The MAWA Trust was established in 2000 by Ms Elizabeth Ahlston and Associate Professor Garry Scroop, with Professor Stephen Leeder AO, then Dean of Medicine, the University of Sydney, later Editor-in-Chief of the Medical Journal of Australia, as its first Chair. MAWA is an Australian organisation and a registered charity which began operations in Sydney but moved its administrative base to Canberra in 2007 to take advantage of research and funding opportunities. The MAWA Trust has three Trustees: Ms Elizabeth Ahlston, Professor Anne Keogh AM and The Honourable Kevin Rozzoli AM.

MAWA's Executive Director is Ms Sharyn Watson and the Board includes senior scientists in medicine and other members with valuable expertise in a broad range of areas crucial to MAWA's operations. The Trust has also established a Scientific Advisory Panel which MAWA calls on for advice and review of research projects submitted for MAWA funding. Membership of MAWA's Advisory Panel comprises senior scientists, researchers, academics and medical consultants with expertise across a range of disciplines, many with international profiles and considered to be leaders in their fields. A number of experts in law, ethics, philosophy and other relevant disciplines are also represented on, or are available to, the panel.

The MAWA Trust has formed a partnership with The Australian National University (ANU) to establish the Australian Centre for Alternatives to Animal Research (ACAAR). The Centre will provide a focal point for alternatives research, act as a knowledge and technical resource, and develop and implement strategies to facilitate a broad adoption of replacement methods. As a first step MAWA awarded funds to the ANU for three Fellowships, the appointment of an A/Professor in Alternatives to provide scientific leadership in replacement research and a range of grants, scholarships and bursaries.

The ANU has been named in the top 10 of the world’s international universities. The 2017 Times Higher Education International Universities Rankings has ANU at 7th in the world and between the University of Oxford (6th) and the University of Cambridge (8th). The ANU was the highest ranked Australian university for the fourth year in a row.

Pictured after the signing of the ANU/MAWA Partnership Agreement in 2010 are some of the senior academics and executives who provided valuable guidance and strong support for MAWA's initiatives. MAWA is particularly appreciative of the support of Professors Aidan Byrne and Kiaran Kirk.
ANU/MAWA PROGRAM
The ANU based research program began with the establishment of an alternatives bioinformatics research group in the John Curtin School of Medical Research (JCSMR), Australia’s national medical research institution, and by supporting computational biophysics research projects in the ANU’s highly regarded Research School of Biology and Research School of Chemistry. The ANU has also been awarded research grants, scholarships and bursaries for other replacement projects and for researchers and scholars to travel to overseas institutions for training. The work at ANU both complements and contributes to a range of research projects which MAWA supports in other Australian universities and research institutions.

HOW MAWA OPERATES
MAWA operates as an independent medical research and educational trust fund which facilitates the development and utilisation of non-animal based experimental methods to replace the use of animals in biomedical research. It is expected that by funding replacement research and training scientists in alternative techniques the reliance on the use of animals will be decreased. MAWA also encourages, through promotion and education, the wider adoption of such methods.

MAWA’S EUREKA PRIZE WINNER AND FINALIST
MAWA Doctoral Scholar Dr Hala Raghib won a prestigious Eureka Prize in 2007 for developing a genetically engineered human cell line to monitor drug action to replace animal testing. She was also listed as one of Melbourne’s ‘Top 100’ most powerful and innovative personalities for scientific achievement. Dr Raghib now works in the pharmaceutical industry and lectures at the ACU.

MAWA Doctoral Scholar Dr Eric Han who developed a safe and reversible human model of nerve injury to replace animal experiments causing injury and pain was a finalist for a Eureka Prize in 2011 and 2012. Dr Han is now a lecturer and researcher at UNSW and serves on MAWA’s Board and Scientific Advisory Panel.

MAWA’S APPROACH
The Trust is taking a leading role in animal replacement in biomedical research and deliberately fosters dialogue with the scientific research community to discover common ground to achieve its goals. MAWA Board members are aware that an increasing number of medical scientists are attempting to replace animals wherever possible in line with the National Health and Medical Research Council (NHMRC) Code of Practice and that new graduates, in particular, are increasingly concerned with the ethical dilemmas they have to face when using animals or animal products in their research projects.

MAWA’s approach is positive. MAWA’s position is that to achieve real progress the Trust must engage with scientists and academics and together work for change. Rather than focusing on practices which the Trust does not support, MAWA concentrates on finding and implementing solutions and works cooperatively and productively with the research community. By maintaining this focus and building relationships with researchers, MAWA has been very successful in promoting its ideals, developing collaborations and partnerships, and identifying funding opportunities.

EXAMPLES OF ALTERNATIVE METHODS SUPPORTED BY MAWA
MAWA funded scholars and researchers have developed and utilised a number of alternative methods to replace animal use including: in vitro research using human cell and tissue cultures; human gene studies; post mortem studies; stem cell research; analytical technology; molecular research; plant tissue cultures; mathematical models; computer simulations; ethical clinical research with volunteer patients and healthy subjects; and bioinformatics and population studies.

MAWA HONOURS SCHOLARS
The Trust invites students from Australian universities to apply for MAWA Honours Research Scholarships for projects that meet MAWA’s criteria. The aim of this initiative is to attract new graduates at the beginning of their research careers to train in advanced non-animal technologies. For example, Honours scholars supported by MAWA (pictured below) have replaced animals by using: (1) human DNA samples; (2) in vitro methods; (3) structure based drug design; and (4) microbiological models. Other MAWA Honours scholars have utilised a range of alternative methods with successful outcomes.

FOUR OF MAWA’S HIGHLY AWARDED HONOURS SCHOLARS

1. Ms Mace Neve, First Class Honours
   John Curtin School of Medical Research
   The Australian National University

2. Mr Michael Stevens, First Class Honours
   School of Engineering Systems
   Queensland University of Technology

3. Ms Karina Turci, First Class Honours
   Molecular & Biomedical Sciences
   The University of Adelaide

4. Mr Mersad Delic, First Class Honours
   School of Medical Science
   Griffith University

IN ORDER TO EXPAND THE WORK OF THE MAWA TRUST AND MAKE A WORTHWHILE IMPACT WE NEED YOUR HELP.
ALL DONATIONS TO MAWA ARE TAX DEDUCTIBLE.
MAWA FUNDING
MAWA funding is provided through the award of: research, development and equipment grants; fellowships; doctoral, masters, honours, bridging and supplementary scholarships; and travel bursaries. The Trust also provides funding assistance for: distinguished scholar tours; the development of training programs in alternatives; sponsorship of significant symposiums, seminars and conferences; open access of pertinent scientific journal articles; and individuals to attend relevant Australian and international conferences.

RESEARCH STREAMS
MAWA does not limit its support to any particular research stream but encourages applications from a broad range of disciplines within, for example, biological sciences, medical sciences, computer sciences, mathematical sciences and bioengineering. MAWA also encourages transdisciplinary and collaborative approaches both within and across institutions and the emergence of areas of research strength.

9TH WORLD CONGRESS ON ALTERNATIVES, PRAGUE

MAWA representatives attended the 9th World Congress on Alternatives (WC9), in Prague, in the Czech Republic. MAWA’s Executive Director Sharyn Watson presented on MAWA’s experience of partnering with a major university and taking a ‘Replacement only’ approach rather than the widely adopted ‘3Rs’ (Replacement, Reduction and Refinement) in biomedical research.

MAWA was delighted that two Australian scholars supported by the Trust, Johanna Frolich and Maureen Ross, were accepted to present at the congress and Johanna was awarded a WC9 Travel Scholarship in addition to the MAWA funding awarded to both students. Maureen is currently continuing her research at the University of Queensland.

UNDERGRADUATE COURSE DEVELOPMENT IN ALTERNATIVES

MAWA recipient Assoc Prof Ian Macreadie, who is developing alternative methods in Alzheimer’s research, has also introduced replacement science to undergraduate teaching for students enrolled in biomedical sciences at RMIT University. MAWA was delighted with the outcomes from the inaugural course and that it was offered again in the following year.

Students are also given the opportunity to present their work at RMIT University’s Community Consultation Day. Two students from the pictured group, Eva Vidacs and Kiara Simonis (top left and bottom left), have been selected for MAWA Ambassadorial roles. Kiara is currently undertaking a Doctor of Veterinary Medicine at the University of Melbourne and Eva is currently considering her options with a view to a similar path.

MAWA DOCTORAL SCHOLARS

Doctoral research scholarships were established with the specific intention of highlighting the scientific and practical advantages and merits of non-animal research, and encouraging new scientists to advance the development, validation and application of replacement methods in medical research. For example, Doctoral scholars supported by MAWA (pictured below) have replaced animals by the development of: (1) an animal blood-free medium for culture based diagnosis; (2) statistical analyses of virulence; (3) internal jugular sampling in humans; and (4) proteomic methods. Other Doctoral scholars have developed a range of alternative techniques with successful outcomes.

FOUR DOCTORAL SCHOLARS SUPPORTED BY MAWA

(1) PUBLIC HEALTH MICROBIOLOGY
Dr Rashmi Fotedar
The Prince of Wales Hospital & Faculty of Medicine UNSW

(2) VIRULENCE STUDIES
Dr Brett Mitchell
James Cook University & The Australian Catholic University

(3) NEUROSCIENCE
Dr Charlotte Keating
Monash Alfred Psychiatry Research Centre Monash University

(4) PROTEOMICS
Dr John Ng
Lowy Cancer Research Centre & Faculty of Medicine UNSW

MAWA Board: Ms Elizabeth Ahlston; Prof Toby Allen; Prof Cris dos Remedios; Prof Kieran Fallon
Dr Jason Grossman; Dr Eric Han; Prof Anne Keogh AM; Mr Raymond Kidd; Prof Debbie Marriott
The Hon Kevin Rozzoli AM; A/Prof Garry Scroop; Ms Sharyn Watson

The MAWA Trust Brochure
MAWA’s research focus is on fundamental medical research to improve understanding of human illnesses, their causes, progression, and the underlying features to facilitate prevention, early diagnosis and effective treatment. MAWA Research Grants provide funds to support research projects of one to three years duration. The Trust has supported research into a vast range of diseases, disorders and disabilities. Some examples are: cancer; heart disease; diabetes; stroke; dementia; obesity; multiple sclerosis; neurological disorders; depression and acute and chronic pain studies.

**EXAMPLES OF MAWA FUNDED RESEARCH PROJECTS**

(1) **EXPERIMENTAL BIOPHYSICS**
Prof Boris Martinac
Mechanobiology Laboratory
Victor Chang Cardiac Research Institute

(2) **NUTRITION & METABOLISM**
Prof Samman & Drs Karra & Foster
School of Molecular Bioscience
The University of Sydney

(3) **ONCOLOGY**
Drs Kristy Brown, Ashwini Chand & Colin Clyne
Prince Henry’s Research Institute
Monash Medical Centre

(4) **VASCULAR IMMUNOLOGY**
Prof Georges Grau
Sydney Medical School
The University of Sydney

Examples pictured above: (1) the development of an alternative approach utilising yeast models and human cells to replace traditional studies of ion channels in animal tissues or animal models; (2) the investigation of zinc transporters in humans to replace the common practice of using animals to study zinc deficiency; (3) the validation of the use of human-derived cells/tissues to replace current methods using animals in breast cancer research; and (4) the utilisation of a human *in vitro* blood-brain barrier model for the study of multiple sclerosis to replace the use of animal models.

**MAWA’S SUPPORT FOR TISSUE BANKS**

Currently large numbers of animals are used in experiments that model human disease in an attempt to understand why human hearts fail. MAWA has awarded funding to the Sydney Heart Bank (SHB) to enable research to be conducted using available high-quality human heart tissue while reducing and ultimately eliminating the use of experimental animal models of heart failure. SHB aims to advance our understanding of the genetic, molecular and mechanical changes that lead to heart failure with the hope of one day finding a cure. The SHB is one of a few, and is by far the largest, human cardiac bio-bank with resources available to researchers across the globe. MAWA has also provided funding support for MS Research Australia’s Brain Bank to facilitate research into multiple sclerosis.

**CONGRATULATIONS TO MAWA GRANT RECIPIENTS**

**THEORETICAL & COMPUTATIONAL CHEMISTRY**

Dr Megan O’Mara, Rita Cornforth Fellow, ANU

**NEUROSCIENCE & THEORETICAL PHYSICS**

Dr Andre Peterson
St Vincent’s Hospital &
The University of Melbourne

**COMPUTATIONAL BIOPHYSICS**

Dr Rong Chen
Research School of Biology
The Australian National University

**MAWA FELLOWSHIPS**

Dr Rong Chen was awarded a MAWA Fellowship for his project which used computational tools to replace animal testing for studying ion channels that are directly or indirectly responsible for causing autoimmune diseases, such as multiple sclerosis, arthritis, and chronic heart diseases and to develop drugs to combat these diseases.

Dr Andre Peterson has been awarded a MAWA Fellowship for his project to investigate epilepsy from a neuronal modelling perspective as a viable replacement to animal models. A novel multi-disciplinary approach will utilise complementary methods including a mathematical model combined with voluntary human data.