

# ANNUAL REPORT 2016



RESEARCH • DISCOVERY • DEVELOPMENT

# Contents

## WIRF OVERVIEW

2	Patron's Message
3	WIRF and its Impact
4	Chairperson's Report
6	Executive Director's Report
8	Spotlight on Research and Research Translation
10	WIRF 40th Anniversary
11	KEMH Centenary

## RESEARCH UNITS

13	Women and Infants Health Research Laboratories
14	Women and Infants Research Foundation /Lotterywest Perinatal Laboratories
16	Biostatistics and Research Design Unit

## RESEARCH OVERVIEWS

18	Preterm Birth Prevention
20	Gynaecologic Oncology
21	The Raine Study
22	Improving Pregnancy for Mothers and Babies

## WIRF - OUTSIDE THE LABS

25	WIRF in the Community
26	Spotlight on Stars 2015
27	WIRF Contributors and Volunteers
28	WIRF Volunteers Celebrated
30	Supporters and Donors
36	Research Support

## WIRF - THE FINER DETAILS

39	Organisational Chart
40	Governance Statement
42	Board of Management
43	Grant Funding
45	Publications and Citations
52	Financial Statements



**women & infants**  
research foundation  
*Western Australia*

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# Patron's Message

Being Patron of the Women and Infants Research Foundation (WIRF) at King Edward Memorial Hospital (KEMH) during its 40th anniversary year has been a thoroughly rewarding experience.

The Anniversary celebrations have provided a fantastic opportunity to celebrate the people, partnerships and research that have shaped the WIRF story.

Many Western Australians are still surprised to learn that in their own backyard they have an organisation that is leading the way in research to prevent preterm birth and improve reproductive health. In many ways WIRF's evolution over 40 years as an internationally recognised organisation, mirrors the growth of WA.



WIRF Board Chair, Rowena Smith and Her Excellency the Honourable Kerry Sanderson, AC present Prof John Newnham AM with his long-service award

The opportunity to attend the 2016 Volunteers Morning Tea function, and present a number of long-service awards to WIRF and KEMH volunteers, was something I enjoyed immensely.

The Foundation's volunteers work tirelessly to support patients and staff and to assist in raising much needed funds for the Foundation's research. They form an invaluable resource contributing to the Hospital's ability to deliver the highest level of care, and allow the Foundation to focus its research efforts on areas of women's and infants' health most important to our community.

Her Excellency the Honourable  
Kerry Sanderson, AC

## HONORARY LIFE MEMBERS

Janet Holmes à Court

John Rawlinson

Rod Maslin

Emeritus Professor Con Michael

Anne Payne

# WIRF and its impact

## WHO WE ARE

For over 40 years, the Women and Infants Research Foundation (WIRF) has conducted and supported research to improve the health of women and infants.

Proudly, WIRF is the charity of King Edward Memorial Hospital, helping to raise vital funds for equipment, new initiatives and providing support to facilitate essential research studies.

## WHAT WE DO

In 2016, the Foundation continued to make significant progress across its many fields of activity, including its two priority areas of research - preterm birth prevention and gynaecological cancer research.

As Western Australia's leading independent research institution dedicated to improving women's, infants' and reproductive health, WIRF continues to translate its research into effective partnerships and programs on a state-wide level.



## OUR VISION

Understanding which factors influence poor health outcomes and developing alternative approaches and effective treatments, provide us the greatest opportunity to improve the health of women and newborns. We want our impact to be measureable and sustainable.

# Chairperson's Report

**For over four decades, the Women and Infants Research Foundation has attracted doctors, researchers and other leading health professionals to Western Australia, with our work having a fundamental impact on improving women's and infants' health.**

Our 40th anniversary year provided a national platform to share our many research achievements. We were able to connect with people who have played a key part in shaping our story and engage new generations of friends and supporters.

Undoubtedly one of the highlights was having the pleasure of being hosted by Governor of Western Australia and WIRF Patron, Her Excellency the Honourable Kerry Sanderson AC, for a special 40th anniversary celebration event held at Government House.

As part of the event, WIRF Executive Director, Professor John Newnham AM, and former WIRF Board member, Ms Jann Rowley were presented long-service awards in recognition for their outstanding service and commitment to the Foundation. Both John and Jann have played a critical role in the shaping the identity of the Foundation and its many successes. I thank them both for their exceptional contributions.

**Of most importance to the continued growth and diversity of our research, is that our work improves health outcomes, and delivers real economic benefit to health services and government.**



Our Western Australian Preterm Birth Prevention Initiative continues to educate and inform parents and health providers on new interventions to prevent preterm birth. A key component of the Initiative is the Prevention of Preterm Birth Symposia. These state-wide outreach symposia provide a forum for medical practitioners and midwives to learn more about the clinical reasons why prevention of preterm birth is important and the science behind the new intervention guidelines.

We continue to operate in an environment of tight fiscal constraints and ever increasing competition for available dollars. We are, however, fortunate to have a diversified income base and a highly capable Finance Committee chaired by Grey Egerton-Warburton. The Committee and our Board continue to explore new and exciting fundraising opportunities among the high level corporate and philanthropic community. Such funding gives certainty to researchers to continue their critical work and helps retain highly skilled staff at WIRF.

The Café/Gift Shop has continued to be of great value to the hospital, providing a much needed focus of activity within the hospital as well as a valuable source of income. All profits are directed to the Foundation and over the years this financial stream has played a key role in the building of our research capabilities.

We understand that our success lies in our ability to work in true partnership with our key partners, health services, policy makers and our donors and supporters. Private and philanthropic support is becoming increasingly important in extending our national and international research impact and translating our research findings for the benefit of women, infants and families across our region.

I would like to thank King Edward Memorial Hospital, Channel 7 Telethon Trust, McCusker Foundation, Lions International and District 201W1, Jean Murray Jones Trust, The Cancer Trust, The Royal Australian and New Zealand College of Obstetricians and Gynaecologists, BHP Billiton, WA Charity Direct, Beyond Bank Australia, Lotterywest, Great Gardens, Bunnings, Hartleys, The Angel Fund, and the many individuals who quietly donate funds to WIRF each year.

**The King Edward Memorial Hospital (KEMH) Centenary celebrations, which ran in parallel to our own anniversary year, was a fantastic opportunity to celebrate 100 years of public health services for women, infants and families in WA.**

I would like to extend my congratulations to KEMH Executive Director, Dr Peter Wynn Own, KEMH's Mr Graeme Boardley who is the Hospital's representative on our Board, and KEMH Alumni on delivering an engaging and hugely popular suite of anniversary events.

In finishing, I would like to thank everyone involved with this wonderful organisation - our incredible family of volunteers, staff, Board and committee members, collaborators, and the WA community. Your commitment, contribution and dedicated support are essential for the ongoing success of WIRF. We look forward to the rewards and challenges that the coming year will bring.

**Rowena Smith**  
Chairperson

# Executive Director's Report

This year the Women and Infants Research Foundation (WIRF) celebrates its 40-year anniversary and King Edward Memorial Hospital (KEMH) celebrates its Centenary. These two organisations, in close collaboration with many partners including The University of Western Australia (UWA), have played a central role in making this State a site of excellence in health care for women and babies. The vitality of Western Australia and the health of its people are to some extent the result of these highly functional organisations and the commitment of their staff and volunteers.

From its beginning in 1976, the ethos of WIRF has centred on building the next generation of researchers and science-competent clinicians. WIRF research starter grants, capacity building grants, PhD scholarships and opportunities for scientific interaction have helped to generate and shape our medical workforce and its research base. Much of the value of this work is unseen by the public although many of the great scientific discoveries made by WIRF researchers are highly visible.



In 1988, WIRF and the UWA Department of Obstetrics and Gynaecology initiated and hosted development of the Western Australian Pregnancy Cohort Study. This project has since been known as The Raine Study in honour of Mary Raine whose estate provided the initial funding through the Raine Foundation. The purpose of The Raine Study has been to discover how events early in life, including during fetal life, influence health and disease through childhood and into adult life. We now accept this concept as obvious, but in 1988 this was an idea that was far from accepted. Nearly 3000 pregnant women and their unborn babies attending KEMH were recruited to the project. The Raine "children" are now adults ranging in age from 24 to 27 years. Data have been collected throughout their lives and now there are 80,000 pieces of information on each participant, along with a host of stored biological samples. The Raine Study is one of Australia's greatest medical research projects and would not have been possible without support from WIRF; this support continues to the current time.

WIRF has also hosted and supports a longstanding series of research projects using sheep as a model of human pregnancy and the newborn. This program has harnessed and adapted for medical research the excellent animal husbandry that has been developed in Australia over two centuries. The WIRF program has been funded by the USA National Institutes for Health continuously for 26 years and by the Australian NHMRC for most of that time. Many discoveries have come from these studies, including valuable information on how we can safely and rapidly mature the fetus before preterm birth.

One of the purposes of our Annual Reports is to present a brief review of WIRF's scientific life and to show the depth and breadth of its research studies. Projects extend across our many areas of clinical activity, underpinned by high quality laboratory science and data management and analysis. I hope you enjoy reading these reports in the following pages.

The Report also shows some of the measures of scientific output that are used to judge research programs and scientists. WIRF's scientific output is disproportionately high for the size of the organisation. A likely explanation for this success is that our scientists are embedded in our clinical teams producing fertile fields for development of ideas and rapid translation of discoveries into clinical practice.

WIRF hosts a busy year of activities. There are events providing scientific interaction and clinical education, and social occasions to recognise and celebrate the contributions made by our researchers, staff and volunteers. In September, we host the Stars Symposium at which a visiting expert provides a public lecture along with two local leaders in the field. The following evening we hold the Rising Stars Symposium at which our early career researchers give scientific presentations at a formal dinner. This year we also plan to hold the inaugural Banquet for Babies at the State Reception Centre, raising awareness and funds for our preterm birth research programs.

Many of our successful research programs are headed by the leaders in our prime fields of activity and I am grateful for their support during the year - Professor Jeffrey Keelan who is Head of the WIRF/UWA Laboratories on the KEMH campus; Professor Dorota Doherty who is Head of the Biostatistics and Research Design Unit; Associate Professor Matt Kemp who is Head of the WIRF/SWIH Perinatal Research Laboratories on the UWA Crawley Campus; and Dr Shaofu Li who is responsible for credentialing and safety in the WIRF/UWA/KEMH research laboratories. Our Research Grants Committee is chaired by Professor Brendan Waddell and we are grateful to the members of the Committee for providing valuable advice to the Board on the awarding of grant and scholarship funds.

None of these achievements would be possible without the wonderful work of our staff and volunteers. One of the leaders, Tina Williams, left in early 2016 to take up a new position with Volunteering WA, after 7 years as our Marketing and Operations Manager. Jenny Reid has continued her excellent work as our Volunteer Coordinator and Anne-Marie Weekes has ensured, as Manager of the Coffee and Gift Shop, that an excellent service is provided to our staff, patients and their visitors. Mr Richie Hodgson has performed a vital role as our principal person involved in media liaison and has also increased his breadth of responsibilities since Tina Williams departed. I would also like to express my great appreciation to Andrea Cole our Finance Manager, Claire Williams and Vanessa Walker our Bookkeepers, Christine Spencer who is our Administrative Officer, and Tony Smith who is our IT Support Officer.

**Most of all, however, I would like to express my appreciation on behalf of the entire organisation to those people who volunteer their time and expertise enabling our various businesses and activities to be successful.**

Finally, I would like to thank Rowena Smith who is Chair of the Board and whose wise counsel has been of such great value to us all, Grey Egerton-Warburton who is Deputy Chair, and all members of the Board who have been so generous with their time.

A handwritten signature in dark ink, appearing to read 'John Newnham'.

**Professor John Newnham AM FRANZCOG**  
Inaugural Executive Director



# Spotlight on Research & Research Translation

Beyond its commitment to research excellence, the Women and Infants Research Foundation sets its sights on solutions – using our research findings to kick-start and sustain positive change.

We are committed to ensuring that the research we do is put into practice and policy by health care providers, governments and other key stakeholders to achieve practical and tangible health outcomes.

## AIMING LOW: Optimising Steroid use in Pregnancy

*An international team of researchers led by the Women and Infants Research Foundation are undertaking pre-clinical trials to optimise steroid treatments for women at risk of preterm delivery.*

Doctors have known for decades that simple steroid injections, if given to the mother before preterm birth, will rapidly mature the lungs and other organs. This treatment is given routinely to women in whom preterm birth appears to be inevitable.

Despite its role in saving the lives of countless thousands of preterm babies, the use of steroids in pregnancy is not without controversy.

Steroid use in pregnancy has never been optimised, meaning that a 50kg woman early in pregnancy is given the same dose of steroids as a 100kg woman close to term. Because steroids are powerful drugs that target many organs, some researchers have become concerned about potential side-effects of excess steroid exposure on the mother and the unborn baby.

Today, a world-leading consortium of scientists and doctors from Perth, Cincinnati (USA) and Sendai (Japan) are undertaking much needed studies aimed at personalising steroid treatment to individual pregnancies, and ensuring that the lowest possible dose of antenatal steroids is used to mature the fetal lung.

Supported by WIRF, GlaxoSmithKline and the Bill and Melinda Gates Foundation, and led by Head of WIRF-SWIH Lotterywest Perinatal Research Laboratories, Assoc Prof Matt Kemp, the consortium is now completing its second year of pre-clinical trials. The team's findings to date are extremely promising, and have generated significant international interest.



In addition to its cutting-edge laboratory-based and biomedical research, the Women and Infants Research Foundation also strives to increase the capacity of communities, health service providers, Aboriginal health workers, professionals and researchers – to help them deliver better services based on evidence about what works, and what doesn't.



### WHY OUR WORK INTO PRETERM BIRTH IS SO IMPORTANT

Preterm birth is the single largest cause of death and disability in children up to five years of age in developed countries. In WA alone, more than 2900 babies are born premature each year.

Premmie babies require a raft of life saving technology to survive then thrive. After several decades of targeted research, we now have the knowledge to safely prevent preterm birth for many women and their pregnancies.

## WIRF AND THE WEST:

### Partnering to launch The Whole Nine Months Magazine

In March 2016, The Women and Infants Research Foundation, in partnership with The West Australian, published the latest edition of 'The Whole Nine Months' educational liftout, which explains how our preterm birth prevention initiative is reducing premature birth in WA.

This enlightening magazine has provided an insight on how the world-first WA Preterm Birth Prevention Initiative is impacting on health care and women in WA and how we're educating and informing parents and health providers on new interventions.

#### Feature articles in the lift out included

- Update on the WA Preterm Birth Prevention Initiative
- Measuring cervix length; a highly predictive diagnostic
- Preterm birth prevention in multiple pregnancies
- Fertility treatments and preterm birth
- Non-medically indicated late preterm birth
- HPV and preterm birth
- The role of antibiotics, mental health and tobacco exposure in preterm birth.



# WIRF 40th Anniversary

## WIRF celebrates a major milestone

Born of a vision to understand and improve the difficult and complex health problems faced by mothers, babies and the women of Western Australia, the Women and Infants Research Foundation (WIRF) is now an internationally recognised medical research institute. In 2016, WIRF celebrated 40 years of research, education and outreach.

Talk about setting up a dedicated health research centre attached to King Edward Memorial Hospital (KEMH) had built great momentum by the mid-1970s. Whilst research had been widely acknowledged as one of KEMH's most important roles in the community, the Board of Management's decision to establish a standalone research hub reflected the Hospital's commitment to addressing the root causes of poor health.

With the backing of King Edward Memorial Hospital, Channel 7 Telethon Trust, and The University of Western Australia, the Women and Infants Research Foundation (formerly King Edward Memorial Hospital Research Foundation) opened its doors in December 1975.

The new cooperative venture would appoint Governor of Western Australia, Air Chief Marshall Sir Wallace Hart Kyle as the Foundation's first Patron with early focus on the development of a generation of future researchers.

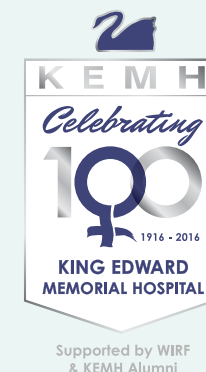
Fast forward to 2016, WIRF research continues to grow and diversify, along with its international reputation for scientific discovery and public health achievement.

In partnership with our key stakeholders, the WA community, and our dedicated staff, we will shape the next chapters of the WIRF story, advancing access and health outcomes for generations to come.



# KEMH Centenary

Coinciding with WIRF's 40th anniversary year, 2016 also saw King Edward Memorial Hospital celebrate its Centenary Anniversary. A number of anniversary events and activities were held throughout 2016 to celebrate 100 years of public health services for women, infants and families. Affectionately known as King Eddies, it holds a special place in the hearts of Western Australians, and is the birthplace of many.



## GALA BALL

Many of Western Australia's leading health professionals, Members of Parliament, and long-serving hospital staff were just some of the dignitaries who gathered for King Edward Memorial Hospital's Centenary Gala Ball in July 2016.

Held at the Astral Ballroom, Crown Perth, and attended by more than 420 people, the Ball provided an opportunity to celebrate and reflect on 100 years of delivering first-class health care to women and infants in WA.

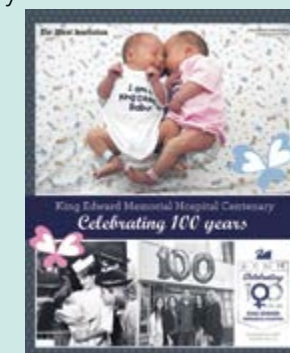
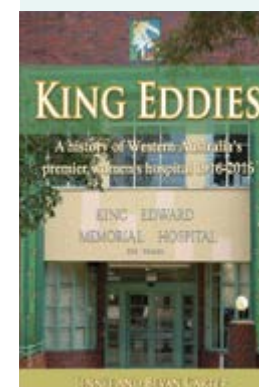


## KEMH COMMEMORATIVE CENTENARY BOOK AND MAGAZINE

*King Eddies: A history of Western Australia's premier women's hospital 1916-2016*, provides a chronicled look at the evolution of WA's only tertiary maternity and gynaecological hospital.

Researched and written by acclaimed WA historians, Jennie and Bevan Carter, the book revisits the initial vision for the establishment of a dedicated maternity hospital, the Hospital's public health achievements, and the people and events that have shaped King Eddies.

In addition to the Centenary Book, KEMH, in partnership with The West Australian, also published a Centenary liftout in July 2016. The liftout details personal stories, highlights organisational milestones and explores the history of KEMH.



## KEMH MUM'S HONOUR WALL

A key part of the Hospital's Centenary celebrations has been the creation of the KEMH Mums Honour Wall.

All women whose babies were born or treated at KEMH have been invited to be a lasting part of the Hospital's Centenary celebration through this unique project which will be launched during World Prematurity Week in November 2016.

Mums are able to choose from Gold and Silver Butterflies, coloured Bunting Flags, and the digital wall, to commemorate their special experience at KEMH.







# The Women and Infants Health Research Laboratories



## OVERVIEW

The Women and Infants Health Research Laboratories are located on the second floor of King Edward Memorial Hospital in the School of Women’s and Infants’ Health (University of Western Australia). They support both clinical and basic research undertaken through the Foundation, the Hospital and the University, and also provide additional analytical facilities for research conducted in the Perinatal Research Laboratories on the UWA campus in Crawley.

Over the past year, the laboratories have supported the research of three Professors, two Associate Professors, two Lecturers, one visiting Fellow, two Research Assistants, four Research Midwives, four PhD students, four Honours students, two MD Research students and two Chinese “Winter School” students.

The running and maintenance costs of the Laboratories are funded by WIRF. Financial support is also received from Lions WA which provides funds on an annual basis for the purchase of essential laboratory equipment.



L-R: May Yee Yap, Sarah Herold and Verity Greaves

## RESEARCH HIGHLIGHTS & ACHIEVEMENTS

- Immunoblotting analysis of placental tissues and maternal serum to identify markers of risk of preterm birth
- Establishment of a Transwell model to explore Ureaplasma colonisation, penetration and inflammation in human fetal membranes
- Analysis of serum concentrations of chemokines and adipokines in participants of a clinical trial of exercise in pregnancy for prevention of gestational diabetes
- Publication of 20 papers and reviews arising from research associated with the laboratories.

**Jeffrey Keelan, PhD**  
Head of Laboratories

Jeffrey Keelan, PhD  
Head of Laboratories  
Associate Professor Craig Pennell  
Ph.D., FRANZCOG  
Dr Demelza Ireland Ph.D.  
Dr ShauFu Li Ph.D.  
Dr Kamali Pugazhenthi Ph.D.  
Dr Matt Payne Ph.D.  
Associate Professor Matt Kemp  
Dr Jian Xiao Ph.D.  
(GuangXi University, CHINA)

Mrs Blagica Penova-Veselinovic M.Sc.  
Mrs Narisha Pendelton B.Nurs.  
Ms Melanie Walls B.Sc (Hons).  
Mrs Melanie White B.Sc (Hons).  
Ms Joan Leong B.Sc (Hons).  
Ms Lisa Stinson M.Sc.  
Ms Pearl Ng B.Sc (Hons)  
Ms Alana De Luca B.Sc.  
Ms Georgia Paverly B.Sc  
Ms May Yee Yap B.Sc  
Ms Sarah Herold B.Sc  
Ms Verity Greaves B.Sc (Hons)



# Women and Infants Research Foundation /Lotterywest Perinatal Laboratories

The Women and Infants Research Foundation School of Women's and Infants' Health (WIRF-SWIH) Lotterywest Perinatal Research Laboratories are housed within the University of Western Australia's Large Animal Facility (LAF) on the Crawley Campus. For over a decade they have played a critical role in supporting pre-clinical sheep research and surgical training undertaken by SWIH and the Foundation. Supporting this important aspect of the Foundation's work remains the primary focus of these laboratories. Recent upgrades to these laboratories have also yielded an improved capacity to comprehensively support basic science and clinical studies, in addition to the core sheep-based research.

Each equipped with cutting-edge equipment, the laboratories are comprised of three complementary facilities, allowing a seamless workflow from experiment to analysis: the PC2 Laboratory supports microbiology and general laboratory analyses; the Pre-PCR Laboratory allows for protein analysis, cell culture and nucleic acid handling; and finally, the Core Laboratory allows for nucleic acid amplification, electrophoresis and ultra-low temperature storage. An especially important feature of this facility is that it allows investigators to directly transfer research samples from operating theatres and animal holding rooms into custom-designed research laboratories for rapid downstream analysis.

The Foundation's laboratories also play a pivotal role in providing surgical training via their support of the Anatomy of Complications Workshop. Held five times each year, the workshops provide advanced training in the surgical management of obstetric and gynaecological complications to medical professionals from Australasia and the Asia-Pacific region.

In the year to date, the Perinatal Research Laboratories have continued to play a crucial role the advancement of the Foundation's perinatal research objectives. Five research staff (post-doctoral researchers, graduate students, technicians and visiting Fellows) work year-round in these laboratories.



Rear (left to right): Dr H. Usuda, Dr S Sato, Mr S. Kawamura, Dr M. Saito, Assoc Prof M. Kemp.  
Front (left to right): Dr S. Watanabe, Dr Y. Miura.

Each July and August, the laboratories host the largest sheep-based perinatal research program of its kind. This year, 15 investigators from the United Kingdom, Japan, the Netherlands, Austria and the United States used the SWIH-WIRF Perinatal Laboratories to perform real-time measurements of fetal infection, inflammation, injury and physiology.

Over the past 12 months, the SWIH-WIRF Perinatal Laboratories have undertaken work funded by agencies including the Bill and Melinda Gates Foundation, GlaxoSmithKline, the National Institutes of Health, the National Health and Medical Research Council, the Royal Society, Chiesi SpA, the Financial Markets Foundation for

Children, Sparks (UK), the Department of Health, and the Women and Infants Research Foundation. Research highlights from the grants include studies to: optimise the use of antenatal corticosteroids; develop new, highly-specific antimicrobial agents; develop new, non-invasive diagnostic techniques for fetal infection; and better understand the role of infection in preterm birth.

Research undertaken in the SWIH-WIRF Perinatal Laboratories has been published in leading peer-reviewed journals including the American Journal of Obstetrics and Gynecology, Laboratory Investigation, Human Reproduction Update, Pediatric Research and Reproductive Sciences. The year ahead promises to be an equally busy year for the laboratories, with a number of exciting protocols under development. As in previous years, the primary focus of research undertaken in our laboratories is the development of better diagnostic tests and interventions for preterm birth and new therapies to improve outcomes for preterm infants.

The support of the Foundation is critical to our efforts to improve the health of babies and their mothers. On behalf of the laboratory team I would like to extend my gratitude to the Foundation's Board, Staff and Volunteers for their invaluable support. I would also like to acknowledge the hard work and commitment of the laboratory team at the LAF over the past 12 months.

**Matt Kemp PgDipLATHE (Oxf) Ph.D (NSW) Ph.D. (W.Aust)**

Associate Professor, School of Women's and Infants' Health  
Head, SWIH-WIRF Perinatal Laboratories at the Large Animal Facility.



## Perth

Ms Lucy Furfaro  
Dr Demelza Ireland Ph.D.  
Ms Lisa Stinson  
Dr Matt Payne Ph.D.  
Dr Judith Böhm M.D.  
Dr Eleanor Woodward Ph.D.  
Professor John Newnham FRANZCOG  
Dr Haruro Usuda M.D.

## Sendai, Japan

A/Prof Masatoshi Saito Ph.D.  
A/Prof Tadashi Matsuda M.D.  
Dr Ryuta Kitanishi M.D.  
Dr Shinichi Sato M.D.  
Dr Shimpei Watanabe M.D.  
Dr Takushi Hanita M.D.  
Dr Yuichiro Miura Ph.D.

## Cincinnati, Ohio

Dr Noah Hillman M.D.  
Professor Alan Jobe Ph.D.  
Professor Suhas Kallapur Ph.D.  
Dr Augusto Schmidt Ph.D.  
Dr Brett Koethe M.D.

## Maastricht, Netherlands

Professor Boris Kramer Ph.D.  
Dr Tim Wolfs Ph.D.

## Edinburgh, Scotland

Dr Sarah Stock Ph.D.  
Dr Sarah Rinaldi Ph.D.

## Cardiff, Wales

Dr Brad Spiller Ph.D.  
Dr Mike Beeton Ph.D.

# Biostatistics and Research Design Unit

The discipline of biostatistics is well recognised as an essential component of medical research and clinical decision making. The existence of the Biostatistics and Research Design Unit contributes and enhances the research studies supported by the Foundation.

The Unit progressively evolved from a single biostatistician, Dr Sharon Evans, employed over 25 years ago, into its current structure which has been in place for the last 12 years, with two full-time biostatisticians and one programmer (and additional biostatistical and midwifery staff for individual projects when required). The first report from the Unit appeared in the 1997 WIRF Annual Report.

The role of the Biostatistics and Research Design Unit is to provide biostatistical consultation and collaboration in the design, conduct, analysis, interpretation, and reporting of research conducted at King Edward Memorial Hospital and affiliated institutions.

Our involvement in research ranges from short-term consultations to ongoing long-term collaborations. A short-term consultation may involve experimental design, plans for data collection, advice on statistical methodology, assistance with data interpretation or performing data analysis for a completed study. The majority of our activities involve ongoing, long-term collaborations on research studies that begin at a study conception and continue until the study completion and publication of results.

We liaise with researchers and staff members on campus to foster and facilitate future research interests. Over the last 12 months, the Unit has been involved in collaborative research with investigators from King Edward Memorial Hospital, all four Western Australian Universities, the Telethon Kids Institute, the University of Sydney, the University of Melbourne, and the University of Arkansas, USA.

Research studies supported by the Unit span all areas of women's reproductive health and the health of their offspring from the neonatal period until young adulthood. We continually aim to increase the use of biostatistics in research conducted on campus and we look forward to meeting new challenges in women's health and reproduction in the coming year.

**Professor (Adj) Dorota Doherty**  
Head, Biostatistics and Research Design Unit



*L:  
Biostat team from  
1998 Annual Report:  
Jenni Henderson (1998-2003),  
Sharon Evans (1989-2002),  
Lyle Gurrin (1998-2001)*

*R:  
Biostat team from 2015:  
Dorota Doherty (2001-current),  
Liz Nathan (2005-current),  
James Humphreys (2005-current)*





# Preterm Birth Prevention Research

In November 2014, WIRF launched the Western Australian Preterm Birth Prevention Initiative with the single aim of safely lowering the rate of early birth in our state. Since then, the program has gone from strength to strength.

The Initiative has three principal components.

First, is a state-wide outreach program ensuring the health care workforce and general public understand the new clinical guidelines that have been put in place. This outreach program has included print media and workshops conducted in hospitals and health care centres. During 2015, the outreach team led by Professor John Newnham, travelled more than 13,000 kms and provided in-service education to more than 500 health care workers in their own work environments. The success of the outreach trips has been remarkable and we expect that further development of this interactive education program will continue to be a priority of WIRF in the future years.

Second, is a public health campaign, known as [thewholeninemonths.com.au](http://thewholeninemonths.com.au). The name is trademarked by WIRF. We are very grateful to The West Australian Newspapers for support, some of which has come from WIRF's successful contribution to the Orange Seed Competition that has provided opportunities for the Initiative to be promoted in print and social media.



Third, is the development of a dedicated Preterm Birth Prevention Clinic at KEMH, designed to provide investigation and management for women at highest risk of this complication of pregnancy. For the first 18 months this service was funded by special block grants awarded by The Minister of Health, but ongoing support is now assured by inclusion of this service within the Hospital budget.

The results of the first 12 months of the Initiative, both state-wide and within KEMH, are now being analysed and are expected to be available in late 2016/early 2017.

Discovering how to prevent preterm birth, and implementing the strategies across Western Australia, has been an enduring focus for WIRF researchers for the last two decades. This is a field in which our researchers have been very productive and for which WIRF is well acknowledged, both locally and internationally. Western Australia, as a location, is ideal for this program, being a relatively isolated medical community but with excellent health care resources and computerisation of outcomes.

As for many areas of research, our greatest contribution will come from focussing on those areas in which we have a particular strength, and contributing to the global effort of preterm birth prevention is definitely one of them.

WIRF's principal partners in the Preterm Birth Prevention Initiative include the Health Department of Western Australia, The University of Western Australia, the Australian Medical Association and the Royal Australian College of Obstetricians and Gynaecologists.

## The Western Australian Preterm Birth Prevention Initiative

[THEWHOLENINEMONTHS.com.au](http://THEWHOLENINEMONTHS.com.au)



L-R: Barney McCallum (Obstetrician, Kalgoorlie), Michelle Pedretti, Suzie Allen, Dr Suzanne Meharry and Prof John Newnham at the Kalgoorlie outreach event

## RESEARCH REPORTS ONLINE

Individual research reports are available online at [www.wirf.com.au/research](http://www.wirf.com.au/research) for the following Preterm Birth Prevention studies:

- The Western Australian Preterm Birth Prevention Initiative
- Exploring the Genetics of Preterm Birth in Western Australian Families
- Development of a Multi-locus Sequence Typing Scheme for *Ureaplasma Parvum* and *Ureaplasma Urealyticum*
- Prevalence of *Ureaplasma* and *Candida spp.* during pregnancy in WA women
- TAK1 Inhibition for the Prevention of Inflammation-induced Preterm Birth
- Predicting Infection-related risk of Preterm Birth
- Characterising T cell responses to *Ureaplasma spp* in pregnancy
- Predict1000 (Prevention of infection-driven preterm birth through development of a universal diagnostic test to identify high-risk pregnancies)
- Western Australia Pregnancy Biobank for High Risk Pregnancies
- Microbial biomarkers of preterm birth

1 in 12 babies is born preterm in WA

# WA Gynaecologic Oncology Research Initiative

In the last 18 months the Western Australian Gynaecologic Oncology Initiative embarked on two separate international searches to recruit a Research Professor in Gynaecologic Cancer to work alongside the clinical Gynaecologic Oncology multidisciplinary unit. Applicants from Queensland, Italy and Germany were interviewed, gave seminar presentations and inspected the facilities available in Western Australia. Despite some job offers, the applicants ultimately decided not to proceed with relocating to Western Australia. We note other medical units in Western Australia also experienced difficulties recruiting Research Professors. The strategic direction has therefore shifted to identifying and supporting young scientists with great potential and an interest in gynaecologic cancer research.

The Western Australian Gynaecologic Oncology Research efforts have gone from strength to strength. Research output, as measured in number of publications in peer-reviewed journals, has increased year on year. There have also been opportunities for our trainees to present our research at scientific meetings in Australia and overseas.

We also extend our congratulations to Dr Aime Munro, who presented at the 2015 Rising Stars Symposium. This year Aime was awarded a PhD for her research into the outcomes of women with cervical pre-invasive changes in Western Australia. Her research has contributed significantly to the understanding of the outcomes in young women with CIN2, women with atypical endocervical cells of uncertain significance and women with adenocarcinoma-in-situ of the cervix.

So where to in the future? Our Biobank Project is progressing well and projects are being identified that will maximise the use of this valuable resource. We are also encouraging our trainees to undertake research projects in Gynaecologic Oncology – a special mention to Dr Paul Cohen for his support with this. Finally, we are excited about the potential collaboration between the Anatomy of Complications Workshop and the UWA Business School in projects and SHRAC Linkage Grants focussing on research in the non-technical skills in surgery and surgical education.

Special thanks also to Diane Loh and Narisha Pental, Research Nurses from WIRF who are involved with LACE and feMMe (see below).

## ONGOING PROJECTS

**Project Biobank** – collecting bio-specimens for future studies  
Recruitment at KEMH Jan – Jun 2013 186 Jul 2013 – Jun 2014 352 Jul 2014 – Jun 2015 344 Jul 2015 – Jun 2016 335  
At KEMH, 51% of the total cases recruited had a diagnosis of a malignancy.

**LACE** – comparing open to laparoscopic hysterectomy for early stage endometrial cancer. A manuscript comparing the long term outcomes of women with early stage endometrial cancer who were surgically managed by a total laparoscopic compared to an open hysterectomy has been submitted to a peer-reviewed journal.

**feMMe** – comparing intrauterine levonorgestrel alone to combining with weight loss and/or Metformin to treat atypical endometrial hyperplasia and early stage endometrial cancer. After a slow start, KEMH contributed 5 patients to the total of 57 recruited to this study.

# The Raine Study

The Western Australian Pregnancy Cohort (Raine) Study is the world's first pregnancy-intensive cohort study and is one of the largest medical research studies in Australia. WIRF hosted the early beginnings of this project and continues to be a major contributor. The Study commenced in 1989 with the recruitment of 2900 women who were less than 18 weeks pregnant at King Edward Memorial Hospital.

Initially, the focus of this study was to examine the effects of repeated ultrasound imaging and placental blood flow studies during pregnancy; however, the long-term value of this unique cohort was also recognised, and the study continued into childhood, adolescence and now adulthood. Over the past 27 years, the 2868 children born into the Raine Study, and their parents, have generously participated in 11 cohort reviews at ages 1, 3, 5, 8, 10, 14, 17, 18, 20, 23 and now 27. The Raine Study now encompasses many special interest study groups, includes more than 150 Australian and international researchers, and contributes to numerous multinational research consortia.



L:  
Raine Study  
Research Team,  
1989

R:  
A Raine Study  
participant is put  
through their paces

This year, the Raine Study has continued to generate new insights into the genetic and environmental antecedents of complex human diseases, including: coronary heart disease, stroke, insulin resistance, type-two diabetes and high cholesterol levels, obesity, neurological disorders and mental illness. The Raine Study is currently conducting the 27 year cohort review. This review is focused on cardiovascular health and the distribution of fat inside the body.

Over the Study's 27 year history, more than 300 peer-reviewed journal articles have been published. More than 15 of these articles have been published in prestigious journals such as *Nature*, *Nature Genetics* and *the Lancet*. The Study's rich resources include thousands of measurements on each participant, and millions of genetic data-points. The generosity of the Raine Study participants and families will enable the study team to continue to contribute to the global research community and support health development for many years into the future.

## RESEARCH REPORTS ONLINE

Individual research reports are available online at [www.wirf.com.au/research](http://www.wirf.com.au/research) for the following Raine studies:

- Raine Genetic Epidemiology Research Group
- Hypothalamic Pituitary Adrenal (HPA) Axis Research Group
- Stress across the lifespan, from conception through adolescence to adulthood
- The long term consequences of assisted reproduction on development of the offspring: a prospective cohort study – 'growing up healthy study'



# Improving Health and Pregnancy for Mother and Babies



Chief Investigators  
Megan Lloyd  
Ben Hartman

## Enhancing donor breastmilk

This research, associated with the Perron Rotary Express Milk Bank, aims to improve the quality of donor breast milk for preterm infants to increase their growth, reduce disability and to improve long-term health.

Assessing the growth of preterm infants receiving a majority of donor milk in their first weeks of life showed that growth was slightly lower than those receiving their mother's own breast milk, but was within clinically acceptable limits. Importantly, there was no evidence of poorer growth in the longer term and growth was similar between the two groups at discharge and at one year. Head circumference (a marker for neurodevelopment) and length were not significantly different between the two groups at any time.

This Study is the first to benchmark preterm infant growth after the successful introduction of donor milk into the King Edward Memorial Hospital neonatal intensive care unit to replace commercial preterm formula for extremely preterm infants. Research is now focussing on methods to improve the nutrient availability of donor milk.

## The GenMove study

Young babies move spontaneously; these movements – called General Movements (GM) – can be observed and characterised as either normal or abnormal. A normal GM score is a strong predictor of normal developmental milestones such as crawling or walking.

Studies have shown that observation of GM in moderately preterm infants can help in the assessment of developmental abnormalities and prediction of future movement/neuromuscular problems. Early identification of babies at risk will enable closer monitoring and earlier interventions.

This Study is aimed at extending the GM measurements to very preterm babies born less than 26 weeks' gestation. Babies born at this gestational age have not been included in previous GM studies, and it is not known how useful GM measurements would be in babies this premature. The study enrolled 40 preterm infants and observed their GM via video recordings. All clinical aspects of the study have been completed. The data are in the final stages of being analysed and interpreted, prior to publication and presentation.

Chief Investigator  
Mary Sharp



## Nutritional benefits of probiotics in preterm infants (SiMPro study)

This double-blinded randomised controlled trial commenced recruitment in September 2015 with joint funding from the Telethon Channel 7 Trust and the Princess Margaret Hospital Translational Research Grant.

The main aim of this project is to compare nutritional benefits of single versus three strain probiotics in extremely preterm infants. The range of nutritional benefits expected include: better growth, lesser time to achieve full milk feeds, lesser incidence of a potentially fatal illness called necrotizing enterocolitis and potentially lesser rates of infection and hence shorter hospital stay.

Recruitment is still ongoing (110 recruited, 75% completed) and there are as yet no results.

The findings from this trial will help in choosing the best strain probiotic for this high-risk population in Western Australia and provide baseline data for further larger multi-centred trials.

Chief Investigators  
Jape Gayatri  
Sanjay Patole





# WIRF - outside the labs



## WIRF in the Community

### GOVERNMENT HOUSE OPENS ITS DOORS FOR WIRF

The Women and Infants Research Foundation was extremely honoured to be hosted by Governor of Western Australia and WIRF Patron, Her Excellency the Honourable Kerry Sanderson, AC as part of a special 40th Anniversary celebration event.

The event, held at Government House in December 2015, was a fantastic opportunity to reflect on 40 years of research, education and innovation.

As part of the event, WIRF Executive Director, Professor John Newnham AM, was presented with an award recognising his 20 years of outstanding service and commitment. Former WIRF Board member, Ms Jann Rowley was also presented with her long-service award.



*Image right: Prof John Newnham AM presents former WIRF Board member, Jann Rowley with her long-service award*

### POSH FROCKS CAMPAIGN

Perth Lord Mayor, Lisa Scaffidi and local celebrity, Famous Sharron, joined WIRF in April 2016 to call for all fashionable women across Perth to get behind the Foundation's Posh Frocks for Premmies Appeal.

The Appeal, which continues to raise much needed funds for the Western Australian Preterm Birth Prevention Initiative, asked women to scour their wardrobes for pre loved ball gowns, bridesmaid dresses, and formal dresses as part of the donation ask.



*L-R: Famous Sharron, Pamela Jones and her son Matthew, Perth Lord Mayor, Lisa Scaffidi and Graeme Boardley at the launch of the Posh Frocks campaign*



# Spotlight on Stars 2015

## STARS

An opportunity to hear how Western Australian-based research is informing and improving clinical practice in women's and reproductive health drew more than 120 attendees to the Foundation's flagship event for 2015.

Stars 2015, "Translating research outcomes into clinical practice", focussed on three different studies and how their findings were contributing to improved patient outcomes and clinical care.

Visiting Professor, Prof Stephen Tong's presentation, *Developing new treatments and diagnostics to tackle dangerous complications of pregnancy*, examined the development of a blood test to avert stillbirth and new drug treatments to treat ectopic pregnancy and preeclampsia.

Prof Tong described how these ideas were conceived, how they were first tested in the laboratory, the steps taken to move these concepts to international trials, and why these treatments have the potential to save the lives of mothers and babies.

His keynote presentation was accompanied by talks from two local stars – Assoc Prof Matthew Kemp and Dr Kym Guelfi.

Senior Research Fellow at the University of Western Australia and Head of the School of Women's and Infants' Health's Perinatal Research Laboratories at the Large Animal Facility, Assoc Prof Kemp's presentation examined how experimental sheep-based research has provided a significant insight into the aetiology of preterm birth and disease, and to the development of potential interventions.

Senior lecturer in the School of Sport Science, Exercise and Health at The University of Western Australia, Dr Guelfi's presentation reviewed the outcomes of the first randomised controlled trial to determine whether a program of regular home-based supervised exercise during pregnancy can reduce the recurrence and severity of gestational diabetes, as well as benefit other aspects of maternal health.

The Rising Stars Symposium was held once again at Matilda Bay Restaurant, Crawley attended by more than 120 people. Researchers revealed their latest discoveries in the field of women and infants health in short, sharp presentations on the research studies listed below:

**Michelle Pedretti** - *Challenges in the implementation of a population screening program for cervical length in mid pregnancy*

**Matt Payne** - *Vaginal colonisation by Ureaplasma, Mycoplasma and Candida spp. and association with preterm birth in a low-risk cohort of Australian women*

**Rhiannon Halse** - *The role of exercise in the management of maternal glycaemia in pregnancy*

**Johannah Scaffidi** - *The pregnant woman as a drug orphan: a global survey of registered pharmacological interventions in pregnancy*

**Cameron Lewis** - *SSRI/SNRI dose during pregnancy is associated with increased need for special care nursery admission and resuscitation at birth*

**Jamee Murdoch** - *Transition from hospital to home: parents perception of their preparation and readiness for discharge with their preterm infant*

The Women and Infants Research Foundation wishes to thank and acknowledge the event exhibitors and sponsors: Postgraduate Medical Education; King Edward Memorial Hospital; Bayer; Perrigo Australia (Silver Sponsors); Avant and Medela.



The late Prof Bill Parer, with Prof John Newnham and Visiting Professor, Stephen Tong



## Rising Stars Symposium

# WIRF Contributors and Volunteers

The Women and Infants Research Foundation coordinates over 100 volunteers within the King Edward Memorial Hospital grounds. These volunteers work tirelessly to support patients and staff, and to assist in raising funds for the Foundation's research. Volunteers provide vital services across a range of departments and services including: the hospital's Café/Gift shop, Op Shop, perinatal loss service, social work, physiotherapy, the Centenary Clinic, West Wing Clinic and nurseries.

## WIRF CAFÉ/GIFT SHOP

WIRF Café/Gift shop has been a major source of income to the Foundation's research for over 16 years. The WIRF Café provides a friendly and warm atmosphere for mums-to-be, new parents, visitors and staff to relax and enjoy the freshly made drinks and food on offer.

Customers enjoy a friendly welcome from our manager, Annemarie Weekes, staff – Noleen, Tuke, Rosa-Linda, Jane, Susan and Geetika and our committed volunteer team of 50 ladies who contribute an incredible 6,000 volunteer hours each year. In 2016, the Café said farewell to long-serving assistant manager, Dewi.

Proceeds from the WIRF Café/Gift Shop directly support the Foundation's research and since opening have generated a staggering \$5 million in profits, part of which has supported our research grants program. The Foundation is extremely grateful to Annemarie, café staff and volunteers for this significant contribution.

## OPPORTUNITY SHOP

The Opportunity Shop, like the café gift shop, serves the Hospital and wider community, and makes a valued social and financial contribution to WIRF and KEMH. Led by Volunteer Coordinator, Jenny Reid, the WIRF Op Shop now has a team of 23 wonderful volunteers including a newly appointed volunteer storeroom manager.

This year we have increased our stock output of women's clothing by two further racks which have been well received by our customers. We strive to continually improve the presentation of the shop which adds to the overall appeal. During the winter months we are well known for our beautiful new hand knitted garments and blankets.

We have a steady flow of generous donations including baby equipment. We actively support the social work department of the Hospital through the voucher system for their clients.

This year the corporate volunteers from AON Risk Solutions, under the guidance of Mr Gary Craik, very generously donated their time and resources to paint the outside of the Op Shop.



Top: Volunteers from the café and gift shop on its 1st birthday in 2000



Bottom: Café staff 2015: Sue, Anne, Dewi, Noleen and Maria



Volunteers Ellie Halton and Lynne McHale at the Hospital Op Shop



# WIRF - Volunteers Celebrated

## WIRF VOLUNTEERS WORTH \$465,000

The contributions of WIRF and KEMH’s family of volunteers were celebrated as part of an event to mark National Volunteers Week 2016.



WIRF Patron, Her Excellency the Honourable Kerry Sanderson AC, Governor of Western Australia, attended as the guest of honour and said the event was a fantastic opportunity to recognise an exceptional group of people.

Using Volunteers WA’s Volunteer Benefits Calculator, WIRF’s team of volunteers contribute over 10,000 hours each year which is valued at a staggering \$465 000. As part of the event, volunteers celebrating 5, 10 and 15 year long-service awards were recognised.

## FARWELL TO A GUARDIAN ANGEL

After almost four decades of coordinating our dedicated team of knitters and sewers, Margaret Lay has decided to call it quits after a stellar 38 years of volunteering.

During her time Margaret has helped thousands of parents and babies at KEMH; providing support to families following the loss of a baby, as well as clothes, blankets and essentials to disadvantaged women and newborns.

As part of a special farewell ceremony, Margaret said she got immense satisfaction and pleasure from her role and that “it had been a magic journey.”



Photographer: Andrew Ritchie - Community Newspaper Group

“When I look at the final result, I think that it is reward in itself,” she said. “It’s been an enormous piece of my life and I’ve loved it all and I feel very proud of what it’s achieved.”

Every one  
of our  
volunteers  
deserves a  
special mention  
& thank you.

- |                            |                      |                       |
|----------------------------|----------------------|-----------------------|
| Sue Aldous                 | Theresa Francis      | Jenny Moynihan        |
| Christine Bailey           | Paul Galea           | Mary Muscroft         |
| Gillian Ball               | Norma Garbin         | Yvonne Neurauter      |
| Rosemary Barr              | Jan Gardiner         | Julie Nolan           |
| Demaris Barrera Sarmiento  | Ellie Halton         | Caroline Olivier      |
| Marianne Bartrop           | Patricia Hammond     | Janice O'Neil         |
| Lorraine Bennett           | Zoe Hewitt-Dutton    | Caryl Pass            |
| Jill Berecny               | Diane Hoffman        | Dagnija Petersons     |
| Ros Bishop                 | Rosemary Howes       | Susan Quartermaine    |
| Midge Bowden               | Carolyn Hunt         | Beattie Ramel         |
| Muriel Boyd                | Jill Hunt            | Jessica Reed          |
| Raie Bradshaw              | Elizabeth Hyde       | Vicki Richards        |
| Janice Braekevelt          | Pam Imms             | Helen Roatch          |
| Dina Brash                 | Barb Jewell          | Jo Roberts            |
| Kate Campbell              | Helen Kanter         | Helen Robertson       |
| Ann Carrington-Jones       | Carol King           | Winsome Rogerson      |
| Janet Chang                | Audrey Knight        | Debra Salamone        |
| Liz Chidlow                | Denise Kristal       | Esther Scott          |
| Diana Ching                | Renita Kyada         | Marie Francoise Scott |
| Karen Chitty               | Rosalie Lightman     | Robin Simon           |
| Jodi Clayton               | Kay Lodge            | Charlene Smith        |
| Leonie Collison-Bryant     | Kathleen Low         | Rema Starina          |
| Loretta Connery            | Danar Martin         | Pam Sulc              |
| Maggie Cooper              | Athene Mathison      | Ann Tate              |
| Rosemarie Cooper           | Anne Marie McGinnity | Dee Terry             |
| Maria Crawford             | Patricia McInnes     | Joy Tillett           |
| Debra Devattimo            | Christine McVeigh    | Carolyn Tsirigotis    |
| Suzanne Draper             | Leah McVeigh         | Gill Vaughan          |
| Janet Dudman               | Katie Jane Mileham   | Judy Vincent          |
| Christine Duncan           | Fay Miriklis         | Geri Walker           |
| Lo Egerton-Warburton       | Olga Mirmikidis      | Naomi Watt            |
| Thilini Egoda-Kapuralalage | Helen Montgomery     | Carol Westwood        |
| Natha Evans                | Delphine Moore       | Cathy Wilkins         |
| Kathy Faver                | Karen Morrison       | Jennifer Williams     |
| Leeanne Finlayson          | Glenys Moulton       |                       |



# Supporters and Donors

Our key supporters, and the many people who quietly donate funds to WIRF each year, continue to make an enormous difference to people's lives. Your support is crucial to driving our research and efforts to innovate and respond to major health problems that matter most to our community. WIRF extends its appreciation and gratitude to all of our donors and supporters.

## ANGEL FUND

Babies born early or high-risk pregnancies can throw families into complete disarray. One of the main issues families encounter is paying for expensive accommodation and living costs for the duration of their treatment. The Angel Fund helps families from remote regions in WA who are experiencing extreme financial hardship. This support helps families enormously by removing the financial burden of their prolonged stay in Perth.

## CROWE HORWATH

We gratefully acknowledge the pro bono provision of financial auditing and accounting services provided by Crowe Horwath for the 2015/16 financial year. This support is very important for our continuing financial viability and we are very grateful for the provision of these essential services on an honorary basis.

## TRIEVENTS

WIRF was thrilled to be a charity partner of the Sunsmart Women's Triathlon event in March 2016. We received some wonderful support through participants, volunteers and from TriEvents donations, helping to raise awareness of the Foundation's work.

## LIONS

Our Laboratories receive financial support on an annual basis from Lions International and the local Lions Club in Floreat. This continued support allows us to keep our laboratories well equipped and running efficiently so we can focus on work to improve the health of women and babies in WA.

## WA CHARITY DIRECT

WA Charity Direct generously funded the 'Mum's Emergency Relief Fund' to support mother's and families suffering hardship due to the birth of a preterm infant. This program is managed by the KEMH Social Work Department with support from WIRF.



## RMO AND REGISTRARS BAKE AND RUN FOR PREMS

A group of KEMH Obstetric and Gynaecological Registrars and Resident Medical Officers led the community fundraising charge in 2016. The group held a Hospital bake sale and braved the 14km Swan River Run all in the name of raising funds to support research into priority areas of women's and infants' health.

The group (Ebony Dunne, Alarna Boothroyd, Anna Dillion, Rose McDonnell, Helen Goodall and Amy Fitzgerald) raised more than \$2800 for WIRF.

Many of WIRF's community fundraisers have an association with King Eddies either as staff, patients or through the work of the Foundation. Last year WIRF was lucky to be chosen as beneficiary by some exceptional people in their personal fundraising events.

## HEATH'S FUND

Touched by the heartbreak of preterm birth, Haley very kindly started a fund in honour of little Heath (her nephew) who sadly passed away. His twin brother, Hunter was also born at 25 weeks and survived, but remained at King Eddies for a further three months before he was able to go home with parents Sarra and Jarrad.

In reflecting on her journey, Sarra has become an advocate for raising awareness of the risks of preterm birth. "Supporting the research, education and community awareness efforts of WIRF is critical to preventing preterm births. The longer our babies stay in, the healthier they are and the less support they need in other areas of life."

WIRF is very grateful to the entire community who got behind the family and created Heath's Fund – raising more \$7300 to support research into preventing preterm birth.

## MICHELLE FLIES THE WIRF FLAG... AGAIN!

2016 saw informal ambassador, Michelle Carey add to her long list of fundraising activities on behalf of WIRF.

Held in March 2016, 'Michelle's Movie Fundraiser' evening attracted more than 120 movie goers to the Grand Cinemas in Warwick. The event raised more than \$3500 in support of premmie baby research.

An avid triathlete, Michelle also competed in her first Ironman event in Busselton on 1 May 2016 in support of WIRF. Michelle took on the gruelling 1.9km swim, 90.1km bike ride and 21.1km run, raising an additional \$2300 for the Foundation.

Since her daughter Olivia was born 12 weeks early in 2012, Michelle has been a keen supporter of the Foundation's preterm birth prevention research.

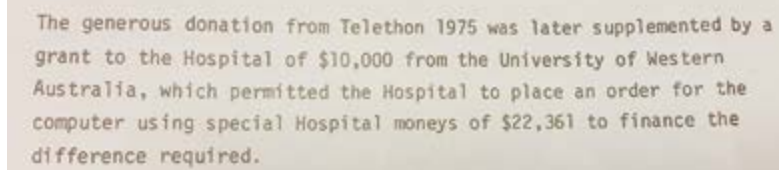


*Thank you*

*Thank you*

## CHANNEL 7 TELETHON TRUST

WIRF received their first grant from Telethon 40 years ago to purchase a new piece of technology called 'a computer' which was shipped in parts from Germany. Since this time the Channel 7 Telethon Trust has been an avid supporter of WIRF and our work.



The generous donation from Telethon 1975 was later supplemented by a grant to the Hospital of \$10,000 from the University of Western Australia, which permitted the Hospital to place an order for the computer using special Hospital moneys of \$22,361 to finance the difference required.

*Actual excerpt from King Edward Memorial Hospital Research Foundation's inaugural 1976 Annual Report*

Last year WIRF received support for several research projects which were grouped under the banner of 'Strategies for preventing preterm birth and treating the preterm infant'. These studies focussed on improving the health and outcomes of WA neonates and infants from pregnancy to childhood.

### **Predictive value of bedside lung ultrasound in preterm infants with respiratory distress and the development of chronic lung disease**

The novel audio-visual training package is in the final stages of production, with medical illustrations having undergone peer expert review. Senior neonatal doctors will commence the formal training program in performing lung ultrasound in October 2016, in preparation for study commencement. This is anticipated in February 2017, following final ethics approval.

### **Non-antibiotic treatment for the prevention of early onset-neonatal GBS disease**

Over 400 women have now been recruited to the study and initial analyses show a GBS colonisation rate of 21% at recruitment (based on culture). Phage have been identified in several GBS isolates and further investigations are currently underway to identify these using Transmission Electron Microscopy.

### **Preterm lipid and total and visceral adiposity**

This is a pilot study of four preterm and four terms infants. The research has yet to start due to some unexpected delays in quantifying the adipose tissue of infants. It is anticipated that this problem will be resolved in the near future and recruitment will commence.

### **Using novel transcriptomic signatures to predict preterm birth in asymptomatic women: evaluation and development**

With the establishment of the PTB prevention clinic and the WA Pregnancy Biobank we have commenced recruitment of these samples and are about to commence extraction and analysis. The testing platform has been developed and validated and the results published, attracting considerable media interest.

### **RCT of Pentoxifylline as an adjunct to antibiotics for NEC and late onset sepsis in infants**

This pilot phase to determine the pharmacokinetics of Pentoxifylline in very preterm infants is close to reaching its target recruitment of 23 patients for the initial phase. The assay for Pentoxifylline is working perfectly and will allow PK modelling once all samples are collected and analysed. The large, randomised RCT of Pentoxifylline therapy, recently funded by the NHMRC, will commence recruitment next month.

### **Safety and efficacy of topical coconut oil to improve skin condition in very preterm infants**

The Coconut oil RCT has almost reached its targeted sample size of 72 infants (only 5 to go). So far we have had positives outcomes, with no side effects observed. We will report on the outcomes of this pilot RCT once all data have been collected.

### **EVE technology as long-term life support for extremely preterm infants**

EVE therapy is a life-support platform for extremely preterm infants. It has the advantage of eliminating the need for mechanical ventilation of the preterm lung. Rather, EVE therapy takes advantage of the fetus-like physiology of extremely preterm infants. Using our preterm fetal lamb model we have been successful in maintaining fetuses in excellent physiological health and free of infection for a period of seven days. Given the highly technical and unforgiving nature of this work this is a remarkable achievement and a major advance over earlier studies. The findings of these studies are presently under review for publication.

### **The Western Australian Pregnancy Biobank (WAPB) for High Risk Women**

The WAPB project is part of WIRF's Preterm Birth Prevention Initiative. Recruitment of participants and collection of samples has commenced and the team is working towards their target of 500-1000 pregnancies. To date, our recruitment success from the high-risk preterm birth prevention clinic at KEMH is around 70%, with almost 100 women recruited as of September 2016, of whom 59 have delivered. Recruitment is about to expand to include women with normal pregnancies (controls) and others outside of the KEMH PTB clinic. The project has a projected recruitment period of five years.



## COMPANY DONORS AND SUPPORTERS

We are very fortunate to work with some wonderful organisations. A few are listed below but many more deserve a special thank you for supporting WIRF through their generous contributions.

AON Risk Solutions  
Avant Mutual Group Ltd  
Barrick Australia Pacific  
Bayer Australia Ltd  
BHP Billiton  
Channel 7 Telethon Trust  
Farmer Jacks Subiaco  
GESB  
Hesta  
Hologic  
Indelible Imprint  
InvoCare Australia Pty Ltd  
Kane Community Foundation  
Lions Club of Floreat  
Lions District 201W1  
Medela Australia Pty Ltd  
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Perrigo Australia  
Postgraduate Medical Education  
Regal Theatre  
Telstra  
TriEvents  
WA Charity Direct

## PRIVATE DONORS

WIRF is grateful to the following donors and partners for their generous support in 2015/16:

Hafizah Abd	Karen Brennan	Lucy Cotton	Nikki Gogan	Brittny Kelly	Metropolitan Redevelopment Authority	Tara Pugsley	Julie Strack
Sharon Akeroyd	Kerry Brenton	Jacqui Crowther	Peta Gooch	Lynn Kelly	Theresa Miloskeski	Robyn Rae	Alicia Streat
All Ford Club of WA	Samantha Bridgwood	Julie Curnow	Clare Goodwin	Matthew Kemp	Lloyd Mitchell	Wayne and Margaret Reed	Tracey Tate
Catherine Allgrove	Callen Bubner	Wipawan Daligh	Jane Graham	Erin Kenworthy	Kassy Molloy	Elizabeth Rennison	Lisa Thackray
Deborah Andrews	Thea Buckley	Taryn Darroch	Jason Graham	Belinda Kilner	Lisa Moody	Jemma Reynolds	The Country Women's Assoc of WA (Inc)
Mark Angus	Meg Bulloch	Keisha Davies	Jamie Grant	Tristan Kinnane	Hayley Moore	Haley Riddick	Brendan Waddell
Julie Apse	Pennie Bulloch	John De Rosa	Kerry Green	Mat Kulbac	Leanne Morrall	Kirrily Ridsdill-Smith	The West Australian
Abbie Atkinson	Sara Burns	Rowena de Vos	Lisa Grosskopf	Anne Kuuse	Linda Morris	Patricia Robb	Holly Thomas
Helen Atkinson	Marisa Burrage	Kate Denton	Bandula Gunawardena	Alicia Laube	Lisa Mundy	Janelle Robinson	Kurt Tiedemann
Autopro Rockingham	Jule Burt	Val Di Girolami	Helen Hadfield	Tracey Lawrence	Holly Murphy	Chloe Rodgers	Samantha Titley
Avant Mutual Group Ltd	Fiona Butler	Vicky Dimitriou	Linda Hadfield	Brett Lines	Leigh Murray	Kate Roe	Ed Trindall
Claire Baggott	Kylie Byrne	Mark Dolling	Samantha Hamilton	Tegan Lines	Aung Naing	Bronwyn Rose	Danielle Tylor
Duncan Bailey	Catherine Cadwallader	Jay Downie	Kate Hammond	Jane Liu	Rachelle Negus	Greg and Lisa Rossiter	Jack and Teresa Van Duyn
Judy Bailey	Sam Cadwallader	Peter Draper	Jeanette Harris	Mohammadreza Lotfinejad	John Newnham	Simone Rowe	Pip van Helvoort
Claire Bains	Mark Caple	Nicholas Dudley	John Hatsi	Simon Macneall	Darren Noble	Lucinda Ryan	Penelope van Veenendaal
Yatiha Balfour	Michelle Carey	Krystal Eastham	David and Bev Hayes	Donald and Helen MacNeil	Amy Norris	Jennifer Saliacus	Judith Wallace
Jonelle Ballantyne	Tim Carpenter	Grey Egerton-Warburton	Chris Hayman	Macquarie Bank	Laoighse O'Connell	Gemma Santostefano	Melissa Waller
Margaret Bambridge	Amy Carr	Mathias Epee-Bekima	Courtney Hayman	Miki Makuch	Margaret O'Connell	Karen Schiller	Jane Warrick
Rohan Bandarage	Ann Carrington-Jones	Nick Eveleigh	Sarah Haynes	Elaine Mann	Kelly O'Connor	Craig Pennell	Lacey Wauchope
Amy Barker	Beck Carse	Farmer Jacks Subiaco	Dorota Doherty	Alana Marchioretti	Martin O'Donovan	Jeff Keelan	Chantelle Webster
Cherie Bascomb	Melita Carstens	Kim Farrington	Carissa Hedland	Marketplace	Caitlin Okely	Charles Schouten	Clare Weiss
David Bedbrook	Anne Carter	Steven Feast	Paul Heidenreich	Lucy Markiewicz	Sara Orenshaw	Clair Scott	Billie Whitehurst
Rhiannon Bedola	Amy Cassidy	Elizabeth Ferguson	Jennifer Heine	Jennifer Marshall	Karen Osborn	Kelly Simpson	Damyon and Lisa Wiese
Tate Beeby	Barbara Chapman	Sarah Fitzgerald	Hesta	Amanda Mather	Amy Partington	Cherie Sinclair	Ann Willcocks
Krystal Benjafeld	Huen Chapman	Amanda Flood	Karyn Hetherington	Joyce Mathers	Davarsh Patel	Kirsty Skeats	Raelene Williams
Jason Bennett	Crystal Chua	S Fong	Bev Hewitt	Kate Matters	Hilton and Sue Paterson	Jan Skipworth	Tina Williams
Ray and Ann Bennett	Haven Chua	Wes Ford	Laurinda Hill	Sari Matthews	Liz Payne	Toni Smit	Julie Wilson
Amy Bennie	Barbara Cimetta	Anna Forester	Robert Hitchcock	Mike Mazzella	Gain Peck	Allie Smith	Scott Winter
Margaret Binning	Katie Clarke	Jacky Fraser	Reginold Ho	Ropn McCorkill	Cameron and Anita Pedemonte	Kerry Smith	Chantel Woodard
Sarah Birch	Zoe Clarke	Estate of Fredric Dunwell	Siew Vei Ho	Annette McCutcheon	Kaisha Pember	Lisa Smith	Sharon Wootton
Ros Bishop	James Clothier	Noel French	Denise Hobson	Emma McGarry	Tess Phillips	Rowena Smith	Darren Woulfe
Graeme Boardley	Andrea Cole	Deb Froome	Gary Homer	Tenneill McGoldrick	Allie Philpott	Joanne South	Rikki Wyatt
Stuart Boekeman	Carol Cole	Noreen Fynn	Belinda Hunt	Marnie McGreevy	Flower Pianta	Kristy Southern	Eva Yates
Beatric Bouska	Wylie Collins	Katie Galloway	Rory Hunt	Kathleen McGurk	Simone Picken	Megan Stark	Jessica Yates
Hynek Bouska	Jim and Carol Connor	Laurie Galloway	Simon Hunt	L and N McInnes	Jaya Piper	E Steinhardt	Aaron and Terri Young
Silvie Bouska	Alison Cook	Kelly Gasteiger	Tamara Hunter	Fiona McKeon	Cheryl Price	Nyssa Stewart	Jordan Young
Caroline Bower	Fiona Cooke	Nicholas Gee	Bernie Hush	Helen McMillan	Tara Puckridge	Kirby Stott	Ruth Young
Leigh Box	Sheridan Coole	Kate Gemmell	Tracy Illich	Jacqui McNamara	Tricia Pugliese	Melissa Stott	Samantha Young
Belinda Boyce	Zena Coole	Judith Germano	Solomon Jacob	Danielle Mercer		Rylan Stott	Sheryl Young
Rebecca Boylan	Sarah Cooper	Latha Gilmore	Kiran Kandel				

# Research Support

## EXTERNAL RESEARCH GRANTS AFFILIATED WITH THE WOMEN AND INFANTS RESEARCH FOUNDATION

The Women and Infants Research Foundation provides the infrastructure and funding to allow our researchers to successfully compete for external grants from organisations such as the National Health & Medical Research Council. The following is a list of competitive grants supported during the financial year ending 30 June 2016:

### National Health & Medical Research Council (NHMRC) (Australia)

• THE INTERNATIONAL PRETERM BIRTH GENOME PROJECT Investigators: C Pennell, E Moses, R Menon, S Williams, M Merialdi (2013 – 2015 \$1,238,162)	\$82,524
• THE LONG TERM CONSEQUENCES OF ASSISTED REPRODUCTION ON DEVELOPMENT OF THE OFFSPRING: A PROSPECTIVE COHORT STUDY Investigators: R Hart, C Pennell, D Doherty, M Robinson, R Norman (2013 – 2017 \$1,552,094)	\$281,552
• SECOND TRIMESTER INTRA-AMNIOTIC TREATMENT FOR EARLY PRETERM BIRTH Investigators: M Kemp, J Newnham, J Rodger, J Keelan, A Jobe (2013 – 2015 \$378,877)	\$66,552
• VAGINAL MARKERS FOR THE PREVENTION OF PRETERM BIRTH Investigators: J Newnham, J Keelan, M Payne, D Doherty, R Allcock (2015 – 2017 \$563,494)	\$357,109

### National Institute of Health (USA) (via Cincinnati Children's Hospital Medical Centre)

• INITIATION & PROGRESSION OF PRETERM LUNG INJURY WITH VENTILATION Investigators: J Newnham, M Kemp (2013- 2017 \$358,655)	\$61,044
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### Department of Health – WA

• MEDICAL AND HEALTH INFRASTRUCTURE FUND (MHRIF) Researchers: J Newnham, C Pennell, R Hart, M Kemp, D Doherty, J Keelan (2016)	\$298,886
• MERIT AWARD – IMPROVING HEALTH AND WELLBEING BY PREVENTING EARLY PRETERM BIRTH Researcher: M Kemp (2015 \$75,000)	\$75,000
• MERIT AWARD – INTERLEUKIN 1 IN SIGNALLING IN FETAL INJURY AND PRETERM BIRTH Researcher: M Kemp (2015 \$50,000)	\$50,000
• FLUROFAMIDE, A NOVEL INTERVENTION FOR PRETERM BIRTH Researcher: M Kemp (2015 \$118,500)	\$118,500

### GlaxoSmithKline Research & Development Limited

• DOSE AND TREATMENT INTERVALS FOR ANTENATAL STEROIDS – A PRECLINICAL PHARMACOLOGIC EVALUATION IN PREGNANT SHEEP Investigators: M Kemp (2015 - 2016 \$130,542)	\$32,638
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### MRC Centre for Reproductive Health

• SPARKS ULTRASOUND STUDY Investigators: M Kemp, S Stock (2015 - 2016 \$24,088)	\$10,452
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### Ferring Pharmaceuticals Pty Ltd

• RESEARCH SUPPORT FOR STUDIES IN REPRODUCTIVE MEDICINE Investigator: R Hart (2014 - 2016 \$40,000)	\$20,000
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## DIRECT RESEARCH EXPENDITURE BY THE WOMEN AND INFANTS RESEARCH FOUNDATION

The Foundation provides financial support for researchers by direct funding of the Research Grant Program, as well as infrastructure support for the external research grants outlined above. The total value of this support for the financial year ended 30 June 2016 was:

\$ 1,842,289

### Total Research Support for 2015 / 2016

**\$3,296,546**

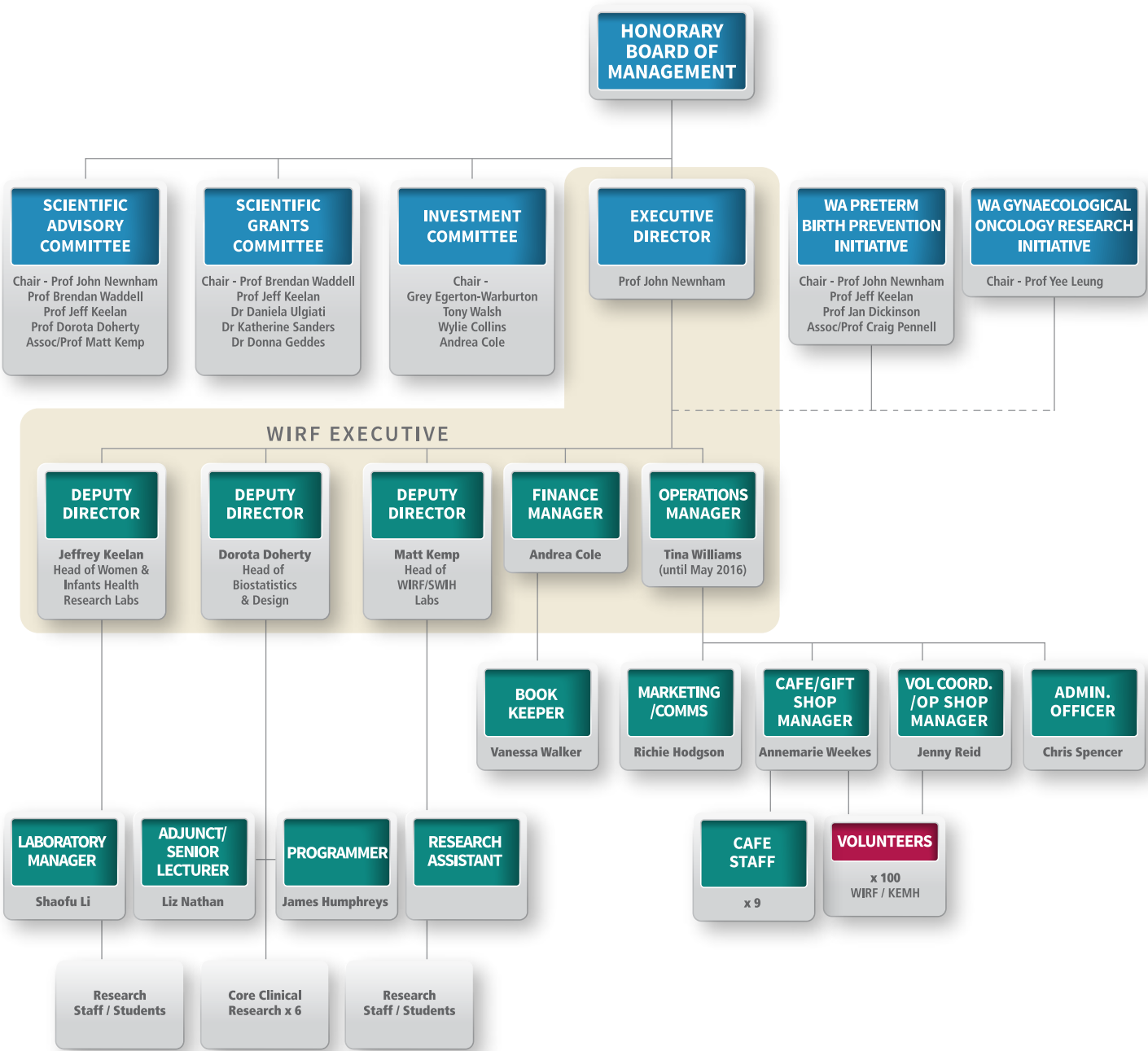




# WIRF

## - the finer details

### Organisational Chart



# Governance Statement

## BOARD OF DIRECTORS

The Board of Management provides strategic direction to Foundation management to ensure the quality, efficiency and longevity of our research, clinical and community activities. The Board meets six times each year. Our Executive Director and all Board Members serve on a voluntary basis.

## CORPORATE AND RESEARCH ETHICS

All employees are expected to discharge their duties in good faith and act honestly in the best interest of the Foundation, striving at all times to enhance the reputation and performance of the Foundation.

All scientific studies conducted by the Foundation are approved by the Ethics Committee of the Women and Children's Health Service and / or the Human Research Ethics Committee and Animal Ethics Committee of The University of Western Australia.



Carson House, KEMH

## RISK MANAGEMENT

All employees and volunteers of the Foundation undergo criminal screening and health checks in compliance with the requirement of the Women and Children's Health Service, irrespective of whether they have direct contact with WCHS children or not.

## FINANCIAL REPORTING

The Foundation's financial year ended on 30th of June 2016. Our Chairperson and Treasurer jointly signed off on the Annual Financial Reporting process on behalf of the Board. A copy of the Foundation's financial reports for year-end 30th of June 2016 are available on [www.wirf.com.au](http://www.wirf.com.au).

## AUDIT GOVERNANCE

The Foundation engages Crowe Horwath as an external audit team to independently review its financial reports and uphold the integrity of the reporting process.

## NOT FOR PROFIT STATUS

The Foundation operates as an incorporated association and not for profit organisation. The Australian Taxation Office has endorsed the Foundation as an Income Tax Exempt Health Promotion Charity and a Deductible Gift Recipient. This status ensures that anyone donating to the Foundation can claim the full tax benefit. The Foundation also holds a Charitable Collections Licence from the Department of Consumer and Employment Protection in Western Australia.

## INVESTMENT COMMITTEE

Members of this Committee are appointed by the Board on an honorary basis. Members of the committee meet twice a year.

**Chairperson:** Mr Grey Egerton-Warburton, Budworth Capital

Mr Tony Walsh, Director, Company Secretary and Head of Corporate, Atlas

Mr Wylie Collins, Head of Finances, Resources Industry

Ms Andrea Cole, Finance Manager, Women and Infants Research Foundation

## SCIENTIFIC GRANTS COMMITTEE

Members of this Committee are appointed by the Board on an honorary basis. Half of the members of the Committee are employed externally to the KEMH campus. The Committee meets to consider research applications for financial support and advises the Board on suitability for funding. The Committee also provides the Board with advice on scientific matters as required. Specifically they review applications for Starter Grants, Capacity Building Grants and PhD Scholarships.

## EXECUTIVE COMMITTEE

Members of the committee consist of the Executive Director, Heads of Research Units, Marketing and Operations and Finance Managers. The committee meets every two months in the week prior to the board meetings.



# Honorary Board of Management



Rowena Smith - Chair



Grey Egerton-Warburton



Prof John Newnham AM



Wylie Collins



Graeme Boardley



Jim Davies



Prof Yee Leung



Elizabeth Needham



Assoc/Prof Craig Pennell



Prof Brendan Waddell



Katie Winterborne (From April 2016)



Tony Walsh (From April 2016)

## Chairperson

**Ms Rowena Smith**  
Head of Function, Resources Industry

## Deputy Chairperson

**Mr Grey Egerton-Warburton**  
Budworth Capital

## Executive Director

**Prof John Newnham AM**  
Professor, Maternal Fetal Medicine, King Edward Memorial Hospital  
Head, School of Women's and Infants' Health  
Deputy Dean, Faculty of Medicine, Dentistry and Health Sciences,  
The University of Western Australia

## Treasurer

**Wylie Collins**  
Head of Finances, Resource Industry

**Mr Graeme Boardley**  
Executive Director of Midwifery and Nursing,  
King Edward Memorial Hospital

**Mr Jim Davies**  
Managing Director  
Marketing

## Prof Yee Leung

Head of Department of Western Australian Gynaecological Service  
Director Surgical Education,  
King Edward Memorial Hospital for Women  
Professor at the School of Women's and Infants' Health

**Ms Elizabeth Needham**  
Barrister

## Assoc/Prof Craig Pennell

Senior Lecturer, School of Women's and Infants' Health  
The University of Western Australia  
Certified Subspecialist in Maternal Fetal Medicine  
King Edward Memorial Hospital

**Prof Brendan Waddell**  
Deputy Dean, Faculty of Science  
The University of Western Australia

**Ms Katie Winterborne**  
Founding Director - Lantegy Legal  
(Board Member from April 2016)

**Mr Tony Walsh**  
Director, Company Secretary and Head of Corporate, Atlas  
(Board Member from April 2016)

# Grant Funding

The Foundation has a specific objective to promote high quality research and foster new researchers. To achieve this WIRF provides three types of grant funding and scholarships.

## STARTER GRANT FUNDING

Starter grants are predominately for new investigators embarking on their research career. Grants are for a maximum of \$20,000 and awarded for a period of two years.

Two starter grants were awarded in 2016:

### Research Title

"Fetal intramuscular steroids for diabetic women at risk of preterm birth"

Researcher	Grant Amount
Dr S W White	\$ 9,535

### Overview of Research

This study will assess the ability of intramuscular corticosteroids given by a single ultrasound guided fetal injection to reduce the need for breathing assistance in preterm newborns of diabetic mothers, and whether this approach can avoid the potentially serious complications currently seen in diabetic mothers from the conventional treatment of two maternal steroid injections. The study will also assess the safety of such an approach. If successful, this pilot study will inform the development of a larger study.

### Research Title

"Volume targeting during high frequency oscillatory ventilation to enhance lung protective ventilation"

Researcher	Grant Amount
Dr JW Davis	\$ 20,000

### Overview of Research

Preterm infants are at risk of life long respiratory morbidity due to the injurious effects of mechanical ventilation. High frequency oscillation ventilation (HFOV) differs from conventional ventilation by delivering hundreds of small volume breaths per minute. New ventilators can now target specific tidal volumes in HFOV potentially limiting inadvertent and potentially injurious overstretching of the fragile lung tissue, this strategy remains relatively untested. Our aim is to compare the physiological consequences of tidal volume targeting in HFOV and conventional ventilation versus standard HFOV.

## SCIENTIFIC GRANTS COMMITTEE MEMBERS:

### Chairperson

**Prof Brendan Waddell**  
Deputy Dean, Faculty of Science  
The University of Western Australia

### Committee

**Prof Jeffrey Keelan**  
Head, Women and Infants Health  
Research Laboratories  
The University of Western Australia  
King Edward Memorial Hospital

**Assoc/Prof Daniela Ulgiati**  
School of Pathology and  
Laboratory Medicine  
The University of Western Australia

**Assoc/Prof Katherine Sanders**  
Bachelor of Philosophy (Hons),  
Academic Coordinator  
School of Anatomy, Physiology and  
Human Biology  
The University of Western Australia

**Dr Donna Geddes**  
Senior Research Fellow  
School of Chemistry and Biochemistry  
The University of Western Australia

PhD TOP UP SCHOLARSHIPS

WIRF PhD Scholarships are a component of a wider strategy designed to nurture and develop promising researchers. Applicants must meet the requirements for candidature for the Doctor of Philosophy by The University of Western Australia, School of Post graduate Studies. The maximum funding is \$21,324 (matched by UWA) per year for three years with a possible extension of six months.

Thesis Title

“Normalising circadian rhythms to improve preterm infants outcomes”

Researcher

Miss N Sorensen,  
The University of Western Australia,  
Department of Anatomy, Physiology  
and Human Biology

Grant Amount

\$21,324 over three years plus a one-off  
\$3,000 allowance for economy travel

1

Thesis Title

“Pregnancy-related medical services utilisation and perinatal outcomes in Western Australia (WA) with a focus on recent migrants”

Researcher

Dr M Mozooni,  
The University of Western Australia,  
School of Women’s and Infants’ Health

Grant Amount

\$6,108 for one year plus a one-off  
\$3,000 allowance for economy travel

2

CAPACITY BUILDING GRANT

Capacity Building Grants provide flexible support to allow investigators to develop their own capacity and attain a level of productivity that will help attract nationally competitive grant funding. Grants are a maximum of \$35,000 per year for three years and are subject to yearly reviews.

Research Title

“Prevention of infection-driven preterm birth through development of a universal diagnostic test to identify high-risk pregnancies”

Researchers

Dr Matt Payne  
Prof John Newnham  
Prof Jeff Keelan

Grant Amount

\$ 35,000 (for three years starting 2014)

Overview of Research

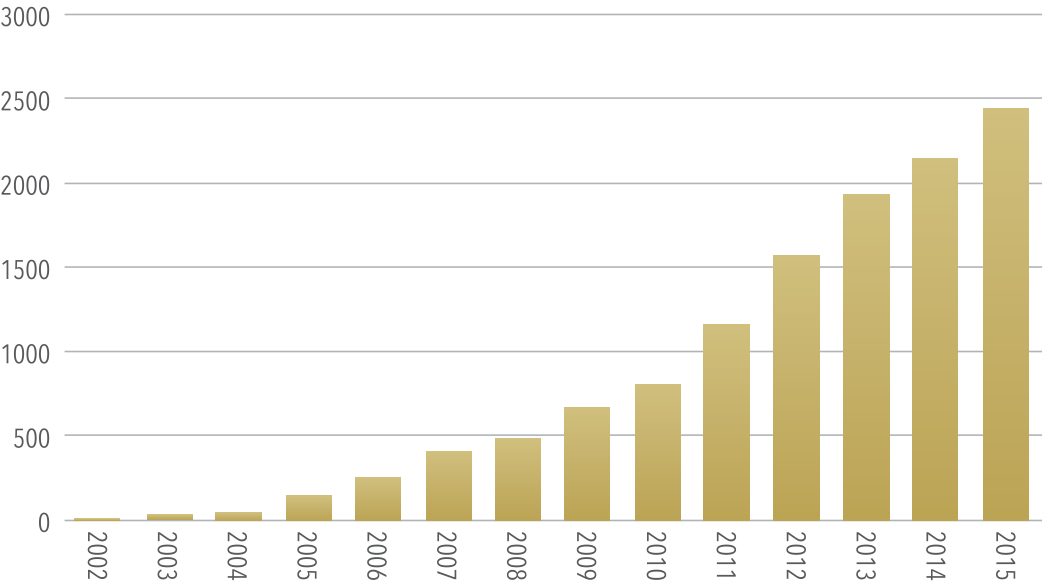
Utilising vaginal microbial markers of PTB, this study will culminate in the design of an accurate and reliable diagnostic test that, once optimised and tested in preliminary trials, will be readily implemented into clinical obstetrics. The test will fill a major void that currently exists in this field. Years of research has shown us that infection plays a role in at least 40% of PTBs. The diagnostic test outlined in this proposal will identify women at a high risk of PTB and will constitute a key part of subsequent randomised controlled trials utilising pharmacological means to prevent PTB.

1

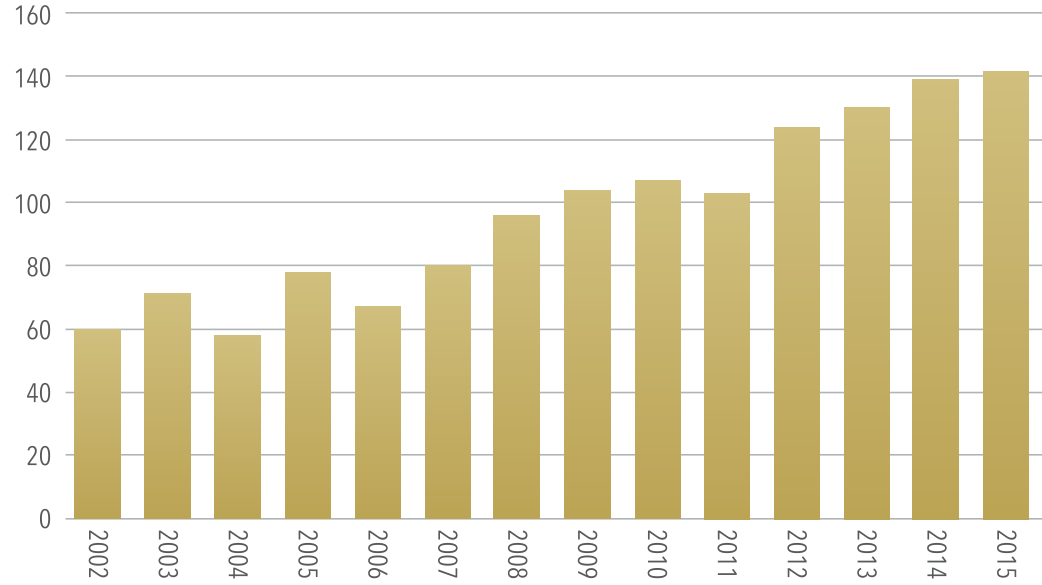
Publications and Citations  
at a glance

At the Women and Infants Research Foundation, our researchers are committed to conveying their research findings to a wide audience. This ensures our research is effectively translated, leading to better outcomes for women, newborns and families.

NUMBER OF CITATIONS PER ANNUM 2002 - 2015



NUMBER OF PUBLICATIONS PER ANNUM 2002 - 2015





# Featured publications in peer review scientific journals

(July 2015 to December 2015)

Agrawal, S., Rao, S., Patole, S. Probiotic supplementation for preventing invasive fungal infections in preterm neonates - A systematic review and meta-analysis. *Mycoses*. 2015; 58:642-651

Balasubramanian, H., Strunk, T., Kohan, R. Arterial hypotension and prerenal failure in an extremely preterm infant associated with oral sildenafil. *Journal of Perinatology*. 2015; 35:458-459

Beesley, V.L., Rowlands, I.J., Hayes, S.C., Janda, M., O'Rourke, P., Marquart, L., Quinn, M.A., Spurdle, A.B., Obermair, A., Brand, A., Oehler, M.K., Leung, Y., McQuire, L., Webb, P.M. Incidence, risk factors and estimates of a woman's risk of developing secondary lower limb lymphedema and lymphedema-specific supportive care needs in women treated for endometrial cancer. *Gynecologic Oncology*. 2015; 136: 87-93

Beesley, V.L., Rowlands, I.J., Hayes, S.C., Janda, M., O'Rourke, P.K., Marquart, L., Quinn, M.A., Spurdle, A.B., Obermair, A., Brand, A.H., Oehler, M.K., Leung, Y., McQuire, L., Webb, P.M. Incidence, risk factors, and estimates of a woman's risk for developing secondary lower limb lymphedema and lymphedema-specific supportive care needs in women treated for endometrial cancer: Editorial comment. *Obstetrical and Gynecological Survey*. 2015; 70: 176-177

Braun, T., Sloboda, D.M., Tutschek, B., Harder, T., Challis, J.R.G., Dudenhausen, J.W., Plagemann, A., Henrich, W. Fetal and neonatal outcomes after term and preterm delivery following betamethasone administration. *International Journal of Gynecology and Obstetrics*. 2015; 130: 64-69

Campbell, C., Horlin, C., Reid, C., McMichael, J., Forrest, L., Brydges, C., French, N., Anderson, M. How do you think she feels? Vulnerability in empathy and the role of attention in school-aged children born extremely preterm. *British Journal of Developmental Psychology*. 2015; 33: 312-323

Christiaens, I., Ang, Q.W., Gordon, L.N., Fang, X., Williams, S.M., Pennell, C.E., Olson, D.M. Two novel genetic variants in the mineralocorticoid receptor gene associated with spontaneous preterm birth. *BMC Medical Genetics*. 2015; 16: 59-66

Cullinane, M., Amir, L.H., Donath, S.M., Garland, S.M., Tabrizi, S.N., Payne, M.S., Bennett, C.M. Determinants of mastitis in women in the CASTLE study: A cohort study. *BMC Family Practice*. 2015; 16: 1-8

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Deshmukh, M.K., Balasubramanian, H., Rao, S., Patole, S.K. Effect of gastric lavage on feeding in neonates born through meconium-stained liquor: a systematic review. *Archives of Disease In Childhood-Fetal And Neonatal Edition*. 2015; 100: F394-F399

Deshpande, G., Rao, S., Patole, S. Probiotics in neonatal intensive care - Back to the future. *Australian and New Zealand Journal of Obstetrics and Gynaecology*. 2015; 55: 210-217

Dickinson, J.E., de Costa, C.M. Non-invasive prenatal testing: The new era in reproductive medicine. *Medical Journal of Australia*. 2015; 203: 57-58

Dickinson, J.E., de Costa C.M. Non-invasive prenatal testing: The new era in reproductive medicine. *Medical Journal of Australia*. 2015; 203: 57-58

Glenn McCluggage, W., Judge, M.J., Clarke, B.A., Davidson, B., Gilks, C.B., Hollema, H., Ledermann, J.A., Matias-Guiu, X., Mikami, Y., Stewart, C.J.R., Vang, R., Hirschowitz, L. Data set for reporting of ovary, fallopian tube and primary peritoneal carcinoma: Recommendations from the International Collaboration on Cancer Reporting (ICCR). *Modern Pathology*. 2015; 28: 1101-1122

Goh, J., Mohan, G.R., Ladwa, R., Ananda, S., Cohen, P.A., Baron-Hay, S. Frontline treatment of epithelial ovarian cancer. *Asia-Pacific Journal of Clinical Oncology*. 2015; 11: 1-16

Griffin, C. Probiotics in obstetrics and gynaecology. *Australian and New Zealand Journal of Obstetrics and Gynaecology*. 2015; 55: 201-209

Griffin, C., Harding, J., Sutton, C. Re: The vaginal microbiome, vaginal anti-microbial defence mechanisms and the clinical challenge of reducing infection-related preterm birth. *BJOG: An International Journal of Obstetrics and Gynaecology*. 2015; 122: 1033

Griffin, C., Raman, P., Haeusler, C. Re: Previous caesarean delivery and the risk of unexplained stillbirth: Retrospective cohort study and meta-analysis. *BJOG: An International Journal of Obstetrics and Gynaecology*. 2015; 122: 1845

Guelfi, K.J., Wang, C., Dimmock, J.A., Jackson, B., Newnham, J.P., Yang, H. A comparison of beliefs about exercise during pregnancy between Chinese and Australian pregnant women. *BMC Pregnancy and Childbirth*. 2015; 15: 345-352

Halse, R.E., Wallman, K.E., Dimmock, J.A., Newnham, J.P., Guelfi, K.J. Home-Based Exercise Improves Fitness and Exercise Attitude and Intention in GDM Women. *Medicine And Science In Sports And Exercise*. 2015; 47: 1698-1704

Hart, R.J., Doherty, D.A., Lachlan, R.I., Walls, M.L., Keelan, J.A., Dickinson, J.E., Skakkebaek, NE, Norman, R.J., Handelsman, D.J. Testicular function in a birth cohort of young men. *Human Reproduction*. 2015; 30(12): 2713-2724

Herbison, C.E., Allen, K.L., Robinson, M., Pennell, C.E. Trajectories of stress events from early life to adolescence predict depression, anxiety and stress in young adults. *Psychoneuroendocrinology*. 2015; 61: 16-17

Jamnadass, E.S., Keelan, J.A., Hollier, L.P., Hickey, M., Maybery, M.T., Whitehouse, A.J. The perinatal androgen to estrogen ratio and autistic-like traits in the general population: a longitudinal pregnancy cohort study. *Journal of Neurodevelopmental Disorders*. 2015; 7: 1-12

Keelan, J.A., Leong, J.W., Ho, D., Iyer, K.S. Therapeutic and safety considerations of nanoparticle-mediated drug delivery in pregnancy. *Nanomedicine*. 2015; 10: 2229-2247

Keelan, J.A., Payne, M.S. Vaginal microbiota during pregnancy: Pathways of risk of preterm delivery in the absence of intrauterine infection? *Proceedings of the National Academy of Sciences of the United States of America*. 2015; 112: E6414

Kemp, M.W., Molloy, T.J., Usuda, H., Woodward, E.A., Miura, Y., Payne, M.S., Ireland, D.J., Jobe, A., Kallapur, S.G., Stock, S., Spiller, O.B., Newnham, J.P., Saito, M. Outside-in? Acute fetal systemic inflammation in very preterm chronically catheterized sheep fetuses is not driven by cells in the fetal blood. *American Journal of Obstetrics and Gynecology*. 2015; 214(2):281.e1-281.e10

Langdon, F.H., Laing, A, Hart, R.J. Health Outcomes of Children Conceived Through Assisted Reproductive Technology. *Handbook of Fertility*. 2015; 313-325

Leung, Y., Salfinger, S., Mercer, A.A. The positive impact of structured teaching in the operating room. *Australian and New Zealand Journal of Obstetrics and Gynaecology*. 2015; 55(6):601-5

Lunetta, K.L., Day, F.R., Sulem, P., Ruth, K.S., Tung, J.Y., Hinds, D.A., Esko, T., Elks, C.E., Altmaier, E., He, C., Huffman, J.E., Mihailov, E., Porcu, E., Robino, A., Rose, L.M., Schick, U.M., Stolk, L., Teumer, A., Thompson, D.J., Traglia, M., Wang, C.A., Yerges-Armstrong, L.M., Antoniou, A.C., Barbieri, C., Coviello, A.D., Cucca, F., Demerath, E.W., Dunning, A.M., Gandin, I., Grove, M.L., Gudbjartsson, D.F., Hocking, L.J., Hofman, A., Huang, J., Jackson, R.D., Karasik, D., Kriebel, J., Lange, E.M., Lange, L.A., Langenberg, C., Li, X., Luan, J., Mägi, R., Morrison, A.C., Padmanabhan, S., Pirie, A., Polasek, O., Porteous, D., Reiner, A.P., Rivadeneira, F., Rudan, I., Sala, C.F., Schlessinger, D., Scott, R.A., Stöckl, D., Visser, J.A., Völker, U., Vozzi, D., Wilson, J.G., Zygmont, M., Boerwinkle, E., Buring, J.E., Crisponi, L., Easton, D.F., Hayward, C., Hu, F.B., Liu, S., Metspalu, A., Pennell, C.E., Ridker, P.M., Strauch, K., Streeten, E.A., Toniolo, D., Uitterlinden, A.G., Ulivi, S., Völzke, H., Wareham, N.J. Rare coding variants and X-linked loci associated with age at menarche. *Nature Communications*. 2015; 6: 1-8

Malacova, E., Kemp-Casey, A., Bremner, A.P., Hart, R.J., Stewart, LM, Preen, D.B. Live delivery outcome after tubal sterilization reversal: a population-based study. *Fertility and Sterility*. 2015; 104: 921-926

Marenholz, I., Esparza-Gordillo, J., Rüschenhoff, F., Bauerfeind, A., Strachan, D.P., Spycher, B.D., Baurecht, H., Margaritte-Jeannin, P., Sääf, A., Kerkhof, M., Ege, M., Baltic, S., Matheson, M.C., Li, J., Michel, S., Ang, W.Q., McArdle, W., Arnold, A., Homuth, G., Demenais, F., Bouzigon, E., Söderhäll, C., Pershagen, G., De Jongste, J.C., Postma, D.S., Braun-Fahrlander, C., Horak, E., Ogorodova, L.M., Puzyrev, V.P., Bragina, E.Y., Hudson, T.J., Morin, C., Duffy, D.L., Marks, G.B., Robertson, C.F., Montgomery, G.W., Musk, B., Thompson, P.J., Martin, N.G., James, A., Sleiman, P., Toskala, E., Rodriguez, E., Fölster-Holst, R., Franke, A., Lieb, W., Gieger, C., Heinzmann, A., Rietschel, E., Keil, T., Cichon, S., Nöthen, M.M., Pennell, C.E., Sly, P.D., Schmidt, C.O., Matanovic, A., Schneider, V., Heinig, M., Hübner, N., Holt, P.G., Lau, S., Kabesch, M., Weidinger, S., Hakonarson, H., Ferreira, M.A.R., Laprise, C., Freidin, M.B., Genuneit, J., Koppelman, G.H., Melén, E., Dizier, M.H., Henderson, A.J., Lee, Y.A. Meta-analysis identifies seven susceptibility loci involved in the atopic march. *Nature Communications*. 2015; 6: 8804

Maxwell, S, Dickinson, J.E., Murch, A, O'Leary, P.C. The potential impact of NIPT as a second-tier screen on the outcomes of high-risk pregnancies with rare chromosomal abnormalities. *Australian and New Zealand Journal of Obstetrics and Gynaecology*. 2015; 55: 420-426

Maxwell, S., Bower, C., O'Leary, P. Impact of prenatal screening and diagnostic testing on trends in Down syndrome births and terminations in Western Australia 1980 to 2013. *Prenatal Diagnosis*. 2015; 35: 1324-1330

Maxwell, S.J., Dickinson, J.E., O'Leary, P. Knowledge of noninvasive prenatal testing among pregnant women. *Medical Journal of Australia*. 2015; 203(2):76.

McDonnell, N., Knight, M., Peek, M.J., Ellwood, D., Homer, C.S.E., McIntock, C., Vaughan, G., Pollock, W., Li, Z., Javid, N., Sullivan, E. Amniotic fluid embolism: An Australian-New Zealand population-based study. *BMC Pregnancy and Childbirth*. 2015, 15: 352

McGurgan, P.M., Mcllwaine, P. Complications of hysteroscopy and how to avoid them. *Best Practice & Research in Clinical Obstetrics & Gynaecology*. 2015; 29: 982-993

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# Women and Infants Research Foundation Inc. Financial Statements to 30 June 2016

## INCOME STATEMENT FOR THE YEAR ENDED 30 JUNE 2016

	2016	2015
	\$	\$
Revenue	3,285,336	3,272,147
Depreciation Expenses	-263,042	-262,894
Research Grants Approved	-54,576	-115,570
Other Research Expenses	-2,045,035	-1,872,265
Administration Expenses	-500,098	-550,169
Trading Activities - cost of goods sold & other expenses	-937,163	-1,010,291
Finance Costs	-17,178	-12,836
Profit on Disposal of Financial Assets	752,993	88,867
<b>Profit / (Loss) before income tax</b>	<b>221,237</b>	<b>-463,011</b>
<b>Income Tax Expense</b>	<b>-</b>	<b>-</b>
<b>Profit /(Loss) from ordinary activities for the year</b>	<b>221,237</b>	<b>-463,011</b>

## BALANCE SHEET AS AT 30 JUNE 2016

	2016	2015
	\$	\$
<b>CURRENT ASSETS</b>		
Cash and Cash Equivalents	5,194,430	207,081
Trade and Other Receivables	575,420	476,844
Inventories	45,584	59,653
Other Current Assets	101,822	196,622
<b>TOTAL CURRENT ASSETS</b>	<b>5,917,256</b>	<b>940,200</b>
<b>NON-CURRENT ASSETS</b>		
Financial Assets	-	5,277,830
Property, Plant and Equipment	670,228	831,289
<b>TOTAL NON-CURRENT ASSETS</b>	<b>670,228</b>	<b>6,109,119</b>
<b>TOTAL ASSETS</b>	<b>6,587,484</b>	<b>7,049,319</b>
<b>CURRENT LIABILITIES</b>		
Trade and Other Payables	3,137,885	3,009,878
Short Term Provisions	149,201	160,755
<b>TOTAL CURRENT LIABILITIES</b>	<b>3,287,086</b>	<b>3,170,633</b>
<b>NON-CURRENT LIABILITIES</b>		
Long Term Provisions	5,728	32,391
<b>TOTAL NON-CURRENT LIABILITIES</b>	<b>5,728</b>	<b>32,391</b>
<b>TOTAL LIABILITIES</b>	<b>3,292,814</b>	<b>3,203,024</b>
<b>NET ASSETS</b>	<b>3,294,670</b>	<b>3,846,295</b>
<b>EQUITY</b>		
Retained Earnings	3,037,653	2,826,056
Reserves	257,017	1,020,239
<b>TOTAL EQUITY</b>	<b>3,294,670</b>	<b>3,846,295</b>

A full copy of the Foundation's audited general purpose financial report for the year ended 30 June 2016 is available at [www.wirf.com.au](http://www.wirf.com.au)



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