

Foreword

Australia has a unique mammalian fauna that has evolved since the separation of the Australian continent with the break-up of Gondwana over 60 million years ago. Internationally we are renowned for our iconic mammals, particularly our marsupials and monotremes including the kangaroo, koala and platypus. Yet sadly, research on our native species is not a national priority.

Marilyn Renfree has spent most of her research life uncovering the secrets of marsupial reproduction and development, and by comparing them to eutherian mammals, she has discovered the many novel ways that make marsupials ideal biomedical models. Through this work she and colleagues have made many fundamental contributions to mammalian development, reproduction, genomics evolution and importantly marsupial and monotreme management and conservation. This special issue contains a broad array of articles stemming from the

Reproduction Down Under conference held in Kingscliff NSW in August 2017 with participants from all over the world (Fig. 1). The conference was organised to highlight the contributions of Professor Marilyn Renfree to Australian science in the fields of reproduction and development in the year of her 70th birthday.

This conference covered a diverse set of topics in reproduction and development, divided into five main themes over two and a half days. These themes are: Contraception and Conservation; Development and Diapause; Sex and Reproduction, Genomic Imprinting and Marsupial and Monotreme Genomics. Each of these topics is reflected in the papers which follow in this volume and highlight the international interest and amazing contributions that marsupials and monotremes have made to modern biology.

*Andrew Pask, Geoff Shaw, Kirsty Short
and Marilyn Renfree*

Scientific program of the meeting

Conservation and contraception

Steve Johnston	Koalas, echidnas and wombat conservation
Thomas Hildebrandt	Biotechnology for conservation of wild mammals

Development and diapause

Geoff Shaw	Embryonic diapause: a developmental breather
Jane Fenelon	How to stop and restart an embryo: diapause around the world
Stephen Frankenberg	Doing it differently: specification in the absence of an inner cell mass
Claire Roberts	The dynamic placenta

Genomic imprinting

Anne Ferguson-Smith	Genomic imprinting in eutherians and marsupials
Shunsuke Suzuki	Emergence of novel CpG islands and genomic imprinting in mammalian evolution
Mike O'Neill	Imprinting in the placenta
Fumi Ishino and Tomoko Kaneko-Ishino	Acquired traits in mammals: genomic imprinting and roles of LTR retrotransposon-derived genes
Jessica Stringer	Genomic imprinting in mammary glands

Growth and lactation

Kevin Nicholas	Marvels of marsupial milk
Elizabeth Pharo	Comparative lactation of seals and tammars
Jenni Hetz and Brandon Menzies	The growth axis and lactation
John Hearn	The top end – pituitary perspectives

Marsupial and monotreme genetics and genomics

Frank Grutzner	Sex chromosomes of monotremes
Asao Fujiyama	Genomics of non-model organisms
Janine Deakin	Marsupial Chromosomics: bridging the gap between genomes and chromosomes
Rachel J. O'Neill	Centromere evolution and function in marsupials
Paul Waters	Comparative genomics of mars and mono
Rob Miller	Immune receptor innovation captured in marsupial and monotreme genomes
Kathy Belov	A devil of a problem
<i>Sex and reproduction</i>	
Robin Lovell-Badge	Making a (eutherian) male
Peter Koopman	SRY: Getting the ball rolling
Humphrey Yao	Gonads and germ cells
Dagmar Wilhelm	A new candidate gene for disorders/differences of sex development
Jo Bowles	An essential function for a lonely Sox
Andrew Pask	Gonadal sex reversal
Andrew Sinclair	Insights from targeted gene sequencing of a large international cohort of patients with Disorders of Sex Development
Nathalie Josso	The importance of anti-Mullerian hormone in reproduction
Richard Behringer	Development: bats, mice and marsupials
Gen Yamada	Molecular mechanisms of external genitalia formation; an emerging model for hormone-induced organogenesis

Final session

Marilyn Renfree	Reproduction Down Under
John Funder	Summary of Meeting

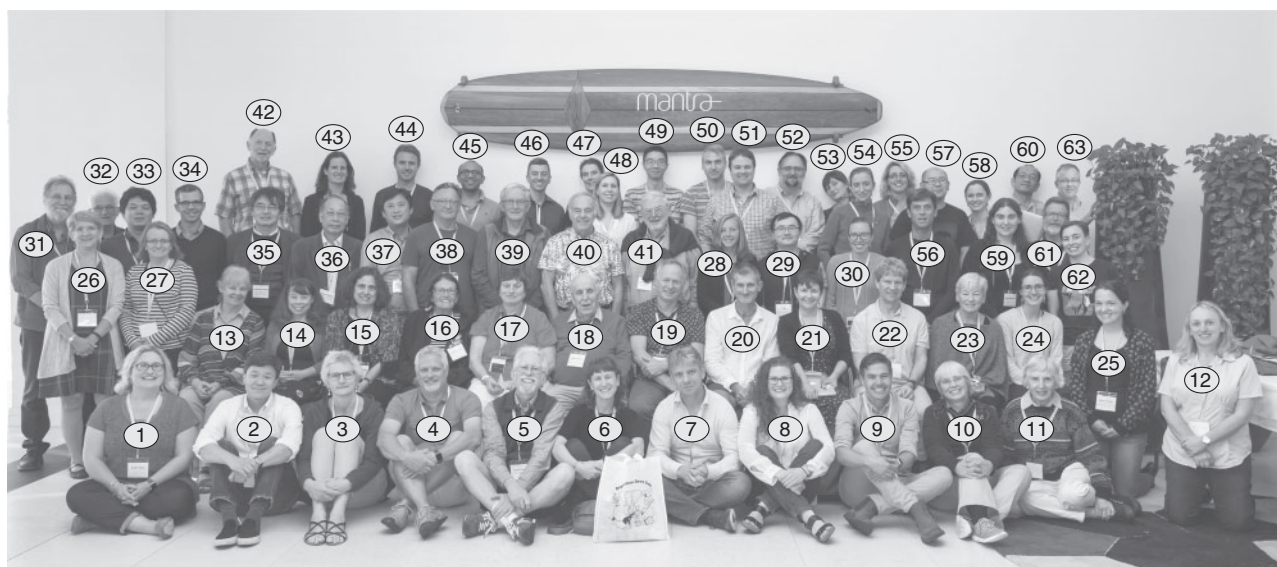


Fig. 1. Participants from the Reproduction Down Under Conference: 1, Kathy Belov; 2, Humphrey Hung-Chang Yao; 3, Dagmar Wilhelm; 4, Michael O'Neill; 5, Geoff Shaw; 6, Tamara Keeley; 7, Thomas Bernd Hildebrandt; 8, Rachel O'Neill; 9, Andrew Pask; 10, Jill Shaw; 11, Frances Thomas; 12, Elizabeth Pharo; 13, Jennifer Graves; 14, Janine Deakin; 15, Anne Ferguson-Smith; 16, Nathalie Josso; Marilyn Renfree; 18, Roger Short; 19, Andrew Sinclair; 20, Peter Koopman; 21, Jo Bowles; 22, Robin Lovell-Badge; 23, Blanche Capel; 24, Melanie Laird; 25, Jane Fenelon; 26, Kate Loveland; 27, Claire Roberts; 28, Bethaney Fehrenkamp; 29, Chen Yu; 30, Jessica Dudley; 31, Kevin Nicholas; 32, Leon Hughes; 33, Hiroyuki Imai; 34, Frank Grutzner; 35, Fumitoshi Ishino; 36, Asao Fujiyama; 37, Shunsuke Suzuki; 38, Iain Clarke; 39, Denis Lincoln; 40, John Hearn; 41, John Funder; 42, Peter Temple-Smith; 43, Kathryn Grueber; 44, Paul Waters; 45, Pradeep Tanwar; 46, Emanuele Pelosi; 47, Kim McIntyre; 48, Katie Ayers; 49, Liang Zhao; 50, Stephen Frankenberg; 51, Brandon Menzies; 52, Robert Miller; 53, Jennifer A. Hetz; 54, Kirsty Short; 55, Carolyn Hogg; 56, Richard Behringer; 57, Keng Yih Chew; 58, Jessica Stringer; 59, Nadia Edelsztein; 60, Gen Yamada; 61, Bruce Loveland; 62, Tamsin Short; 63, Stephen Johnston. Not pictured: Tomoko Kaneko-Ishino, Hisato Kobayashi, Gail Risbridger and Yuki Kaneko-Ishino.