 genes for inhibitory activity against several medically important viruses including hepatitis C virus and HIV. His findings, recently published in *Nature*, show that landscape of IFN-induced genes consists of a diverse range of antiviral effectors, with some having broad activity against several viruses and others showing more restricted specificity. Common mechanistic themes for ISG action include translational inhibition and feedback into antiviral signaling pathways.

In current and future efforts, Dr. Schoggins is expanding the screening technology to include a larger panel of RNA and DNA viruses, which will allow a system-wide characterization of antiviral ISG activity across the viral phylogeny. He is also interested in mechanistic dissection of ISG effector function in the context of the virus life cycle and host cellular processes. This ongoing work will provide a rich platform to understand how the highly pleiotropic IFN system orchestrates an antiviral program. Taking advantage of these naturally occurring virus inhibitors may be an effective strategy for future development of novel drugs to treat human viral diseases.



Nicole Messina
Graduate Student
Peter MacCallum Cancer Centre

Nicole Messina is a Ph.D student in the lab of Ricky W. Johnstone in the cancer immunology research group at the Peter MacCallum Cancer Centre. Her interest in immunology began during her undergraduate studies at Monash University where she undertook her honours year in the lab of Ricky W. Johnstone and continued her research during her Ph.D studies. Her current project focuses on the importance of IFN signalling pathways in homeostasis and anti-tumour responses. She has been examining the role of constitutive IFN $\alpha\beta$ signalling in the maintenance of maintaining efficient cytokine and immune responses. Research from her laboratory has revealed a role for IFN β in maintaining basal expression of signalling molecules in uninfected cells. Notably, attenuated signalling by STAT dependant pathways in IFNAR1^{-/-} cells can, in part, be attributed to decreased expression of STAT molecules. Her research has also examined the role of STAT1 independent signalling in anti-tumour responses. She has found that STAT1^{-/-} tumours are subject to immunosurveillance which utilizes perforin and both CD8⁺ and NK cells. Furthermore she has found that type I and II IFNs responsiveness of STAT1^{-/-} tumours is not required; however host IFN responses are required for the control of STAT1^{-/-} tumour growth.

**Journal of Biological Chemistry/Herbert Tabor Young
Investigator Award Winner**



Dr. Niamh Mangan
Research Fellow
Monash Institute of Medical Research

Dr. Mangan received her Ph.D. investigating helminth modulation of allergic responses, at the School of Biochemistry and Immunology, Trinity College Dublin, Ireland, in November 2005. Following completion of her doctoral training, Dr. Mangan commenced as a post-doctoral research fellow at the Institute of Molecular Medicine, Trinity College Dublin from 2005 until 2007. Her research interests involved cellular mechanisms of modulation and suppression of the immune response, exploiting mouse models of infection and inflammation, resulting in several high impact publications including *Nature Genetics*, *Gastroenterology* and *J. Exp. Med.* Significantly, her research studies with Prof. Fallon were invited for review in *Nature Reviews Immunology*, 2007.

As a result of her expertise in the area of infection and inflammation, in March 2008 Dr. Mangan was offered a position as a Research Fellow in the Interferon Research Group with Prof. Paul Hertzog, Director, Centre for Innate Immunity and Infectious Diseases at Monash Institute of Medical Research. Her current studies investigate the role of interferon cytokine and receptor signaling in immune regulation in infection and inflammation, in particular characterising the novel cytokine, interferon epsilon (IFN ϵ), in infection and inflammation.

In November 2010, Dr Mangan was awarded an NHMRC New Investigator Project Grant and received an Australian Research Fellowship from the Australian Research Council to expand her research studies characterising the role of IFN ϵ in the immune response. A particular focus of this research is the importance of IFN ϵ in infections of the female reproductive tract.