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Never Stand Still

Medicine

Centre for Childhood Cancer



# UNSW Centre for Childhood Cancer Research

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Partner of Children's Cancer Institute



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## Message from the Director

In Australia, cancer kills more children than any other disease.

The UNSW Centre for Childhood Cancer Research exists to provide major advances in childhood cancer research with the aim to save the lives of all children with cancer and eliminate their suffering. I am immensely proud to be its inaugural Director.

The launch of the Centre in 2015 was an exciting milestone for UNSW Australia and the Centre's key partner, Children's Cancer Institute. Now I look forward to seeing it become a vibrant hub to grow the next generation of childhood cancer researchers.

Our students will have an impressive range of important translational research projects to work on, access to state-of-the-art equipment and facilities, advice and mentoring from world-leading researchers, and career development opportunities to help them reach their potential. The new Centre builds on the track record of both organisations, UNSW Australia and Children's Cancer Institute, in training research leaders and innovators of the future.

Join us as we make new discoveries and take them from bench to bedside, out of the laboratory and into the clinic to make a real difference to the everyday lives of children with cancer and their families.

*Professor Murray Norris AM*

## Centre Purpose

The UNSW Centre for Childhood Cancer Research was established in 2015. The Centre will be closely interlinked with Children's Cancer Institute, the only medical research institute in Australia solely dedicated to childhood cancer. Children's Cancer Institute is highly acknowledged and collaborates with all major international centres of excellence in childhood cancer research. The Centre is committed to saving the lives of all children with cancer and eliminating their suffering through world-class translational research.

## Our People

### **Professor Murray Norris AM Director**

BSc ANU, MAppSc NSWIT, PhD UNSW

Deputy Director; Head, Molecular Diagnostics Program,  
Children's Cancer Institute



Professor Murray Norris AM is the inaugural Director of the UNSW Centre for Childhood Cancer Research and was one of the first three scientists to staff at the Centre's partner Institute, the Children's Cancer Institute when its research laboratories opened in 1984. He is Head of the Molecular Diagnostics Program and was appointed Deputy Director of Children's Cancer Institute in 2000.

His research interests focus on utilising new molecular genetic technologies to improve the diagnosis and risk classification and treatment of childhood cancer, and he has been responsible for developing and implementing unique technology enabling the early prediction of relapse in children with acute lymphoblastic leukaemia. Murray has an international research reputation in childhood neuroblastoma, particularly with regard to the molecular analysis of genes and their relationship with clinical variables. He has spent over 30 years investigating childhood cancers at the molecular level and has undertaken extensive research into the characterisation of genes involved in mediating resistance to chemotherapeutic drugs in paediatric leukaemia and neuroblastoma. The development of new therapeutic approaches to treating cancers and the detection of minimal residual leukaemia are key areas of his research.

Murray has published more than 160 peer-reviewed papers and is a regular reviewer for several national and international grant-funding bodies as well as numerous international journals. In addition to an established record of state and national grant-funded research, the quality of his work has been recognised by a number of awards.

**Professor Richard Lock**  
**Deputy Director**

BSc UC Swansea, PhD London  
Head of Program, Leukaemia Biology, Children's Cancer  
Institute



Professor Richard Lock is the inaugural Deputy Director of the UNSW Centre for Childhood Cancer Research and was recruited as Head of Children's Cancer Institute's Leukaemia Biology Program in 1998 from the position of Associate Professor, Department of Medicine and Department of Biochemistry and Molecular Biology, University of Louisville, Kentucky, USA. Prior to his move, he had attained an international reputation in the cancer-related fields of cell cycle control, drug resistance and mechanisms of programmed cell death (apoptosis). Since arriving at Children's Cancer Institute, Richard has successfully developed a clinically relevant laboratory model for the in vivo growth of human acute lymphoblastic leukaemia cells – the first such model in Australia. The model now plays a central role in the preclinical evaluation of anticancer agents and the identification of new targets for targeted therapies. Richard's contribution to cancer research has been reflected in his authorship of more than 150 peer-reviewed papers, including several in prestigious journals such as Blood, Cancer Research, Cell Stem Cell, Clinical Cancer Research, The Journal of Biological Chemistry, Molecular and Cellular Biology, and Oncogene. He is currently a National Health and Medical Research Council Senior Research Fellow, and has been awarded research grants by the National Cancer Institute (USA), the Cancer Council NSW (Australia), and the National Health and Medical Research Council (Australia). He is a Principal Investigator in the NCI-funded Pediatric Preclinical Testing Consortium, which aims to provide reliable preclinical testing data for paediatric drug candidates that can be used to inform new agent prioritisation decisions.

**Associate Professor Tao Liu**  
**ARC Future Fellow**

BMed, MMed, PhD UNSW

Group Leader, Histone Modification in Cancer,  
Children's Cancer Institute



Originally trained as a medical practitioner specialising in neurology, Dr Tao Liu studied for a PhD degree at UNSW Australia on the role of inflammatory mediators in chronic pain due to nerve injury. He then worked on the role of MIC-1, a new member of the transforming growth factor beta superfamily, in cancer cell proliferation, survival/apoptosis and metastasis at St Vincent's Centre for Applied Medical Research. Tao moved to Children's Cancer Institute as a Senior Research Officer in 2003. Since 2004, he has been focusing his research on the roles of histone deacetylases, histone demethylases, histone methyltransferases and long noncoding RNAs in modulating gene transcription and tumourigenesis, and the roles of histone deacetylase inhibitors and histone methyltransferase inhibitors as anticancer agents. He was promoted to Project Leader in 2009 and Group Leader in 2011. Over the past decade, Tao has authored a number of peer-reviewed publications in scientific journals including the well-known Lancet, Journal of the National Cancer Institute, Proceedings of the National Academy of Sciences USA, PLOS Genetics, Cell Death & Differentiation, and Cancer Research.

**Dr Jenny Wang**  
**ARC Future Fellow**

BSc, PhD Macq

Group Leader, Cancer and Stem Cell Biology,  
Children's Cancer Institute



Dr Jenny Wang is an ARC Future Fellow and Senior Lecturer at the UNSW Centre for Childhood Cancer Research and head of the Cancer and Stem Cell Biology Group at Children's Cancer Institute. She was recruited to Children's Cancer Institute in 2011 from Harvard Medical School and Harvard Stem Cell Institute, where she undertook postdoctoral research in leukaemia stem cell biology (2005 – 2011). Since relocating Jenny has established an independent stem cell research group and was awarded a Cancer Institute NSW (CINSW) Career Development Fellowship in 2012 and an Australian Research Council (ARC) Future Fellowship in 2013. Her research has attracted \$1.5 million in competitive project grant funding as Chief Investigator A (CIA) since 2012, including National Health & Medical Research Council (NHMRC) project grants, a Cancer Council NSW (CCNSW) project grant and UNSW Gold Star Awards.

## Our Research

### Molecular Diagnostics

This program is utilising molecular genetic techniques to improve the diagnosis and risk classification of childhood cancers including leukaemia and neuroblastoma. Major areas within the program include molecular detection of residual disease following chemotherapy and the use of functional genomics and high-throughput screening strategies to detect novel molecular targets and relevant inhibitors.

#### CONTACT

Professor Murray Norris

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### Leukaemia Biology

Leukaemias account for approximately one third of all paediatric malignancies and cause the greatest number of cancer-related deaths in children. The long-term goal of the Leukaemia Biology Program is to improve the treatment of children with leukaemia through the development of new therapies and their preclinical testing in clinically relevant experimental models.

#### CONTACT

Professor Richard Lock

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## Histone Modification in Cancer

Altered gene transcription is a major cause of cancer. One of the main ways that cancer cells alter gene transcription is to chemically modify cell proteins called histones. This acts to 'switch off' the transcription of genes that help suppress tumour initiation and progression, and to 'switch on' the transcription of genes that induce these processes. This group is focused on understanding altered gene transcription in cancer with a view to improving anti-cancer therapies.

### CONTACT

Dr Tao Liu

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## Cancer and Stem Cell Biology Group

The main focus of research in the Cancer and Stem Cell Biology Group is to develop novel therapeutic strategies specifically targeting and destroying cancer stem cells that are often resistant to commonly used cancer therapies such as radiation therapy and chemotherapy, and that are now believed to be the engine driving the growth of a tumour and the root cause of treatment resistance and relapse in cancer.

Stem cells have become the centre of much attention because they are capable of dividing to produce copies of themselves (self-renewal) indefinitely and also generating multiple cell types. Genetic and epigenetic abnormalities enable cancer stem cells to hijack normal stem cell self-renewal mechanisms that multiply out of control, causing cancer. Cancer stem cells are able to evade treatment and regenerate cancer through their self-renewal capacity. Targeted disruption of abnormal stem cell self-renewal represents a novel therapeutic strategy that could significantly reduce the capacity of a tumour to regenerate itself after treatment and is becoming a central focus in new drug development.

### CONTACT

Dr Jenny Wang

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## Study with Us

At the UNSW Centre for Childhood Cancer Research Centre, we are strongly committed to fostering the next generation of research leaders. As one of our students you will be provided with personalised training in state-of-the-art facilities to bring out your best.

Students at the Centre enjoy a number of benefits:

- Access to state-of-the-art equipment and facilities
- Development opportunities including travel to conferences, skill building workshops and an annual student retreat
- Supplementary scholarship award of \$6,000 per annum to 'top up' scholarships and assist with cost of living for all PhD students who hold a competitive scholarship (APA or equivalent)
- Annual competitive PhD excellence award of \$10,000 per annum to the top ranking new PhD student each year.

For more information on studying with us, please contact our Careers & Strategy Manager, Dr Amanda Philp [education@ccia.unsw.edu.au](mailto:education@ccia.unsw.edu.au)

### General Enquiries and Membership

#### CONTACT

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