

09:00 – 16:30

CAREER DEVELOPMENT FORUM

**Location: Melbourne Museum Theatre
11 Nicholson Street, Carlton, VIC 3053**

15:00 – 18:00

REGISTRATION

Location: Plenary Registration Desk A
Located on the ground floor of the Melbourne
Convention Centre
1 Convention Centre Place

COVID-19 STATEMENT

The Organising Committee is committed to taking all reasonable steps to provide the safest possible environment for participation at ComBio2022 by delegates, speakers, exhibitors, guests, employees and suppliers. All participants are required to be aware of and comply with any relevant COVID Safety Guidelines and protocols in place at the time of the meeting and these will be communicated in advance.

Social distancing where possible will be encouraged; hand sanitiser will be available onsite (and at each exhibition booth) and face masks will be provided and expected where practical. We also encourage self-testing by RAT as a pre-caution.

Importantly, at the time of the ComBio2022 meeting, if you are not feeling well and are displaying COVID-19 symptoms, we ask that you do not attend the Congress. We request you test accordingly for COVID-19 and notify the Secretariat (combio@asbmb.org.au) immediately to advise you will not be in attendance.

WEDNESDAY 28 SEPTEMBER 2022

From 07:30

REGISTRATION

Location: Organiser Office 6
Located on the Ground Floor of the Melbourne
Convention Centre
1 Convention Centre Place

08:30 - 08:50

OPENING OF CONFERENCE AND ACKNOWLEDGEMENT OF COUNTRY

Prof Jacqueline Wilce, Monash University, VIC
ComBio2022 Conference Chair

Prof Mark Hulett, La Trobe University, VIC
ComBio2022 Program Chair

Location: Goldfields Theatre

Prof Jacqueline Matthews, University of Sydney, NSW
ASBMB President

Dr Peter Ryan, CSIRO Agriculture & Food, ACT
ASPS President

Prof Kieran Harvey, Peter MacCallum Cancer Centre/
Monash University, VIC
ANZSCDB President

A/Prof Lee Ann Rollins, University of New South Wales, NSW
GSA President

A/Prof Peter Mace, University of Otago, New Zealand
NZSBMB President

08:50 - 09:30

PLENARY 1

OPENING KEYNOTE LECTURE

Chairs: Dr Gavin Knott, Monash University, VIC
A/Prof Kaylene Simpson, Peter MacCallum Cancer Centre,
VIC

Location: Goldfields Theatre

PLE-WED-01 - virtual live talk

CRISPR: The science and opportunity of genome editing
Doudna, J. (USA)

Professor Jennifer Doudna



Jennifer Doudna, PhD is a biochemist at the University of California, Berkeley. Her groundbreaking development of CRISPR-Cas9 - a genome engineering technology that allows researchers to edit DNA - with collaborator Emmanuelle Charpentier earned the 2020 Nobel Prize in Chemistry and forever changed the course of human and agricultural genomics research. She is also the Founder of the Innovative Genomics Institute, the Li Ka Shing chancellor's chair in Biomedical and Health

Sciences, and a member of the Howard Hughes Medical Institute, Lawrence Berkeley National Lab, Gladstone Institutes, the National Academy of Sciences, and the American Academy of Arts and Sciences. She is a leader in the global public debate on the responsible use of CRISPR and has co-founded and serves on the advisory panel of several companies that use the technology in unique ways. Doudna is the co-author of "A Crack in Creation", a personal account of her research and the societal and ethical implications of gene editing.

09:35 – 11:05

SYMPOSIUM 1

PROTEIN INTERACTIONS AND MOLECULAR ASSEMBLIES

Chairs: A/Prof Tara Pukala, University of Adelaide, SA
A/Prof Michael Landsberg, University of Queensland,
QLD

Location: Goldfields Theatre

09:35 SYM-01-01

Molecular basis of auto-inhibition, activation and substrate recognition of SARM1, the executioner of axon degeneration
Gu, W., Shi, Y., Horsefield, S., Manik, M.K., Saikot, F.K., McGuinness, H.Y., Luo, Z., Nanson, J.D., Ve, T. and Kobe, B. (Australia)

09:55 SYM-01-02

Observing giant membrane pore formation - one molecule at a time
McGuinness, C., Walsh, J.C., Bayly-Jones, C., Dunstone, M.A., Christie, M.P., Morton, C.J., Parker, M.W. and **Boecking, T.** (Australia)

10:15 SYM-01-03

Biochemical and biophysical characterisations of the human telosome
Sivaraman, H., Camargos, A. and **Wong, W.** (Australia)

10:35 SYM-01-04 *Queensland Protein Group SIG Lecture*

Unravelling the molecular architecture of the commander assembly
Healy, M.D., McNally, K.E., Butkovic, R., Sacharz, J., Croll, T.I., Stroud, D.A., Ghai, R., Cullen, P.J. and Collins, B.M. (Australia and United Kingdom)

10:50 SYM-01-05

Structural basis for enhanced cytoplasmic aggregation of familial ALS-associated SFPQ mutants in primary neurons
Widagdo, J., Udagedara, S., Bhembre, N., Tan, J.Z.A., Neureiter, L., Huang, J., Anggono, V. and **Lee, M.** (Australia)

09:35 – 11:05

SYMPOSIUM 2

EXTRACELLULAR MATRICES

Chairs: A/Prof Joshua Heazlewood, University of Melbourne, VIC
Prof Rachel Burton, University of Adelaide, SA

Location: Eureka Room 1

09:35 SYM-02-01

Solid-state NMR as a tool to inform plant cell wall engineering

Gao, Y., Lipton, A., Murray, D.T. and **Mortimer, J.C.**
(Australia and USA)

09:55 SYM-02-02

Sensing stress at the plant cell surface to regulate secondary wall development

Ma, Y., Shafee, T., MacMillan, C.P., Mudiyansele, A., Hao, P., Radcliffe, J., de Vries, L., Mansfield, S.D., Bacic, A. and **Johnson, K.L.** (Australia and Canada)

10:15 SYM-02-03

Exploiting *Plantago* seed mucilage as a model for studying cell wall polysaccharide synthesis and functionality

Cowley, J.M., Phan, J.L., Tucker, M.R. and Burton, R.A.
(Australia)

10:35 SYM-02-04

Spatiotemporal deposition of polysaccharides in the cell walls of oat endosperm

Nadiminti, P.P., Wilson, S.M., Meene, A.V.D., Ratcliffe, J., Bacic, A. and Doblin, M.S. (Australia)

10:50 SYM-02-05

Recent advances in the regulation of (1,3;1,4)- β -glucan biosynthesis in barley

Garcia-Gimenez, G., Ho, Y.Y., Schreiber, M., Fincher, G.B., Burton, R.A., Waugh, R., Tucker, M.R., Houston, K., Bacic, A. and Doblin, M.S. (Australia and UK)

09:35 – 11:05

SYMPOSIUM 3

REGENERATION

Chairs: Dr Alberto Rosello-Diez, Monash University, VIC
A/Prof Jess Frith, Monash University, VIC

Location: Eureka Room 2

09:35 SYM-03-01

From the top down, patterning and growth along the head-to-tail axis

Chang, Y.C.C., Manent, J., Schroeder, J., Wong, S.F.L., Hauswirth, G.M., Garside, V., Polo, J.M., Tainor, P. and **McGlenn, E.** (Australia and USA)

09:55 SYM-03-02

Understanding the drivers of variability in kidney organoid tissue formation

Lawlor, K.T., Er, P.X., Peiris, T.R., Wilson, S.B., Scurr, M., Vanslambrouck, J.M. and Little, M.H. (Australia and Denmark)

10:15 SYM-03-03

Dental tissue infection and repair: smart materials and 3D tissue culture models

Sloan, A. and Moses, R. (Australia)

10:35 SYM-03-04

Injury response in Xenia - an emerging model in regenerative biology

Caglar, C., Herath, W., Admaski, M. and Admaska, M. (Australia)

10:50 SYM-03-05

Size matters: control of cell hypertrophy by the mTORC1-cholesterol axis during long bone compensatory growth

Hng, C.H., Chang, H. and Rosello-Diez, A. (Australia)

09:35 – 11:05

SYMPOSIUM 4

ENVIRONMENTAL GENOMICS

Chairs: Dr Richard Edwards, University of Western Australia, WA
A/Prof Helen Bothwell, University of Georgia, USA
Dr Collin Ahrens, University of New South Wales, NSW
Location: Eureka Room 3

09:35 SYM-04-01

Using genomics to assess the resilience of commercial fisheries in rapidly changing environments: Australian blacklip abalone as a case study

Miller, A., Holland, O., Toomey, M., Ahrens, C., Hoffmann, A. and Sherman, S. (Australia)

09:55 SYM-04-02

Sex-specific evolution of damselflies during a climate-change induced range expansion

Dudaniec, R.Y., Carey, A.R., Yong, C.J., Hansson, B., Svensson, E.I. and Lancaster, L. (Australia, Sweden and United Kingdom)

10:15 SYM-04-03

How local is local? determining optimal scales for restoration management with a case study from eucalyptus

Bothwell, H.M. and Borevitz, J.O. (Australia and USA)

10:35 SYM-04-04

Integrating genetic theory and phenotype performance to overcome consistent overestimation of population decline in genomic vulnerability estimates

Ahrens, C.W. and Rymer, P. (Australia)

10:50 SYM-04-05

Many genes contribute to adaptation in contrasting environments of an Australian wildflower

Kaur, A., Wilkinson, M.J., James, M.E., Jung, H., Engelstaedter, J. and Ortiz-Barrientos, D. (Australia)

09:35 – 11:05

SYMPOSIUM 5

EDUCATION 1

Chairs: A/Prof Nirma Samarawickrema, Monash University, VIC
A/Prof Tracey Kuit, University of Wollongong, NSW

Location: Courtyard Room 1

09:35 **SYM-05-01 ASBMB SDR Scientific Education**

Award Lecture

Dissolving boundaries: the student-led interdisciplinary
Humans 2.0 Conference

Lim, S.H. (Australia)

10:05 **SYM-05-02 ASPS Education and Outreach**

Award Lecture

Plant science: safeguarding our future food security

Shelden, M.C., Koerber, G. and Loveys, B. (Australia)

10:35 **SYM-05-03 GSA Excellence in Education Award Lecture**

Relevance and resilience in 21st century genetics teaching

Tanurdzic, M. (Australia)

09:35 – 11:05

SYMPOSIUM 6

GENOME ENGINEERING

Chair: Dr Gaetan Burgio, Australian National University, ACT
Dr Andrew Kueh, Walter & Eliza Hall Institute, VIC

Location: Hospitality Suite 1

09:35 SYM-06-01

Improved delivery and expanded range of Prime Editors for precise gene correction

Glaser, A. (Australia)

09:55 SYM-06-02

Whole genome CRISPR/Cas9 screening to understand resistance to BH3-mimetic drugs in lymphoma

Diepstraten, S.T., Deng, Y., Kueh, A.J., Chang, C., Strasser, A., Herold, M. and Kelly, G.L. (Australia)

10:15 SYM-06-03

Improving CRISPR gene editing efficiency

Adikusuma, F., Chey, Y.C.J., Lushington, C., Gierus, L., Arudkumar, J. and Thomas, P.Q. (Australia)

10:35 SYM-06-04 *Adelaide Protein Group SIG Lecture*

Synthetic biology tools for repeated genome integration in *E. coli*

Hao, N, Dodd, I.B. and Shearwin, K.E. (Australia)

10:50 SYM-06-05

Designing of CRISPR/Cas13Rx system interfering Turnip mosaic virus infection in canola (*Brassica napus*)

Ton, B.L., Bayer, P., Khan, A., Lister, R., Jones, R.A.C. and Batley, J. (Australia)

09:35 – 11:05

SYMPOSIUM 7

MOLECULAR IMMUNOLOGY AND IMMUNOMETABOLISM

Chairs: A/Prof Justine Mintern, University of Melbourne, VIC
Dr Graeme Lancaster, Baker Heart & Diabetes Institute, VIC

Location: Courtyard Room 2

09:35 SYM-07-01

Lipid droplets are critical organelles in the fight against viral infection

Helbig, K.J. (Australia)

09:55 SYM-07-02

Mechanisms underpinning sex-bias in adipose immune cells and systemic metabolism

Valle Torres, S., Elmzzahi, T., Chisanga, D., Kallies, A. and **Vasanthakumar, A.** (Australia and Germany)

10:15 SYM-07-03

Metabolic regulation of the MHC-I antigen presentation pathway in cancer

Ting, K.E., Sathiqu, R.M. and **Brown, K.K.** (Australia)

10:35 SYM-07-04

Structural and functional characterisation of plant innate immune receptors

Maruta, N., Burdett, H., Sorbello, M., Lim, B.Y.J. and Kobe, B. (Australia and Scotland)

10:50 SYM-07-05

The role of glycosaminoglycans and their degrading enzymes in inflammatory cell homeostasis

Farrugia, B.L., Mizumoto, S., Yamada, S. and Whitelock, J.M. (Australia and Japan)

09:35 – 11:05

SYMPOSIUM 8

CELL COMPETITION IN DEVELOPMENT AND DISEASE

Chairs: Dr Samantha Stehbens, University of Queensland, QLD
Dr Edwige Roy, University of Queensland, QLD
Dr Emma Gordon, University of Queensland, QLD

Location: Hospitality Suite 2

09:35 SYM-08-01

Mechanisms of developmental morphogenesis *in vivo*
Sanson, B. (United Kingdom)

09:55 SYM-08-02

The cell-surface receptor system Sas-Ptp10D in cell competition: is polarity loss its only trigger?
Fahey Lozano, N., La Marca, J.E., Portela, M. and Richardson, H.E. (Australia)

10:15 SYM-08-03

Cell competition as a tumour suppressor in pre-leukaemia
Slape, C.I. (Australia)

10:35 SYM-08-04

Netrins are involved in the epithelial wound response in *Drosophila* and Zebrafish
Wallace, L.J., Wong, E., Chaturvedi, V., Jusuf, P. and Murray, M.J. (Australia)

10:50 SYM-08-05

When nuclei go too far: two-step nuclear centring by competing microtubule- and actin-based mechanisms in 2-cell mouse embryos
Ye, Y. and Homer, H.A. (Australia)

11:05 – 11:30 MORNING TEA

Location: Goldfields Foyer

11:30 – 12:10

PLENARY 2

PLENARY LECTURE

Chair: A/Prof Megan Maher, University of Melbourne, VIC

Location: Goldfields Theatre

PLE-WED-02- virtual live talk

How eukaryotic translation is regulated by initiation factor eIF3

Cate, J.H.D. (USA)

Professor Jamie Cate



Dr. Cate has had a longstanding interest in understanding how the ribosome translates the genetic code into proteins. His lab studies human translation, focusing on the role of human translation initiation factor eIF3 and on ribosome stalling mechanisms. Using biochemical and structural biology, his lab has revealed fundamental mechanisms of human translation initiation, including the discovery of a 5'-m⁷G mRNA cap-binding activity in human eIF3 and eIF3-mediated regulation of specific mRNAs. His lab also revealed a new molecular mechanism of action for small molecules that can selectively stall protein synthesis on the human ribosome, in collaboration with Pfizer. Dr. Cate received his Ph.D. from the Department of Molecular Biophysics and Biochemistry at Yale University. After a Damon Runyon-Walter Winchell Cancer Research Fund Postdoctoral Fellowship at the University of California, Santa Cruz, he joined the faculty of MIT as an Associate Member of the Whitehead Institute for Biomedical Research. He is now Professor of Biochemistry, Biophysics and Structural Biology at the University of California, Berkeley. His research has been recognized with a Searle Scholar Award, AAAS Newcomb Cleveland Prize, and the Irving Sigal Young Investigator Award from The Protein Society. He is also a Member of the American Academy of Arts and Sciences.

11:30 – 12:10

PLENARY 3

PLENARY LECTURE

Chair: Prof Ros Gleadow, Monash University, VIC

Location: Eureka Room 1

PLE-WED-03

Cell type development in a changing environment

Manzano, C., Canto-Pastor, A., Kawa, D., Thiombiano, B., Shimels, M., Leite, M., Kuramae, E., Raaijmakers, J., Bouwmeester, H. and **Brady, S.M.** (USA and The Netherlands)

Professor Siobhan Brady



Siobhan Brady received her PhD at the University of Toronto in 2005, and was a Natural Sciences and Engineering Research Council of Canada Postdoctoral Fellow at Duke University from 2005 – 2008. In 2009 she began at the University of California, Davis in the Department of Plant Biology and in the Genome Center and became a Professor in 2020. In 2016 she was named as a Howard Hughes Medical Institute Faculty Research Scholar. Research in the Brady lab focuses on the global regulation of gene expression and its contribution to root morphology and development in *Arabidopsis thaliana*, *Solanum* species, *Sorghum bicolor* and maize.

11:30 – 12:10

PLENARY 4

PLENARY LECTURE

Chair: Prof Jenny Graves, La Trobe University, VIC

Location: Eureka Room 2

PLE-WED-04 - virtual live talk

Bats: Longevity, immunity, genomes... why should we care?

Teeling, E. (Ireland)

Professor Emma Teeling



Prof. Prof. Emma Teeling is an international leader in the cross-cutting fields of mammalian phylogenetics and comparative genomics, with particular expertise in bat biology. She established the Laboratory of Molecular Evolution and Mammalian Phylogenetics in 2005, is a Founding Director of the genome consortium Bat1K and the Full Professor of Zoology at University College Dublin, Ireland. Prof. Teeling's integrative research in the fields of zoology, phylogenetics and genomics uncovers the genetic signatures of survival that enables species to adapt to an ever-changing environment. The two main goals of her research are: (1) study unique model species to better understand the molecular basis of mammalian adaptations to inform medicine and molecular biology; (2) understand and thereafter conserve, natural populations. She has pioneered and leads global research into the development of bats as new models for healthy ageing and disease tolerance. She has been awarded prestigious personal grants to pursue this research-European Research Council (ERC) Starting grant (2013-2018), a Science Foundation Ireland (SFI), President of Ireland Young Researcher Award (2006-2012), an Irish Research Council (IRC) Laureate Award (2018-2022), and an SFI Future Frontiers Award (2020-2025).

WEDNESDAY 28 SEPTEMBER 2022

12:15 – 12:55

PLENARY 5

PLENARY LECTURE

Chair: Prof Mike Ryan, Monash University, VIC

Location: Goldfields Theatre

PLE-WED-05

Mitochondrial behavior

Nunnari, J. (USA)

Professor Jodi Nunnari



Jodi Nunnari is a pioneer in the field of mitochondrial biology. She was the first to describe the organelle as a dynamic network in homeostatic balance and decipher the mechanisms of the machines responsible for mitochondrial division and fusion. Nunnari was born and raised in Cleveland, Ohio, and studied chemistry at the College of Wooster before attaining a Ph.D. in pharmacology from Vanderbilt University. She was a postdoctoral fellow with Peter Walter at the University of California, San Francisco and joined the faculty at the University of California, Davis in The College of Biological Science in The Department of Molecular and Cellular Biology in 1996. Nunnari was named Editor-in-Chief of *The Journal of Cell Biology* in 2015, becoming the first woman to serve in this position. She is a member of the the American Society for Cell Biology, and served as the Society's president in 2018. In 2017, Nunnari was elected as a member of the National Academy of Sciences.

WEDNESDAY 28 SEPTEMBER 2022

12:15 – 12:55

PLENARY 6

ANNALS OF BOTANY LECTURE

Chair: Dr John Golz, University of Melbourne VIC

Location: Eureka Room 1

PLE-WED-06

Casparian strips - an independent evolutionary path toward polarised epithelia

Geldner, N. (Switzerland)

Professor Niko Geldner



Niko Geldner studied biology at the Universities of Mainz, Bordeaux 2 and Tübingen. He did his PhD in the lab of Gerd Juergens, working Arabidopsis embryogenesis and auxin transport. He then went as an EMBO and HFSP fellow to Joanne Chory at the Salk Institute in La Jolla, California, working on endosomal trafficking of the BRI1 receptor and developing the WAVE sub-cellular compartment markers. In 2007 he started as an Assistant Professor at the University of Lausanne and was promoted to Associate Professor in 2012 and Full Professor in 2018. He was awarded a starting and consolidator grant of the European Research Council (ERC) in 2007 and 2013. In 2011 he became an EMBO Young Investigator and was elected EMBO member in 2017.

12:55 – 14:00 **LUNCH BREAK**

Location: *Lunches may be purchased at nearby Cafés*

14:00 – 15:30

SYMPOSIUM 9

PROTEIN EVOLUTION AND ENGINEERING

Chairs: Prof Emily Parker, Victoria University of Wellington,
New Zealand
Dr Joe Kaczmarek, Australian National University, ACT
Location: Goldfields Theatre

14:00 SYM-09-01

Engineering of tick evasion proteins as chemokine-targeted anti-inflammatory agents

Bhusal, R.P., Aryal, P., Devkota, S.R., Pokhrel, R., Gunzburg, M.J., Foster, S.R., Lim, H.D., Payne, R.J., Wilce, M.C.J. and Stone, M.J. (Australia)

14:20 SYM-09-02

In silico evolution of nucleic acid-binding proteins from a nonfunctional scaffold

Raven, S.A., Payne, B., Bruce, M., Filipovska, A. and Rackham, O. (Australia)

14:40 SYM-09-03

Building biosensing capacity through development of a semi-continuous bacteriophage M13 directed evolution system
Beltrame, L., Shearwin, K.E. and **Whelan, F.** (Australia)

15:00 SYM-09-04

Entirely random, non-homologous recombination can yield the 'hopeful monsters' of protein evolution

Rawcliffe, G.T.A., Moghaddas Sani, H., Dillon, L.M., Mackay, J.P. and **Patrick, W.M.** (New Zealand and Australia)

15:15 SYM-09-05

Phylogenetic and functional analysis of autotransporters

Clarke, K.R., Paxman, J. and Heras, B. (Australia)

14:00 – 15:30

SYMPOSIUM 10

PLANT DEVELOPMENT

Chairs: Prof Sureshkuma Balasubramanian, Monash University, VIC
A/Prof Marcus Heisler, University of Sydney, NSW
Dr John Golz, University of Melbourne, VIC

Location: Eureka Room 1

14:00 SYM-10-01

Grain retention mechanism in wheat and barley

Pourkheirandish, M. (Australia)

14:20 SYM-10-02

Inhibitor of growth (ING) genes and roles in growth and flowering in Medicago

Putterill, J., Jaudal, M., Mayo-Smith, M., Peng, Y., Whibley, A., Poulet, A., Thomson, G. and Goldstone, D. (New Zealand and USA)

14:40 SYM-10-03

MicroRNA-resistant alleles of *HOMEBOX DOMAIN-2* modify inflorescence branching and increase grain protein content of wheat

Dixon, L.E., Pasquariello, M., Badgami, R., Ng, P.Q., Chayut, N., Adamski, N., Steuernagel, B., Searle, I.R., Uauy, C. and **Boden, S.A.** (United Kingdom and Australia)

15:00 SYM-10-04

The essential role of auxin response minima to maintain totipotency in liverworts

Flores-Sandoval, E., Briginshaw, L.N., Fisher, T.J., Alvarez, J.P. and Bowman, J.L. (Australia)

15:15 SYM-10-05

Root or nodule? how to find the switch

Sohail, M.N. and Foo, E. (Australia)

14:00 – 15:30

SYMPOSIUM 11

EARLY DEVELOPMENT AND PATTERNING

Chairs: Dr Jennifer Zenker, Monash University, VIC
A/Prof Dagmar Wilhelm, University of Melbourne, VIC

Location: Eureka Room 2

14:00 SYM-11-01

Endoderm differentiation is a necessary precursor for cardiac patterning

Barratt, K.S., Diamand, K.E.M., Walsh, K., Alzahrani, A., Dickson, K. and **Arkell, R.M.** (Australia)

14:20 SYM-11-02

Gastrulation and body plan: lineage trajectories and tissue patterning

Tam, P.P.L. (Australia)

14:40 SYM-11-03

Stem cell pluripotency - a microtubule cytoskeleton regulated state?

Zenker, J. (Australia)

15:00 SYM-11-04

Allosteric regulation of PRC2 by its accessory subunits is required for embryonic development

Agius, S.C., Chang, Y., Murray, M., Levina, V., Rientjes, J., McGlenn, E. and Davidovich, C. (Australia)

15:15 SYM-11-05

Telomere elongation during embryogenesis is regulated by mitochondria

Winstanley, Y.E., Wu, L.L., Febbraio, M.A., Russell, D.L., Carroll, J. and Robker, R.L. (Australia)

14:00 – 15:30

SYMPOSIUM 12

INVASIVE SPECIES GENOMICS

Chairs: A/Prof Lee Ann Rollins, University of New South Wales,
NSW

Dr Rahul Rane, CSIRO, VIC

Location: Eureka Room 3

14:00 SYM-12-01

Avian invasion genomics: a tale of myna significance

Whibley, A., Atsawawaranut, K., Stuart, K., Ewart, K.M.,
Rollins, L.A., Johnson, R.N., Major, R.E. and Santure, A.W.
(Australia and USA)

14:20 SYM-12-02

How genomic architecture informs invasive species spread

Tay, W.T. (Australia)

14:40 SYM-12-03

Steps towards implementing a gene drive for invasive wasp
species

Gilligan, J.B. and Dearden, P.K. (New Zealand)

15:00 SYM-12-04

Genetics and plasticity are responsible for climate induced
ecogeographical patterns in a recent invasion

Stuart, K.C., Sherwin, W.B., Cardilini, A.P.A. and Rollins,
L.A. (Australia)

15:15 SYM-12-05

Evolutionary dynamics of *Rhinella marina* during invasion

Cheung, K., Edwards, R.J. and Rollins, L.A. (Australia)

14:00 – 15:30

SYMPOSIUM 13

EDUCATION 2

Chairs: A/Prof Tracey Kuit, University of Wollongong, NSW
Dr Amber Willems-Jones, University of Melbourne, VIC

Location: Courtyard Room 1

14:00 SYM-13-01

Online learning, isolation, and employability development:
our students speak

Rowland, S. and Carpenter, L. (Australia)

14:20 SYM-13-02 *Student Panel Discussion*

The student perspective: Advice from students on what
teaching academics should take with them from the pandemic.

Sentosa, D., Accheni, J., Go, M. and Jaitly, I. (Australia)

15:05 SYM-13-03

Making more out of student partnerships throughout the
pandemic and into the future

Galea, A.M., Fleischner, C. and Turnbull, K. (Australia)

15:17 SYM-13-04

Evidence-based and student-centred approaches to course
development: a model for combining assessment results with
student evaluation survey data to drive innovative teaching
practice

Clemson, M.W. and Huang, A. (Australia)

14:00 – 15:30

SYMPOSIUM 14

ADVANCED IMAGING

Chairs: Dr Niall Geoghegan, Walter & Eliza Hall Institute, VIC
Dr Susanne Ramm, Peter MacCallum Cancer Centre, VIC
Location: Hospitality Suite 1

- 14:00** **SYM-14-01**
Multi-modal molecular marker multiplexing to map heterogeneity across the cancer cell state landscape
Kohane, F., Gunawan, I., Zheng, Y., Menon, P., Nguyen, K. and **Lock, J.G.** (Australia)
- 14:20** **SYM-14-02**
Precision cryo-correlative light and electron microscopy for rapid in situ structural analyses of optogenetically-positioned organelles
Ariotti, N., Redpath, G.M.I., Rae, J., Yao, Y. and Parton, R.G. (Australia)
- 14:40** **SYM-14-03**
The mechanobiology of microtubules: how cells survive confined spaces
Ju, R.J. and **Stehbens, S.J.** (Australia)
- 15:00** **SYM-14-04**
Tracking the nuclear wide dynamics of live cell nucleosome proximity by FAIM of histone FRET
Hopper, A., Solano, A. and **Hinde, E.** (Australia)
- 15:15** **SYM-14-05**
Super-resolution mapping of resection and recombination complexes at collapsed replication forks
Rozario, A.R., Rothenberg, E., Bell, T.D.M. and **Whelan, D.R.** (Australia and USA)

14:00 – 15:30

SYMPOSIUM 15

HOT ENZYMES

Chairs: Dr Lakshmi Wijeyewickrema, La Trobe University, VIC
Dr Luke Guddat, University of Queensland, QLD

Location: Courtyard Room 2

14:00 SYM-15-01

Structure and function of a peptide crosslinking P450 from biarylite biosynthesis

Cryle, M.J. (Australia)

14:20 SYM-15-02

Constructing thermostable P450 enzymes through ancestral sequence reconstruction: insights from the reconstruction of the CYP2U subfamily

Ross, C.M., Foley, G., Boden, M. and Gillam, E.M.
(Australia)

14:40 SYM-15-03

Taxonomy driven biochemistry illuminates the enzymatic dark matter

Vickers, C.J., Fraga, D., Compton, J.A., Jones, G.D. and Patrick, W.M. (New Zealand and USA)

15:00 SYM-15-04 *Canberra Protein Group SIG Lecture*

How fungal Nudix hydrolases promote plant disease

McCombe, C.L. and Williams, S.J. (Australia)

15:15 SYM-15-05

Molecular insights into the enzyme-catalysed syntheses of narrow-spectrum macrolide antibiotics

Maghool, S., Sharkey, L.K.R., Pidot, S.J., Stinear, T.P. and **Maher, M.J.** (Australia)

14:00 – 15:30

SYMPOSIUM 16

TISSUE ARCHITECTURE AND CELL POLARITY

Chairs: Prof Barry Thompson, JCSMR, Australian National University, ACT
Dr Melanie White, University of Queensland, QLD
Location: Hospitality Suite 2

14:00 SYM-16-01

Cortical actin flow activates a cadherin-catenin clutch to assemble adherens junctions

Noordstra, I., Diez Hermoso, M., Schimmel, L., Bonfim-Melo, A., Kalappurakkal, J.M., Mayor, S., Gordon, E., Roca Cusachs, P. and Yap, A.S. (Australia, Spain and India)

14:20 SYM-16-02

Plasticity of stem cells in intestinal regeneration and cancer

Chan, W.H., Hlavca, S.C., Jarde, T., Engel, R.M., McMurrick, P.J. and **Abud, H.E.** (Australia)

14:40 SYM-16-03

FAT4 controls lymphatic endothelial cell polarity in response to flow by orchestrating cytoskeletal remodelling

Oszmiana, A., Betterman, K.L., Sutton, D.L. and **Harvey, N.L.** (Australia)

15:00 SYM-16-04

Molecular motor engagement plays a central role in receptor fate determination

Redpath, G.M.I., Tirumala, N., Skerhut, S., Dolai, P., Kapoor-Kaushik, N., Ariotti, N., Kumar, K.V. and Ananthanarayanan, V. (Australia and India)

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15:15 SYM-16-05

Investigating the functions of grainyhead-like 2 and 3 during intestinal epithelial homeostasis

Ton, A.N., Jarde, T., Dworkin, S., Carpinelli, M.R., Jane, S.M., Hime, G.R., Dominado, N.P., Horvay, K. and Abud, H.E. (Australia)

15:30 – 15:55 AFTERNOON TEA
Location: Goldfields Foyer

15:55 – 16:35

PLENARY 7

ASBMB EDUCATION PLENARY LECTURE

Chairs: Prof Joel Mackay, University of Sydney, NSW
A/Prof Nirma Samarawickrema, Monash University, VIC
Location: Goldfields Theatre

PLE-WED-07

Supporting academic careers as student numbers and
technology change

Crossley, M. (Australia)

Professor Merlin Crossley



Merlin Crossley has a distinguished record as an academic who has contributed to teaching, research, administration, and community engagement. He has always enjoyed and recognised the importance of inspiring teaching. In 2016 he became Deputy Vice-Chancellor Academic and Student Life at the University of New South Wales, having previously served as Dean of Science. Prior to that he held positions at the University of Sydney, Harvard, and Oxford. He supports science communication as Chair of the Editorial Board of *The Conversation*, Deputy Director of the Australian Science Media Centre (AusSMC), Chair of the UNSW Press Board, and is an Honorary Associate of the Australian Museum, having previously served several years on the Trust. In recognition of his work for the museum a new species of iridescent squid was named after him *Iridoteuthis merlini*. He has also held roles on the ASBMB Council and currently uses social media, blogging and twitter, to engage with and help build the community of scientists and interested citizens.

15:55 – 16:35

PLENARY 8

ASPS JAN ANDERSON AWARD & LECTURE

Chair: Dr Peter Ryan, CSIRO Agriculture & Food, ACT
ASPS President
Prof Ros Gleadow, Monash University, VIC

Location: Eureka Room 1

PLE-WED-08

How plants manage their mouths: tracing the evolution of
molecular mechanisms for stomatal movements

Sussmilch, F.C. (Australia)

Dr Frances Sussmilch



Dr Frances Sussmilch is an ARC DECRA Fellow at the University of Tasmania and an Associate Investigator for the ARC Centre of Excellence for Plant Success in Nature and Agriculture. Since completing her PhD in molecular biology in 2014 with Assoc. Prof. Jim Weller at UTAS, she has worked in the research groups of Dr Scott McAdam and Prof. Tim Brodribb at UTAS, and Prof. Rainer Hedrich at the University of Würzburg. Dr Sussmilch was awarded the Royal Society of

Tasmania's Peter Smith Medal for outstanding early career research in 2020. She is currently establishing her own research program, funded through the ARC DECRA and Discovery Project schemes, using a range of diverse land plants to investigate the evolution of genetic mechanisms that control the opening and closure of stomatal pores and enable plants to acquire CO₂ for photosynthesis but prevent excessive water loss when water is limiting.

15:55 – 16:40

PLENARY 9

ANZSCDB PRESIDENT'S MEDAL AWARD & LECTURE
*Including the Presentation of the ANZSCDB Emerging Leader Award
to A/Prof Kelly Smith, University of Melbourne, VIC*

Chair: Prof Kieran Harvey, Peter MacCallum Cancer
Centre/Monash University, VIC
ANZSCDB President

Location: Eureka Room 2

PLE-WED-09

Understanding human reprogramming: a journey from
epiblast to trophoblast and into iblastoids

Polo, J. (Australia)

Professor Jose Polo



Jose Maria Polo was born in Buenos Aires, Argentina where he graduated from Buenos Aires University as a Biochemist. In 2002, Jose began his graduate studies at Albert Einstein College of Medicine, New York under the supervision of Professor Ari Melnick where he worked on lymphomagenesis and B-cell maturation. In 2008, he obtained his PhD and moved to Boston to the laboratory of Professor Konrad Hochedlinger at the Harvard Stem Cell Institute to work on reprogramming of adult cells into induced pluripotent stem (iPS) cells. In particular, his work focused on the acquisition of immortality and the existence of epigenetic memory during reprogramming. In June 2011, established his independent research group at Monash University, where he holds appointments to the departments of Anatomy and Developmental Biology and to the Australian Regenerative Medicine Institute. In 2012, Jose was awarded a NHMRC Career Development Fellowship, in 2014 a Silvia and Charles Viertel Senior Medical Research Fellowship and in 2018 an ARC Future Fellowship to continue his work in the molecular mechanism governing the reprogramming process and the epigenetic mechanism underpinning cell fate. In 2016, he co-founded Mogrify Ltd to translate reprogramming technologies into therapies. In October 2021, Jose was recruited to the University of Adelaide as the inaugural Director of the Adelaide Centre for Epigenetics (ACE) and Program leader of the recently established South Australian Immunogenomics Cancer Institute (SAiGENCI). In Adelaide he will continue his work in epigenetics and its application to reprogramming, early embryogenesis and cancer.

16:40 – 18:10

SYMPOSIUM 17

PROTEIN AND NUCLEIC ACIDS/GENE REGULATION

Chairs: Prof Charlie Bond, University of Western Australia, WA
Dr Mihwa Lee, La Trobe University, VIC
Dr Gavin Knott, Monash University, VIC

Location: Goldfields Theatre

16:40 SYM-17-01

Correlating dynamic structural transitions in cells

Smith, N. (Australia)

17:00 SYM-17-02

RNA antagonises PRC1 to enable a molecular switch between compact to open chromatin states

Uckelmann, M., Levina, V., Taveneau, C., Ng, X., Pandev, V., Das, P., De Marco, A. and **Davidovich, C.** (Australia)

17:20 SYM-17-03

Unravelling the mechanisms of bacterial gene regulation

Dobson, R.C.J. (New Zealand)

17:40 SYM-17-04

Correlation of brightness fluctuations maps protein diffusion as a function of oligomeric state within live cell nuclear architecture

Solano, A., Lou, J., Scipioni, L., Gratton, E. and Hinde, E. (Australia and USA)

17:55 SYM-17-05

Bivalent binding by cyclic peptides generates exquisite sensitivity for bet bromodomains

Patel, K., Norman, A., Mohanty, B., Payne, R.J., Walport, L.J. and **Mackay, J.P.** (Australia and UK)

16:40 – 18:10

SYMPOSIUM 18

PLANT GENOMICS, GENETICS AND GENE EDITING

Chairs: Dr Kathryn Hodgins, Monash University, VIC
A/Prof Mathew Lewsey, La Trobe University, VIC

Location: Eureka Room 1

- 16:40 SYM-18-01**
An environmentally responsive dichotomy in cell lineages of the root
Oliva, M., Stuart, T., Tang, D., Pflueger, J., Poppe, D., Jabbari, J.S., Gigante, S., Whelan, J., Lewsey, M.G. and Lister R. (Australia and USA)
- 17:00 SYM-18-02**
Mapping cell-specific activity during germination of barley grain using spatial transcriptomics
Peirats-Llobet, M., Yi, C., Liew, L.C., Berkowitz, O., Narsai, R., Lewsey, M.G. and Whelan, J. (Australia)
- 17:20 SYM-18-03**
Stable unmethylated DNA demarcates expressed genes and their CIS-regulatory space in plant genomes
Crisp, P.A., Marand, A.P., Noshay, J.M., Eglitis-Sexton, J., Zhang, Y., Zhou, P., Lu, Z., Schmitz, R.J. and Springer, N.M. (Australia, USA and China)
- 17:40 SYM-18-04**
Recruitment of distinct UDP-glycosyltransferase families demonstrates dynamic evolution of chemical defense within eucalyptus
Hensen, C.C., Sorensen, M., Bellucci, M., Brandt, W., Olsen, C.E., Goodger, J.Q.D., Woodrow, I.E., Moller, B.L. and **Neilson, E.H.** (Denmark and Australia)
- 17:55 SYM-18-05**
Assessing the impact of self-fertility on ryegrass
Harris, C.R., Eady, C.C., MacKnight, R.C. and Lynette, L.R. (New Zealand)

16:40 – 18:10

SYMPOSIUM 19

NEURODEVELOPMENT

Chairs: Prof Stefan Thor, University of Queensland, QLD
Dr Lachlan Harris, QIMR Berghofer MRI, QLD

Location: Eureka Room 2

16:40 SYM-19-01

Touch versus tension: modelling mechanosensation using human pluripotent stem cells

Hulme, A., McArthur, J.R., Guo, Y., Miellet, S., Napierala, M., Martinac, B., Adams, D.J., Finol-Urdaneta, R. and **Dottori, M.** (Australia and USA)

17:00 SYM-19-02

How has developmental timing of gene expression and neurogenic dynamics shaped the evolution of the mammalian brain?

Suarez, R., Kozulin, P., Bailey, E.J., Paolino, A., Haines, E., Zhao, Q.-Y., Richards, L.J. and **Fenlon, L.R.** (Australia)

17:20 SYM-19-03

Neural stem cell niche communication is critical for normal development and defective in glioma

Muckle, D., Zaytseva, O., Kim, N., Kinsela, B., Mitchell, N.C., Delandre, C., Levens, D.L., Marshall, O. and **Quinn, L.M.** (Australia and USA)

17:40 SYM-19-04

Nuclear transporter IPO13 is central to efficient neuronal differentiation

Gajewska, K.A., Haynes, J.M. and Jans, D.A. (Australia)

17:55 SYM-19-05

Finding treatments for chromatin disorders: early postnatal interventions to improve intellectual disability

Vanyai, H.K., Lawrence, E., Herold, M., Voss, A.K. and Blewitt, M.E. (Australia)

16:40 – 18:10

SYMPOSIUM 20

COMPARATIVE POPULATION GENOMICS

Chairs: Dr Anna Santure, University of Auckland, New Zealand
A/Prof Daniel Ortiz-Barrientos, University of Queensland,
QLD

Location: Eureka Room 3

16:40 SYM-20-01

Uncovering the genetic architecture of replicated adaptation

James, M.E., Allsopp, R.N., Groh, J.S., Kaur, A., Wilkinson, M.J. and Ortiz-Barrientos, D. (Australia and USA)

17:00 SYM-20-02

The genomic impact of island isolation in Australian mammals

Roycroft, E., Potter, S., Moritz, C., Macdonald, A.J., Ottenwell, K.M., Sargent, H., Byrne, M. and Eldridge M.D.B. (Australia)

17:20 SYM-20-03

Saiphos equalis: the lizard that lays eggs and gives live birth

Songsomboon, K., Liang, S., Friesen, C., Griffith, O., Grueber, C. and Whittington, C. (Australia)

17:40 SYM-20-04

Complex multiple introductions drive fall armyworm invasions into Africa, Asia and Australia

Rane, R.V., Walsh, T.K., Gordon, K., Lenancker, P. and Tay, W.T. (Australia)

17:55 SYM-20-05

Testing the link between rates of morphological and molecular evolution in flowering plants

Asar, Y.A., Sauquet, H.S. and Ho, S.Y.W. (Australia)

16:40 – 18:10

SYMPOSIUM 21

EDUCATION 3

Chairs: A/Prof Maurizio Costabile, University of South Australia,
SA

Dr Matthew Clemson, University of Sydney, NSW

Location: Courtyard Room 1

16:40 SYM-21-01

From emergency remote teaching to BAU integrated learning:
A SAMR analysis

Yucel, R. (Australia)

17:00 SYM-21-02

Utilising resources developed for COVID-19 online practicals
to enhance the return to face-to-face practicals

Frankenberg, N.T., Seah, S.W., Tsatsaronis, J.A., Binger,
K.J., Pakay, J.L., Carroll, F.Y., Durrand, F.M. and Chen, K.Z.
(Australia and Singapore)

17:14 SYM-21-03

Somersaulting through a semester of biochemistry: flipping
how students think about how they learn

Jones, K.S. (New Zealand)

17:28 SYM-21-04

A refreshed biochemistry curriculum incorporation blended
learning, peer-mentoring, and problem-based learning

Tsatsaronis, J.A., Binger, K.J., Pakay, J.L., Wijeyewickrema,
L.C., Durand, F.M., Carroll, F.Y. and Frankenberg, N.T.
(Australia)

17:42 SYM-21-05

An effective way to make biochemistry labs more engaging

Wijenayake, N. (Australia)

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17:56 SYM-21-06

The impact of online assessment practices on student learning:
considerations for future practice

Carroll, F.Y., Lay, F.T. and Pakay, J.L. (Australia)

16:40 – 18:10

SYMPOSIUM 22

PRECLINICAL MODELS

Chairs: A/Prof Susi Woods, University of Adelaide/SAHMRI, SA
Dr Mitchell Lawrence, Monash University, VIC

Location: Hospitality Suite 1

16:40 SYM-22-01

Understanding and targeting the dynamic cellular ecosystem of pancreatic cancer

Pajic, M. (Australia)

17:00 SYM-22-02

Lord of the crypts - manipulating cell competition and signalling in the intestine

Flanagan, D.J. and Sansom, O.J. (Australia and UK)

17:20 SYM-22-03

A patient-derived explant model for drug and biomarker co-development in prostate cancer

Centenera, M.M. (Australia)

17:40 SYM-22-04

Multi-omics characterisation of breast cancer organoids

Leung, D., Kerr, G., Micati, D., Gregory, P., Ooi, C., Tan, B., Lang, T., Vereker, M., Sian, T.L.K., Archer, S., Daly, R., Mitchell, C., Papa, A., Nottle, T., Richardson, G., Abud, H.E. and Jardé, T. (Australia)

17:55 SYM-22-05

Super-resolution microscopy to characterize drug-induced microtubule filament dysfunction

Rozario, A.M., Duwe, S., Elliott, C., Hargreaves, R., Moseley, G., Dedecker, P., Whelan, D.R. and Bell, T.D.M. (Australia and Belgium)

16:40 – 18:10

SYMPOSIUM 23

SYSTEMS BIOLOGY AND REGULATORY NETWORKS

Chairs: A/Prof Melissa Davis, Walter & Eliza Hall Institute, VIC
A/Prof Lan Nguyen, Monash University, VIC

Location: Courtyard Room 2

16:40 SYM-23-01

Noise distorts the epigenetic landscape and shapes cell-fate decisions

Ham, L., Coomer, M. and **Stumpf, M.P.H.** (Australia)

17:00 SYM-23-02

scREMOTE: using multimodal single cell data to predict regulatory gene relationships and to build a computational cell reprogramming model

Tran, A., Yang, P., **Yang, J.Y.H.** and Ormerod, J. (Australia)

17:20 SYM-23-03

Decoding an immunotherapy response - a multiomic approach

Kulasinghe A.K. (Australia)

17:40 SYM-23-04 *RNA Network Australasia SIG Lecture*

Evolutionary dynamics of circular RNAs in primates

Santos Rodriguez, G.S.R., Voineagu, I.V. and Weatheritt, R.J.W. (Australia)

17:55 SYM-23-05

Investigating the link between heterogeneity and adaptive drug resistance in ER+ breast cancer using a novel modelling technique, meta dynamic analysis

Hart, A., Shin, S. and Nguyen, L.K. (Australia)

16:40 – 18:10

SYMPOSIUM 24

EXOSOMES/EXTRACELLULAR VESICLES

Chairs: A/Prof Jason Howitt, Swinburne University, VIC
Dr Kirsty Danielson, University of Otago, New Zealand

Location: Hospitality Suite 2

16:40 SYM-24-01

Investigating EV cargo in treatment resistant endometrial cancer

Henry, C., Paterson, E., Sarkar, D., Mehta, S. and Danielson, K. (New Zealand)

17:00 SYM-24-02

Role of extracellular vesicles in disease progression and prevention

Fuller, O.F. (Australia)

17:20 SYM-24-03

Extracellular vesicles as a therapeutic avenue to treat cancer metastasis

Mathivanan, S. (Australia)

17:40 SYM-24-04

Help from beyond the grave: how mesenchymal stem cell apoptotic bodies can stop inflammation

Ozkocak, D.C., Baxter, A.A., Pang, S.H.M., Bhuvan, T., Santavanond, J.P., Zheng, D., Phan, T.K., Heng, T.S.P. and Poon, I.K.H. (Australia)

17:55 SYM-24-05

The role of executioner caspases in extracellular vesicle biogenesis

Nedeva, C., Chitti, S.V. and Mathivanan, S. (Australia)

18:10 – 19:30 WELCOME MIXER

Location: Exhibition Hall

08:30 – 09:10

PLENARY 10

PLENARY LECTURE

Chair: A/Prof Archa Fox, University of Western Australia, WA
Prof Danny Hatters, University of Melbourne, VIC

Location: Goldfields Theatre

PLE-THU-10- virtual live talk

Mechanisms and subcellular organelles promoting tau fiber propagation

Lester, E., Van Alstyne, M., McCann, K.L., Reddy, S., Cheng, L.Y., Kuo, J., Pratt, J. and **Parker, R.** (USA)

Professor Roy Parker



Roy Parker is an Investigator with the Howard Hughes Medical Institute, Cech-Leinwand Endowed Chair of Biochemistry and Distinguished Professor at the University of Colorado Boulder. He received his Ph.D. from the University of California, San Francisco and completed his Postdoctoral work at the University of Massachusetts, Worcester. He has been on the editorial boards of *MCB*, *Science*, *Cell*, *RNA*, and *Nucleic Acids Research*. He was the President of the RNA Society (2010), and has been elected to the American Academy of Arts & Sciences (2010) and the National Academy of Sciences (2012).

08:30 – 09:10

PLENARY 11

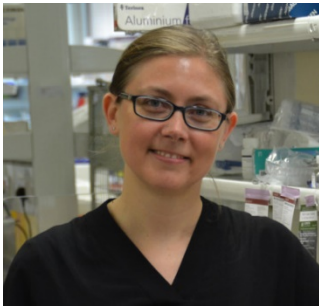
PLENARY LECTURE

Chair: Dr Seb Dworkin, La Trobe University, VIC
Prof Sarah Russell, Peter MacCallum Cancer Centre, VIC
Location: Eureka Room 2

PLE-THU-11 - virtual live talk

The haematopoietic stem cell niche in health and disease:
dynamic cells in an evolving environment
Lo Celso, C. (United Kingdom)

Professor Cristina Lo Celso



Dr Lo Celso graduated from Torino University in Italy. She obtained her PhD from UCL, working with Fiona Watt at the CRUK London Research Institute, where she studied epidermal stem cells. She started performing intravital microscopy of the haematopoietic stem cell (HSC) niche during her postdoctoral training at Harvard University with David Scadden. In 2009 she started her independent research group at Imperial College London, where she is now a

reader in the department of Life Sciences, and network lead of the Imperial Stem Cell and Regenerative Medicine Network. Dr Lo Celso recently established a satellite laboratory at the Sir Francis Crick Institute. Her research aims to understand the mechanisms regulating HSC function during steady state and during stress, such as infections, leukaemia and transplantation. Her interdisciplinary approach combines mouse bone marrow intravital microscopy techniques, computational image analysis, molecular profiling and mathematical modelling of the HSC niche. Dr Lo Celso is the first woman to receive the Foulkes Medal award (2017). She received the ISEH New Investigator award in 2017, presented the DGZ Carl Zeiss Lecture 2018 and was awarded the Royal Microscopical Society Life Sciences medal 2019.

08:30 – 09:10

PLENARY 12

PLENARY LECTURE

Chair: A/Prof Lee Ann Rollins, University of New South Wales,
NSW
GSA President
Location: Eureka Room 3

PLE-THU-12

The power of genetic monitoring: case studies from
endangered species
Waits, L.P. (USA)

Professor Lisette Waits



Lisette Waits is a Distinguished Professor in the Department of Fish and Wildlife Sciences at the University of Idaho. She has a BS in Genetics from University of Georgia and PhD in Genetics from University of Utah where she studied the phylogenetics and population genetics of grizzly bears. She has been a leader in the fields of conservation genetics and molecular ecology with particular focus on developing methods for noninvasive genetic monitoring of wildlife and landscape genetics. Her research has focused on using genetic methods to study over 30 different wildlife species in North America, Central America, South America, Europe and Asia, and she has published over 250 papers. She is an elected fellow of The Wildlife Society and the American Association for the Advancement of Science. She currently serves on the International Union for Conservation of Nature Conservation Genetics North American Working Group and the American Association of Zoos and Aquariums Conservation Genetics Working Group.

09:15 – 10:45

SYMPOSIUM 25

PHASE SEPARATION

Chairs: A/Prof Archa Fox, University of Western Australia, WA
Prof Danny Hatters, University of Melbourne, VIC

Location: Goldfields Theatre

09:15 **SYM-25-01**

Stressed out droplets: regulating phase separation of RNA binding proteins

Loughlin, F.E., West, D.L., Rivero-Rodriguez, F., Corrales-Guerrero, L., Diaz-Moreno, I. and Wilce, J.A. (Australia)

09:35 **SYM-25-02**

Towards a single molecule characterization of phase separation.

Gambin, Y. and **Sierecki, E.** (Australia)

09:55 **SYM-25-03**

ALS-associated mutations in the TDP-43 low-complexity domain have variable effects on its liquid-liquid phase separation properties

McAlary, L., Heydari, T., Peng, X., Hoggarth, J., Sher, M., Cashman, N.R. and Plotkin, S.S. (Canada)

10:15 **SYM-25-04 *Perth Protein Group SIG Lecture***

Disordered regions of DBHS proteins determine their liquid phase behaviour and subnuclear organisation

Marshall, A.C., Cummins, J., Kobelke, S., Zhu, T., Widagdo, J., Anggono, V., Hyman, A., Fox, A., Bond, C.S. and Lee, M. (Australia and Germany)

10:30 **SYM-25-05**

Liquid-to-solid transition of biomolecular condensates

Shen, Y. (Australia)

09:15 – 10:45

SYMPOSIUM 26

FROM LAB TO FIELD

Chairs: Prof Barry Pogson, Australian National University, ACT
A/Prof Monika Doblin, La Trobe University, VIC

Location: Eureka Room 1

09:15 SYM-26-01

Engineering photosynthetic electron transport to increase productivity of C4 crops

Ermakova, M., Bowerman, A., George-Jaeggli, B., Belide, S., Furbank, R. and von Caemmerer, S. (Australia)

09:35 SYM-26-02

High-value genes for higher wheat yield

Roy, S.J., Kalenahalli, Y., Kettenburg, A.T., Lopez, M.A., Heuer, S., Johnson, A.A.T., Gaxiola, R., Valluru, R. and Bailey-Serres, J. (Australia, India, USA and UK)

09:55 SYM-26-03

Iron biofortification of Australian bread wheat

Johnson, A.A.T., Beasley, J.T and Van De Meene, A. (Australia)

10:15 SYM-26-04

White clover leaves expressing condensed tannins precipitate protein and reduce methane emissions in rumen fluid

Roldan, M.B., Cousins, G.R., Zeller, W.E., Salminen, J.-P., Kaur, R., Muetzel, S., Woodfield, D.R., Caradus, J.R. and Voisey, C.R. (New Zealand and USA)

10:30 SYM-26-05

Exogenous RNA interference inhibits infection physiology of rust fungi to reduce symptoms *in planta*

Degnan, R., McTaggart, A., Shuey, L., Pame, L., Smith, G., Carroll, B., Mitter, N. and Sawyer, A. (Australia and New Zealand)

09:15 – 10:45

SYMPOSIUM 27

ORGANOGENESIS AND ORGANOIDS

Chairs: Dr Alexander Combes, Monash University, VIC
Prof Frederic Hollande, University of Melbourne, VIC
A/Prof Louise Cheng, Peter MacCallum Cancer Centre,
VIC

Location: Eureka Room 2

- 09:15** **SYM-27-01 ANZSCDB Emerging Leader Award Lecture**
The zebrafish *grime* mutant uncovers an evolutionarily conserved role for Tmem161b in the control of cardiac rhythm
Koopman, C.D., De Angelis, J.E., Iyer, S.P., Verkerk, A.O., Da Silva, J., Vetter, I., Hogan, B.M., De Boer, T.P., Bakkers, J. and **Smith, K.A.** (Australia and The Netherlands)
- 09:35** **SYM-27-02**
Insights into gonadal sex differentiation provided by single-cell transcriptomics in the chicken embryo
Smith, C.A., Estermann, M.A., Williams, S., Major, A.T., Hurst, C.E., Serralbo, O. and Powell, D. (Australia)
- 09:55** **SYM-27-03**
Enhancing kidney organoids for disease research and treatment
Vanslambrouck, J.M., Wilson, S.B., Tan, K.S., Groenewegan, E., Rudraraju, R., Neil, J., Lawlor, K.T., Mah, S., Scurr, M., Howden, S.E., Subbarao, K., and Little, M.H. (Australia)
- 10:15** **SYM-27-04**
Protein prenylation regulates cardiomyocyte proliferation
Batho, C., Reynolds, L., Kerslake, E., Fitzsimmons, R., Ng, D., Mills, R. and Hudson, J. (Australia)

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10:30 **SYM-27-05**

Deregulation of SNAI1 levels associates with tumour initiation and progression

Micati, D., Akhtar, R., Chan, W.H., Jarde, T., Engel, R., Staples, M., Hime, G. and Abud, H. (Australia)

09:15 – 10:45

SYMPOSIUM 28

GENOMES AND BIODIVERSITY

Chairs: Prof Janine Deakin, University of Canberra, ACT
Dr Catherine Grueber, University of Sydney, NSW

Location: Eureka Room 3

09:15 SYM-28-01

Assessing inbreeding depression in the threatened Aotearoa New Zealand hihi (stitchbird) using a high quality assembly and genome-wide markers

Santure, A.W., Duntsch, L., Whibley, A., de Villemereuil, P., Brekke, P., Bailey, S. and Ewen, J.G. (New Zealand and UK)

09:35 SYM-28-02

Genetic management of wildlife when the times are changing

Pavlova, A. and Sunnucks, P. (Australia)

09:55 SYM-28-03

400 by 20,000: characterising whole genome diversity in an iconic Australian marsupial

McLennan, E.M., Silver, L., Belov, K. and Hogg, C.J. (Australia)

10:15 SYM-28-04

Genome of Australia's most cryptic mammal: the marsupial mole

Frankenberg, S., Feigin, C., Lucas, S., Steffen, R., Doronina, L., Hartley, G., Grady, P., De Paoli-Iseppi, R., Cooper, S., Donnellan, S., Clark, M., Cooper, S., O'Neill, R., Schmitz, J., Clark, N. and Pask, A. (USA and Australia)

10:30 SYM-28-05

Plethora of new marsupial genomes informs our knowledge of marsupial MHC

Silver, L.W., Hogg, C.J. and Belov, K. (Australia)

09:15 – 10:45

SYMPOSIUM 29

NEURODEGENERATIVE DISEASES

Chairs: Dr Rebecca Nisbet, Florey Institute of Neuroscience & Mental Health, VIC
Prof Thomas Fath, Macquarie University, NSW
Location: Courtyard Room 1

09:15 SYM-29-01

Loss of LAMP5 interneurons is associated with neuronal network dysfunction in Alzheimer's disease

Ittner, L. (Australia)

09:35 SYM-29-02

The role of protein synthesis in Tau-related pathologies

Bodea, L.G., Evans, H.T., Carlisle, A.K. and Götz, J. (Australia)

09:55 SYM-29-03

Mechanisms and monitoring of axons degeneration in neurodegenerative disease

King, A.E., Collins, J., Atkinson, R.A., Cook, A., Bender, J., Leung, J., Phipps, A., Izadi, E., Perry, S. and Canty, A. (Australia)

10:15 SYM-29-04 *Sydney Protein Group SIG Lecture*

Single molecule diagnostic of Parkinson's disease - putting a number on each a-synuclein aggregates

Lau, D., Magnan, C., Hill, K., Cooper, A., Gambin, Y. and Sierrecki, E. (Australia)

10:30 SYM-29-05

Longitudinal spatial mapping of lipid metabolites reveals pre-symptomatic changes in the hippocampi of Huntington's disease transgenic mice

Farzana, F., McConville, M., Renoir, T., Li, S., Nie, S., Tran, H., Hannan, A., Hatters, D. and Broughton, B.A. (Australia)

09:15 – 10:45

SYMPOSIUM 30

MODEL SYSTEMS

Chairs: Dr Andrew Cox, Peter MacCallum Cancer Centre, VIC
Dr Lizzie Mason, Peter MacCallum Cancer Centre, VIC

Location: Hospitality Suite 1

09:15 SYM-30-01

Quails across the scales: quantitative live imaging of development

Wang, J.X., Alvarez, Y.D., Tan, S., Serralbo, O. and **White, M.D.** (Australia)

09:35 SYM-30-02

Vertebrate late-life mortality deceleration: lessons from the African killifish

Ruparelia, A., Salavaty, A., Barlow, C., Eramo, M., Ramialison, M., Cox, A., Ryan, M., Creek, D., Englert, C. and Currie, P. (Australia and Germany)

09:55 SYM-30-03

Learning about life through the worm - neuromodulator control of behavioural states in *C. elegans*

Chew, Y.L. (Australia)

10:15 SYM-30-04

A basic vocabulary of the splicing code

Dent, C., Prodic, S., Mukherjee, S., Coutts, J., Guo, Y.-L., Fournier-Level, A., Sureshkumar, S., Powell, D. and **Balasubramanian, S.** (Australia and China)

10:30 SYM-30-05

Integrative modelling of signalling network dynamics identifies cell type-selective therapeutic strategies for FGRF4-driven cancers

Nguyen, L.K., Shin, S.Y., Chew, N.J., Ghomlaghi, M., Jeong, Y., Chueh, A.C. and Daly, R.J. (Australia)

09:15 – 10:45

SYMPOSIUM 31

METABOLISM IN HEALTH AND DISEASE

Chairs: Prof Aleksandra Filipovska, University of Western
Australia, WA
A/Prof Brian Drew, Baker Heart & Diabetes Institute, VIC
Location: Courtyard Room 2

09:15 SYM-31-01

Sexual dimorphism in response to dietary restriction reveals a
type I interferon stimulus

Harney, D.J., Cielesh, M., Viengkhou, B., Hofer, M.J. and
Larance, M. (Australia)

09:35 SYM-31-02

Gut-derived hormones and metabolic regulation

Keating, D.J. (Australia)

09:55 SYM-31-03

Processed foods drive intestinal barrier permeability and
microvascular disease

Coughlan, M.T. (Australia)

10:15 SYM-31-04

Multi-omics characterisation of the role of cardiolipin in
mitochondrial function and disease

Lee, R.G., Balasubramaniam, S., Boycott, K.M., Geraghty,
M.T., Marcellin, E., Rackham, O., Thorburn, D.R., Vaz, F.M.,
Reid, G.R. and Filipovska, A. (Australia, Canada and The
Netherlands)

10:30 SYM-31-05

Hepatic dynamin-related protein 1 silencing affects glucose
metabolism independent of sex and body weight

Rusu, P.M. and Rose, A.J. (Australia)

09:15 – 10:45

SYMPOSIUM 32

APOPTOSIS AND CELL DEATH SIGNALLING

Chairs: A/Prof Kate Lawlor, Hudson Institute of Medical Research, VIC

A/Prof Ivan Poon, La Trobe University, VIC

Location: Hospitality Suite 2

09:15 SYM-32-01

Pathogenic basis of RIPK1-mediated cell death and inflammation

Lalaoui, N. (Australia)

09:35 SYM-32-02

The role of receptor interacting protein kinase 1 in human intestinal disease and infection

Ebert, G., Ambrose, R., Lalaoui, N., Doerflinger, M., Herold, M., Pellegrini, M., Silke, J. and **Pearson, J.** (Australia and Germany)

09:55 SYM-32-03

Trem14 receptor is a master regulator of inflammation and innate immune cell death during polymicrobial sepsis

Menassa, J., Pollock, C., Nedeva, C. and **Puthalakath, H.** (Australia)

10:15 SYM-32-04

Mechanistic studies on the inhibition of pro-apoptotic BAK protein

Iyer, S., Subas-Satish, H., Miller, M., Van Delft, M., Huang, D.C.S., Andoniou, C. and Kluck, R.M. (Australia)

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10:30 SYM-32-05

Novel formulation of arachidonic acid induces ferroptosis in lung cancer cells?

Day, Z.I., Mayfosh, A.J., Baxter, A.A., Radcliffe, J.C., Rau, T.F. and Hulett, M.D. (Australia)

10:45-11:30 MORNING TEA
Location: Exhibition Hall

11:30 – 13:00

SYMPOSIUM 33

PEPTIDES

Chairs: Prof Frances Separovic, University of Melbourne, VIC
Dr Yanni Chin, University of Queensland, QLD

Location: Goldfields Theatre

11:30 SYM-33-01

Venom peptides from stinging nettles as novel sodium channel probes

Vetter, I., Durek, T., Jami, S., Deus, J., Gilding, E., Neely, G., Kurdyukov, S. and Chung, F. (Australia)

11:50 SYM-33-02

Cyclic peptides that target telomere maintenance in cancer cells

Lau, Y.H. (Australia)

12:10 SYM-33-03

Tackling polymyxin resistance: restoring the efficacy of the last-line antibiotics in resistant bacteria

Leung, I.K.H. (Australia and New Zealand)

12:30 SYM-33-04 *Yeast SIG Lecture*

From pathogenic to industrial yeasts: discoveries and innovations

Erpf, P.E., Chau, S.M.H., Phung, T.K., Rothnagel, J.A., Schulz, B.L., Fraser, J.A. and Paulsen, I.T. (Australia)

12:45 SYM-33-05

Formation of amyloid-like defensin: lipid complexes: insights into defensin mechanism of action

Hein, M.J.A., Lay, F.T., Reynolds, N.P. and Hulett, M.D. (Australia)

11:30 – 13:00

SYMPOSIUM 34

PHOTOSYNTHESIS AND CARBOHYDRATES

Chairs: Dr Rob Sharwood, Western Sydney University, NSW
Dr Maria Ermakova, Australian National University, ACT

Location: Eureka Room 1

11:30 SYM-34-01

Enhancement of coral climate resilience via experimental evolution of microalgal endosymbionts
van Oppen, M.J.H. (Australia)

11:50 SYM-34-02

Importance of small fluxes, CO₂ and vapour gradients within the leaf
Marquez, D.A., Wong, S.C., Stuart-Williams, H.J., Cernusak, L.A. and Farquhar, G.D. (Australia)

12:10 SYM-34-03

Is now the time for a Rubiscuit or Ruburger? increased interest in Rubisco as a food protein
Pearce, F.G. and Brunke, J.E. (New Zealand)

12:30 SYM-34-04

Sugar signalling in the transcriptional regulation of shoot branching
Hellens, A.M., Barbier, F.F., Fichtner, F. and Beveridge, C.A. (Australia)

12:45 SYM-34-05

The GABA shunt contributes to ROS homeostasis in guard cells of Arabidopsis
Xu, B., Feng, X., Piechatzek, A., Zhang, S., Kromdijk, J. and Gilliam, M. (Australia, USA and UK)

11:30 – 13:00

SYMPOSIUM 35

BLOOD AND CARDIOVASCULAR DEVELOPMENT

Chairs: Dr Cristina Keightley, La Trobe University, VIC
Dr Chris Slape, University of Queensland, QLD
Dr Anne Lagendijk, University of Queensland, QLD

Location: Eureka Room 2

11:30 SYM-35-01

c-Src is a central modulator of vascular expansion and matrix degradation

Essebieer, P., Schimmel, L., Yordanov, T., Noordstra, I., Yu, A., Claesson-Welsh, L., Stehbens, S., Yap, A., Lagendijk, A. and **Gordon, E.** (Australia and Sweden)

11:50 SYM-35-02

Membrane budding as a mechanism of platelet biogenesis

Taoudi, S. (Australia)

12:10 SYM-35-03

The dynamic interplay between the ECM and cell fate in the developing heart

Garside, V.C., Jeanes, A., Lyer, S.P., Kalish-Smith, J., Coxam, B., Sparrow, D. and Smith, K.A. (Australia and UK)

12:30 SYM-35-04

Real time visualisation of endothelial Erk signalling during angiogenesis and lymphangiogenesis

Okuda, K.S., Keyser, M., Mason, E.A., Patterson, S., Chen, W., Scott, M., Condon, N., Astin, J.W., Distel, M. and Hogan, B.M. (Australia, New Zealand and Austria)

12:45 SYM-35-05

How does the red blood cell lose its nucleus: cell-intrinsic and cell-extrinsic mechanisms of erythroid enucleation

Newton, L.M., Wolwer, C.B., Lim, K., Abeid, D., Hawkins, E.D. and Humbert, P.O. (Australia)

11:30 – 13:00

SYMPOSIUM 36

FUNCTIONAL GENOMICS IN MODEL ORGANISMS

Chairs: A/Prof Kelly Smith, University of Melbourne, VIC
Dr Travis Johnson, Monash University, VIC

Location: Eureka Room 3

11:30 SYM-36-01

The mitochondrial genomic landscape within and across generations

Zuryn, S. (Australia)

11:50 SYM-36-02

Functional genomics meets nutrigenomics: a systematic approach to reveal diets that treat inherited metabolic disease

Martelli, F., Lin, J., Mele, S., Kanca, O., Barlow, C., Christodoulou, J., Schittenhelm, R., Bellen, H.J., Piper, M.D.W. and **Johnson, T.K.** (Australia and USA)

12:10 SYM-36-03 *GSA D.G. Catcheside Prize Lecture*

Defining the transcriptomic signataure of pre-symptomatic Alzheimer's disease using zebrafish genetic models

Barthelson, K., Pederson, S.M., Newman, M., Hin, N. and Lardelli, M. (Australia)

12:30 SYM-36-04

Uncovering the developmental and molecular basis of craniofacial evolution between mammals

Newton, A.H., Feigin, C.Y., Morelande, T., Cooke, L.E. and Pask, A.J. (Australia)

12:45 SYM-36-05

The versatility of the *Xenopus* oocyte expression system for studying membrane proteins

Shafik, S.H., Winning, C.S., Taylor, K.L. and Djordjevic, M.A. (Australia)

11:30 – 13:00

SYMPOSIUM 37

CANCER

Chairs: Dr Ajith Vasanthakumar, Olivia Newton-John Cancer Research Institute, VIC
Dr Sarah Best, Walter & Eliza Hall Institute, VIC

Location: Courtyard Room 1

11:30 SYM-37-01

Epigenetic regulation of cancer immune evasion
Burr, M.L. (Australia)

11:50 SYM-37-02 *Sponsored by The Brain Cancer Centre*

Resolving tumour heterogeneity to develop personalised therapies for brain cancer
Gomez, G.A. (Australia)

12:10 SYM-37-03

Early immune pressure initiated by tissue-resident memory T cells sculpts tumour evolution in non-small cell lung cancer
Asselin-Labat, M.L. (Australia)

12:30 SYM-37-04

Defining the heterogeneity of cellular function during growth and therapy resistance in colorectal cancer
Hlavca, S.C., Chan, W.H., Engel, R.M., Jarde, T., McMurrick, P.J. and Abud, H.E. (Australia)

12:45 SYM-37-05

Keratin 19 contributes to the development of therapy resistance in ovarian cancer
Vogel, I., Zhu, C., Bronger, H., Kiechle, M., Dreyer, T. and **Magdolen, V.** (Germany)

11:30 – 13:00

SYMPOSIUM 38

TARGET DISCOVERY

Chairs: Dr Ameer George, Australian National University, ACT
Dr Kate Jarman, Walter & Eliza Hall Institute, VIC

Location: Hospitality Suite 1

11:30 SYM-38-01

Uncovering new biology by elucidating the targets of cell death inhibitors derived from phenotypic screens
van Delft, M.F., Li, K., Khakham, Y., Yap, Y.Q., Lowes, K.N., Dewson, G., Huang, D.C.S., Kile, B.T. and Lessene, G. (Australia)

11:50 SYM-38-02

Multi-omics approach identifies novel therapeutic targets in SMAD4-deficient oesophageal cancer
Milne, J.V., Fujihara, K.M., Pechlivanis, M., Mcmillan, P.J., Jana, M.K., Jackson, T.D., Simpson, K.J., Duong, C.P., Phillips, W.A. and Clemons, N.J. (Australia)

12:10 SYM-38-03

Molecular targeted therapies for refractory childhood cancers
Somers, K., Karsa, M., Gao, L., Murray, J., Lock, R., Fletcher, J., Norris, M. and Haber, M. (Australia)

12:30 SYM-38-04

A robust high-throughput transcription factor screening platform for discovery of HIF-1 α modulators
Allen, T., Roennfeldt, A., Liu, M., Quinn, R., Peet, D., Bersten, D.C. and Whitelaw, M. (Australia)

12:45 SYM-38-05

A translatable cell-based high throughput screening system to screen for regulators of Factor Inhibiting HIF (FIH)
Roennfeldt, A.E., Allen, T.P., Whitelaw, M.L., Bersten, D.C. and Peet, D.J. (Australia)

11:30 – 13:00

SYMPOSIUM 39

METABOLISM AND NUTRITION

Chairs: Dr Benjamin Parker, University of Melbourne, VIC
Prof Nigel Turner, Victor Chang Cardiac Institute, NSW
Dr David Stroud, University of Melbourne, VIC

Location: Courtyard Room 2

11:30 SYM-39-01

Liver-secreted hexosaminidase A regulates insulin-like growth factor signalling and glucose transport in skeletal muscle

Montgomery, M.K., Bayliss, J., Nie, S., Keenan, S.N., Taddese, A.Z., Gregorevic, P., De Nardo, W., Williamson, N., Watt, K.I. and Watt, M.J. (Australia)

11:50 SYM-39-02

High sugar feeding during fetal development leads to liver metabolic reprogramming and dysfunction in mouse offspring
Lucic-Fisher, S.G., Huang, M.L., Chung, C., Brandon, A., Solon-Biet, S. and **Bell-Anderson, K.S.** (Australia)

12:10 SYM-39-03

A nutrient-hormone axis affecting movement economy
Rose, A.J., Rusu, P.M. and Chan, A.Y. (Australia)

12:30 SYM-39-04

Maternal heterozygosity of neutral amino acid transporter gene *Slc6a19* causes metabolic perturbation and Congenital NAD Deficiency Disorder in mice

Cuny, H., Bozon, K., Kirk, R.B., Sheng, D.Z., Broer, S. and Dunwoodie, S.L. (Australia)

12:45 SYM-39-05

Cholesterol synthesis unleashed: hypoxia induces the proteasomal truncation and constitutive activation of squalene monooxygenase

Coates, H.W., Capell-Hattam, I.M., Olzomer, E.M., Du, X., Farrell, R., Yang, H., Byrne, F.L. and Brown, A.J. (Australia)

11:30 – 13:00

SYMPOSIUM 40

EPIGENETICS AND TRANSCRIPTIONAL CONTROL

Chairs: A/Prof Lee Wong, Monash University, VIC
Dr Alyson Ashe, University of Sydney, NSW

Location: Hospitality Suite 2

11:30 SYM-40-01

Spatiotemporal dynamics of the 3D genome during the development of an immune reaction

Allan, R.S. (Australia)

11:50 SYM-40-02

A new role for a testis-specific epigenetic regulator in cancer
Soboleva, T.A., Jiang, X.Z., Tremethick, D., Hart-Smith, G., Wen, J. and Dahlstrom, J. (Australia)

12:10 SYM-40-03

The 3D genome as a target for epigenetic therapy in breast cancer

Achinger-Kawecka, J., Stirzaker, C., Portman, N., Campbell, E., Chia, K.M., Schmitt, A., Hickey, T.E., Lim, E. and Clark, S.J. (Australia)

12:30 SYM-40-04

A *cis*-regulatory-directed pipeline for the identification of genes involved in cardiac development and disease

Nim, H.T., Dang, L., Thiyagarajah, H., Bakopoulos, D., See, M., Charitakis, N., Sibbritt, T., Eichenlaub, M.P., Archer, S.K., Fossat, N., Burke, R.E., Tam, P.P.L., Warr, C.G., Johnson, T.K. and Ramialison, M. (Australia and Denmark)

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12:45 SYM-40-05

The RNA-binding surface of PRC2 is required for the histone-methylation of chromatin in an RNA-independent manner

Zhang, Q., Gail, E., Flanigan, S., Ng, X., Healy, E. and Davidovich, C. (Australia)

13:00 – 14:30 LUNCH / EXHIBITION / POSTERS

Location: Exhibition Hall

13:30 – 14:30 POSTER SESSION A

Location: Exhibition Hall

14:30 – 16:00

SYMPOSIUM 41

AGGREGATION AND PROTEOSTASIS

Chairs: Prof Margaret Sunde, University of Sydney, NSW
A/Prof Bradley Turner, Florey Institute of Neuroscience
and Mental Health, VIC

Location: Goldfields Theatre

14:30 SYM-41-01

Cellular aging impedes stress-activation of a major protein
disaggregation pathway

Nillegoda, N.B. (Australia)

14:50 SYM-41-02

Selective endosomal autophagy (endophagy) and autophagy
protein quality control in reprogramming proteostasis disease
stress

Apaja, P.M. (Australia)

15:10 SYM-41-03

Genome-wide CRISPR screens to identify modulators of
TDP-43 aggregation in ALS

San Gil, R., Xu, J., Cowley, K.J., Ma, M., Yoon, S., Simpson,
K.J. and Walker, A.K. (Australia)

15:30 SYM-41-04

Arginine-rich C90RF72 ALS proteins stall ribosomes in a
manner distinct from a canonical ribosome-associated quality
control substrate

Kriachkov, V., McWilliam, H.E.G., Mintern, J.D.,
Amarasinghe, S.L., Ritchie, M.E., Furic, L. and Hatters, D.M.
(Australia)

15:45 SYM-41-05

Functional characterisation of the human mitochondrial
disaggregase, CLPB

Baker, M.J., Anderson, A.J., Palmer, C.S., Frazier, A.E. and
Stojanovski, D. (Australia)

14:30 – 16:00

SYMPOSIUM 42

PLANT WATER TRANSPORT AND UTILISATION

Chairs: Dr Megan Shelden, University of Adelaide, SA
Dr Annamaria De Rosa, Australian National University,
ACT

Location: Eureka Room 1

14:30 SYM-42-01

Herb and conifer roots show similar high sensitivity to water deficit

Bourbia, I.B., Pritzkow, C.P. and Brodribb, T.B. (Australia)

14:50 SYM-42-02

Investigating cation-water co-transporting aquaporin roles in plant environmental responses

Qiu, J., McGaughey, S., Tyerman, S. and Byrt, C. (Australia)

15:10 SYM-42-03 NZSPB Michael McManus Award for Best Student Paper Lecture

Drought-induced senescence of *Medicago truncatula* nodules involves serpin and ferritin to control proteolytic activity and iron levels

Dhanushkodi, R., Matthew, C., McManus, M.T. and Dijkwel, P.P. (New Zealand)

15:30 SYM-42-04

Gene regulation in response to changing leaf turgor

Humphreys, J.L., Correa Lozano, A., Brodribb, T.J. and Smith, S.M. (Australia)

15:45 SYM-42-05

Temporal changes in plant-growth promoting rhizobacteria colonisation with drought

Waymouth, V.J., Brumley, D.R., Calabria, J., Ebert, B. and Watt, M. (Australia and Germany)

14:30 – 16:00

SYMPOSIUM 43

MECHANOBIOLOGY

Chairs: Dr Chloe Shard, University of South Australia, SA
Dr Guillermo Gomez, University of South Australia, SA
Location: Eureka Room 2

14:30 **SYM-43-01**

Cerebral cavernous malformation severity is determined by distinct forms of hyaluronic acid in the brain microenvironment

Yordanov, T.E., Martinez, M.A.E., Esposito, T., Labzin, L.I., Stehbens, S.J., Rowan, A., Hogan, B.M., Chen, C.S., Lauko, J. and **Legendijk, A.K.** (Australia and USA)

14:50 **SYM-43-02**

Using surfaces patterned with precise microscale topographies to understand mechanotransduction and direct cell fate

Frith, J.E. (Australia)

15:10 **SYM-43-03**

Multiple pathways of mechanoelectrical transduction in melanoma cells

Patkunarajah, A., Cargando, A.A., Sanderson, G., Schroeter, L., Heu, C. and **Poole K.** (Australia and United Kingdom)

15:30 **SYM-43-04**

Mechanical forces regulate Hippo signalling in epithelial organs via basolateral spot junctions

Kroeger, B., Manning, S.A., Fonseka, Y. and Harvey, K.F. (Australia)

15:45 **SYM-43-05**

Investigating enhanced mesenchymal stem cell performance in the presence of tropoelastin

Al Halawani, A., Yeo, G., Mithieux, S.M. and Weiss, A.S. (Australia)

14:30 – 16:00

SYMPOSIUM 44

EVOLUTION OF DEVELOPMENT

Chairs: A/Prof Craig Smith, Monash University, VIC
A/Prof Maja Adamska, Australian National University,
ACT

Location: Eureka Room 3

14:30 SYM-44-01

Signalling for change: using development to predict animal responses to global change

Mirth, C.K. (Australia)

14:50 SYM-44-02

The role of tissue interactions in the evolution of placentation

Griffith, O.W. (Australia)

15:10 SYM-44-03

Stretched mussels: tracing the genetic basis of resilience to climate change and ocean acidification in green-lipped mussels (*kuku*) from genome to embryo

Kenny, N.J. (New Zealand)

15:30 SYM-44-04

Gene expression divergence between hybrids with extreme adaptive phenotypes

Broad, Z.C., Barton, S., Wilkinson, M.W., Lefevre, J.G., Jung, H., Barbier, F.F., Beveridge, C.A., Donovan, D. and Ortiz-Barrientos, D. (Australia)

15:45 SYM-44-05

Division clusters: evidence for an unexpected mode of oogenesis in *Apis mellifera*

Cullen, G.R., Gilligan, J.B. and Dearden, P.K. (New Zealand)

14:30 – 16:00

SYMPOSIUM 45

METABOLIC DISEASE

Chairs: Dr Adam Rose, Monash University, VIC
Prof Judy de Haan, Baker Institute, VIC

Location: Courtyard Room 1

14:30 SYM-45-01

Redox homeostasis in NAFD pathogenesis

Tiganis, T. (Australia)

14:50 SYM-45-02

Genetic analysis of metabolic syndrome in diversity outbred mice

Stoeckli, J. (Australia)

15:10 SYM-45-03

High salt diets promote a TH17 cell driven gut-bone axis to regulate haematopoiesis and atherosclerosis

Cooney, O.J., Al-Sharea, A., Dragoljevic, D., Marques, F., Lee, M.K.S. and **Murphy, A.J.** (Australia)

15:30 SYM-45-04

Bile acid dysregulation triggers a catabolic program to regulate cancer-associated cachexia

Webb, M.L., Wong, M.M. and Cox, A.G. (Australia)

15:45 SYM-45-05

Disruption of the circadian clock component BMAL1 elicits an endocrine adaption that impacts on insulin sensitivity and liver disease

Weger, B.D., Jouffe, C., Powell, E., Sweet, M. and Gachon, F. (Australia)

14:30 – 16:00

SYMPOSIUM 46

STEM CELLS AND GENOMICS

Chairs: Dr Sara Howden, Murdoch Children's Research Institute,
VIC

Dr Grace Lidgerwood, University of Melbourne, VIC

Location: Hospitality Suite 1

14:30 SYM-46-01

Modeling human brain tissue *in vitro* with patient-derived induced pluripotent stem cells

Bardy, C. (Australia)

14:50 SYM-46-02

Developing unsupervised methods to identify genetic mechanisms controlling cell decisions and functions

Palpant, N. (Australia)

15:10 SYM-46-03

Insight into pluripotency gene control at single locus resolution

Knaupp, A.S., Mohenska, M., Larcombe, M.R., Ford, E., Lim, S.M., Wong, K., Chen, J., Lister, R., Schittenhelm, R.B. and Polo, J.M. (Australia)

15:30 SYM-46-04

The role of the enteric nervous system in regulating the function of the gastrointestinal epithelium

Kaur, J., Jarde, T., Abud, H. and McKeown, S. (Australia)

15:45 SYM-46-05

Spatially resolved transcriptomics exploration in virtual reality

Bienroth, D., Charitakis, N., Jaeger-Honz, S., Garkov, D., Klein, K., Nim, H.T., Schreiber, F. and Ramialison, M. (Australia and Germany)

14:30 – 16:00

SYMPOSIUM 47

SYNTHETIC BIOLOGY

Chairs: Dr Laetitia Hughes, Harry Perkins Institute of Medical Research, WA
Prof Ian Paulsen, Macquarie University, NSW

Location: Courtyard Room 2

14:30 SYM-47-01

Frankenstein Cas9: engineering improved gene editing systems

Rackham, O. (Australia)

14:50 SYM-47-02

Split-GFP biosensor for recombinant protein production in *Pichia pastoris*

Navone, L., Moffitt, K., Hartley, C. and Speight, R. (Australia)

15:10 SYM-47-03

Unraveling and harnessing microbial polyurethane degradation

Semenec, L., Jackson, C., Paulsen, I.P. and **Cain, A.K.** (Australia)

15:30 SYM-47-04

From vinegar to bioplastics with engineered *Vibrio natriegens*: using synthetic biology for sustainable production of poly-3-hydroxybutyrate

Politan, R.J., Cheung, W., Chooi, Y.-H. and Fritz, G. (Australia)

15:45 SYM-47-05

Development of biosensors for diagnostic applications

Guo, Z. (Australia)

14:30 – 16:00

SYMPOSIUM 48

PROTEIN KINASES AND PHOSPHATASES

Chairs: Dr Melissa Pitman, University of Adelaide, SA
Dr Fiona Whelan, University of Adelaide, SA
A/Prof Sandra Nicholson, Walter & Eliza Hall Institute,
VIC

Location: Hospitality Suite 2

14:30 SYM-48-01

Protein Kinase R is an innate immune sensor of proteotoxic stress via accumulation of cytoplasmic IL-24

Davidson, S., Yu, C.H., Steiner, A., Ebstein, F., Jarur-Chamy, V., Hrovart Schaale, K., Laohamonthonkul, P., Poli, M.C., Goldbach Mansky, R. and Masters, S.L. (Australia, Germany, Chile and USA)

14:50 SYM-48-02

Different sites of PKC δ phosphorylation create disparate targetomes with distinct functions

Lonic, A., Belle, L., Nero, T., Nguyen, E., Lim Kam Sian, T., Doughty, L., Gehling, F., Cognard, E., Daly, R.J., Parker, M.W. and **Khew-Goodall, Y.** (Australia)

15:10 SYM-48-03

Phospho-proteogenomic profiling reveals pathways for therapeutic targeting in AML

Murray, H.C., Enjeti, A., Brzozowski, J.S., Kahl, R., Samaraweera, S., D'Andrea, R., Dun, M. and Verrills, N.M. (Australia)

15:30 SYM-48-04

Optogenetic interrogation of c-Jun N-terminal kinase (JNK) signal dynamics delineates contextual functions of the pathway

Didan, Y. and **Ng, D.C.H.** (Australia)

THURSDAY 29 SEPTEMBER 2022

15:45 SYM-48-05

AMPK and mTORC1: novel bi-directional regulation of two key central regulatory pathways

Hoque, A., Ling, N.X.Y., Kaczmarek, A., Davie, E., Smiles, W.J., Morrison, K.R., Ngoei, K.R.W., Scott, J.W., Petersen, J. and Oakhill, J.S. (Australia)

16:00 – 16:25 *AFTERNOON TEA*

Location: *Exhibition Hall*

16:25 – 17:05

PLENARY 13

ASBMB LEMBERG MEDAL AWARD & LECTURE

Chair: Prof Jacqueline Matthews, University of Sydney, NSW
ASBMB President

Location: Goldfields Theatre

PLE-THU-13

How to make a malaria parasite self-destruct

Xie, S.C., Metcalfe, R., Dunn, E., Morton, C., Puhlovich, T., Huang, S.C., Wittlin, S., Luth, M.R., Otilie, S., Winzeler, E., Griffin, M., Brand, S., Langston, S., Dick, L., Gould, A.E. and **Tilley, L.** (Australia, USA and Switzerland)

Professor Leann Tilley



Redmond Barry Distinguished Professor of Biochemistry and Pharmacology Emeritus, The University of Melbourne, Melbourne, Australia
Leann Tilley studied at the University of Melbourne and Sydney University, and worked in the Netherlands and France, before beginning her independent career at La Trobe University in 1989. She was promoted to Professor in 2004; and in 2011, she returned to the University of Melbourne.

Leann's laboratory embraces a range of technologies, such as, novel imaging technologies, structural biology, and molecular cell biology, to identify vulnerabilities in the malaria parasite and other pathogens. She is interested in the action of and resistance to anti-infective drugs; and is working with industry partners to design new drugs. She believes that answering the major medical and biotechnology questions of the 21st century requires convergence of the life and physical sciences; and that the development of drugs for tropical diseases, requires radical new approaches, involving Academic/ Private/ Public partnerships. Leann is passionate about enhancing the roles of women in science.

16:25 – 17:05

PLENARY 14

ASPS PETER GOLDACRE AWARD & LECTURE

Chairs: Dr Peter Ryan, CSIRO Agriculture & Food, ACT
ASPS President
Prof Kathleen Soole, Flinders University of South
Australia, SA

Location: Eureka Room 1

PLE-THU-14

Improving photosynthesis for food and energy security
Ermakova, M. (Australia)

Dr Maria Ermakova



Dr. Ermakova's research focuses on engineering photosynthesis to improve plant productivity. After receiving her PhD from University of Turku, Finland, Maria joined the ARC Centre of Excellence for Translational Photosynthesis at the Australian National University in Canberra. There she worked on genetically engineering model and crop plants, such as *Setaria*, sorghum, rice and tobacco, for better efficiency of light interception and conversion to biomass, with a particular interest in the bioenergetics of C₄ photosynthesis. Maria's work resulted the identification of promising traits that enhance CO₂ assimilation and could help boost biomass and yield in C₄ crops that are becoming increasingly important for Australian agriculture. In 2019, Maria joined the C₄ Rice project, funded by the Gates Foundation, where she worked on installing a C₄ metabolic pathway into rice. Maria's work has achieved important milestones on the way to fully functional C₄ rice, that is projected to increase yields by up to 50%.

16:25 – 17:05

PLENARY 15

GSA M.J.D. WHITE MEDAL AWARD & LECTURE

Chair: A/Prof Lee Ann Rollins, University of New South Wales,
NSW
GSA President
Location: Eureka Room 3

PLE-THU-15

The road to bisulphite sequencing: are we coming to its end?
Frommer, M. (Australia)

Dr Marianne Frommer



Marianne Frommer received her PhD, on the physical biochemistry of muscle proteins, from the University of Sydney in 1976. Following two years of teaching at Cumberland College of Health Sciences, and a career interruption for child-rearing, she took up a position as postdoctoral fellow and subsequently as senior research fellow at the Royal Prince Alfred Hospital, Sydney. Her laboratory was located at CSIRO Division of Biomolecular Engineering, where she carried out pioneering research on

CpG islands and DNA methylation, including the invention of bisulphite sequencing. In 1994, she made a change in direction, moving to the University of Sydney, where she co-founded the Fruit Fly Research Centre. She initiated DNA molecular studies that defined the Australia-wide distribution of Queensland fruit fly and generated promising developments towards its control, including publication of the first tephritid genome sequence. She was elected as a fellow of the Australian Academy of Science in 2010.

17:05 – 17:45

PLENARY 16

ASBMB SHIMADZU MEDAL AWARD & LECTURE

Chairs: Prof Jacqueline Matthews, University of Sydney, NSW
ASBMB President
A/Prof Peter Mace, University of Otago, New Zealand
NZSBMB President

Location: Goldfields Theatre

PLE-THU-16

Eating bad mitochondria through PINK1/Parkin mitophagy
Lazarou, M. (Australia)

A/Prof Michael Lazarou



Michael Lazarou heads a laboratory focused on autophagy and mitochondrial quality control within the Ubiquitin Signalling Division at the Walter and Eliza Hall Institute of Medical Research (WEHI), and is co-affiliated with the Biomedicine Discovery Institute at Monash University.

Michael's graduate studies focused on the assembly of mitochondrial protein complexes and how they break down in energy generation disorders. He undertook his postdoctoral studies in 2010 at the National Institutes of Health, USA where he focused on the Parkinson's disease proteins PINK1 and Parkin and their role in maintaining mitochondrial health. Michael was recruited to the Biomedicine Discovery Institute at Monash University in June 2014, where he established his laboratory, before moving to WEHI as a lab head in 2022. He was the recipient of the 2013 ASBMB Boomerang Award, the 2022 ASBMB Shimadzu Research Medal, and was an ARC Future Fellow (2017–2020). Michael's lab uses multiple imaging modalities, including AI-directed volumetric electron microscopy, combined with gene editing and biochemistry to understand the intricate mechanisms of mitophagy and mitochondrial quality control.

17:05 – 17:45

PLENARY 17

J.G. WOOD AWARD & LECTURE

Chair: Dr Peter Ryan, CSIRO Agriculture & Food, ACT
ASPS President
Prof Kathleen Soole, Flinders University of South
Australia, SA

Location: Eureka Room 1

PLE-THU-17

Genome sequence signatures and the intersection of
conserved and divergent features

Appels, R. (Australia)

Professor Rudi Appels



Professor Rudi Appels is a plant breeder and geneticist. He completed his PhD in the Department of Biochemistry at Adelaide University in 1972 and with funding from the World Health Organisation joined the Karolinska Institute, Stockholm, as a post-doctoral fellow. Rudi then returned to Australia and spent the next 27 years as a research scientist with CSIRO. He continued his plant breeding research in Perth for a further 14 years and currently holds an Honorary Professorship at the University of Melbourne. Since 2004, Rudi has been co-leader of the International Wheat Genome Sequencing Consortium (IWGSC) which was established to compile a high quality sequence of the wheat genome.

17:05 – 17:45

PLENARY 18

GSA ROSS CROZIER MEDAL AWARD & LECTURE

Chair: A/Prof Lee Ann Rollins, University of New South Wales,
NSW

GSA President

Location: Eureka Room 3

PLE-THU-18

Epigenetics, sex and historical responses to rapid
environmental change

Holleley, C.E. (Australia)

Dr Clare Holleley



Clare Holleley is an evolutionary biologist that specialises in historical epigenomics and the epigenetics of environmentally controlled reptile sex determination. She runs the Temporal Epigenomics Lab at the Australian National Wildlife Collection within CSIRO. Clare's team is developing cutting-edge methodologies to reveal temporal trends in the mode and tempo of epigenetic change over the last century. This work is poised to assist in the efforts to understand the biological impacts of altered climate regimes on sentinel vertebrate species such as reptiles, frogs and fish. Clare is passionate about the value of natural history collections for genomic research and is a vocal advocate for the integration of historical insight into contemporary ecological and disease research. Clare has attracted over \$4mill in competitive funding, published 50 papers including Science and Nature, and is known for her scientific communication and outreach efforts.

17:45 – 18:05

ASBMB & NZSBMB AWARD PRESENTATIONS

Chairs: Prof Jacqueline Matthews, University of Sydney, NSW
ASBMB President
A/Prof Dominic Ng, University of Queensland, QLD
ASBMB Secretary
A/Prof Peter Mace, University of Otago, New Zealand
NZSBMB President

Location: Goldfields Theatre

ASBMB Eppendorf Edman ECR Award

To: Dr Wael Awad, Monash University, VIC

ASBMB SDR Scientific Education Award

To: Dr Saw Hoon Lim, University of Melbourne, VIC

ASBMB Fred Collins Award

To: Mr Yanxiang Meng, Walter & Eliza Hall Institute, VIC

ASBMB Fellowship Awards

To: Miss Jacinta Conroy, University of Queensland, QLD
Dr Chris Horne, Walter & Eliza Hall Institute, VIC
Dr Tess Malcolm, University of Melbourne, VIC

**Presentations of Certificates to Long Standing Members
of the ASBMB:**

Dr Anthony Ashton
Professor Tony Burgess
Dr Christopher Driver
Professor Bruce Kemp
Professor Nicos Nicola
Professor Raymond Norton

NZSBMB Custom Science Award

To: Prof Mark Hampton, University of Otago, New Zealand

17:45 – 18:05

ASPS AWARD PRESENTATIONS

Chairs: Dr Peter Ryan, CSIRO Agriculture & Food, ACT
ASPS President
Prof Kathleen Soole, Flinders University of South
Australia, SA

Location: Eureka Room 1

ASPS-FPB Best Paper Award: To be announced.

ASPS Education and Outreach Award

To: The Science Week Team, University of Adelaide, SA:

Dr Beth Loveys
Dr Georgia Koerber
Dr Megan Shelden

THURSDAY 29 SEPTEMBER 2022

17:45 – 18:05

GSA ALAN WILTON TALK & PRESENTATION

Chair: A/Prof Lee Ann Rollins, University of New South Wales,
NSW
GSA President
Location: Eureka Room 3

Dr Livia Gerber, University of New South Wales, NSW

PLE-THU-18A

Social bonds among male dolphins and their effects on fitness and ageing

Gerber, L., Peters, K.J., Krutzen, M. and Rollins, L.A. (Australia, Switzerland and New Zealand)

GSA AWARD PRESENTATIONS

GSA D.G. Catcheside Prize

To: Dr Karissa Barthelson, Flinders University of South Australia, SA

GSA Excellence in Education Award

To: Dr Milos Tanurdzic, University of Queensland, QLD

18:10 – 19:10

ANNUAL GENERAL MEETINGS

Locations:	ASBMB	Goldfields Theatre
	ASPS	Eureka Room 1
	ANZSCDB	Eureka Room 2
	NZSBMB	Courtyard Room 2

08:30 – 09:10

PLENARY 19

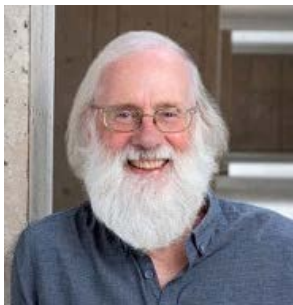
PLENARY LECTURE

Chair: Prof Tony Tiganis, Monash University, VIC
A/Prof Isabelle Lucet, Walter & Eliza Hall Institute, VIC
Location: Goldfields Theatre

PLE-FRI-19

Histidine phosphorylation: a protein regulatory mechanism?
Hunter, T. (USA)

Professor Tony Hunter



Tony Hunter received his BA and PhD from the University of Cambridge, England, and completed postdoctoral training at the Salk Institute. In 1979, he discovered a new class of protein kinases that phosphorylates tyrosine residues in proteins, and demonstrated that dysregulated tyrosine phosphorylation by activated tyrosine kinases causes malignant transformation. His work and that of others has shown that aberrant tyrosine phosphorylation is causal in several types of human cancer, and this

has led to successful development of inhibitors that target disease-causing tyrosine kinases (TKIs), such as Gleevec, a BCR-ABL inhibitor used for treatment of chronic myelogenous leukemia. Currently, 38 TKIs are approved for clinical use in the treatment of cancer and other diseases. Most recently, he has been studying histidine phosphorylation of proteins, and has generated monoclonal antibodies specific for the 1- and 3-phosphohistidine isoforms, and used these to uncover a role for histidine phosphorylation in liver cancer.

08:30 – 09:10

PLENARY 20

PLENARY LECTURE

Chair: Prof Sarah Russell, Peter MacCallum Cancer Centre, VIC
Dr Seb Dworkin, La Trobe University, VIC

Location: Eureka Room 2

PLE-FRI-20

aPKC functions as a rheostat to control epithelial polarity and morphogenesis

St Johnston, D. (United Kingdom)

Professor Daniel St Johnston



Daniel St Johnston did his Ph. D. at Harvard, where he cloned the dorsal-ventral patterning gene *decapentaplegic*. He then spent three years as a postdoc with Christiane Nüsslein-Volhard at the Max Planck Institute in Tübingen, before moving to the Wellcome /Cancer Research UK Gurdon Institute at the University of Cambridge, where he is now a Wellcome Principal Research Fellow and Professor of Developmental Genetics. He is a member of EMBO (1997), a Fellow of the Royal Society (2005) and the Academy of Medical Sciences (2004) and was awarded the EMBO Gold Medal in 2000. He spent his early career analysing the first asymmetries in development that polarize the body axes in *Drosophila*. This has led him to investigate how cells become polarised, how polarity controls the organisation of the cytoskeleton and how the polarised cytoskeleton is used to target components to the correct place in the cell. Much of his current work uses advanced imaging approaches and genetics to study the development of apical-basal polarity in epithelial cells with the aim of understanding how cortical polarity factors control spindle orientation, polarized secretion and the positioning of intercellular junctions in absorptive and secretory epithelia.

08:30 – 09:10

PLENARY 21

PLENARY LECTURE

Chair: Prof Vanessa Hayes, University of Sydney NSW

Location: Eureka Room 3

PLE-FRI-21

Population genetics, kinship practices and social organization in prehistoric societies of Europe through the lens of ancient human DNA

Haak, W. (Germany)

Dr Wolfgang Haak



Wolfgang Haak is a Group Leader at the Max Planck Institute for Evolutionary Genetics in Germany. He works at the interface of ancient human genomics, archaeology, anthropology, medical sciences, forensics and linguistics. He did his PhD at the Johannes Gutenberg University of Mainz, where he studied Anthropology, Paleontology and Pre- and Protohistory. In 2007 he joined the Australian Centre for Ancient DNA at the University of Adelaide as a postdoc leading the ancient human DNA group of National Geographic's The Genographic Project. He returned to Germany in 2015 heading the Molecular Anthropology Group, first at the Max-Planck Institute for the Science of Human History in Jena, and since 2020 in Leipzig, Germany. He is mostly known for analyzing ancient human genome-wide data in the light of data from neighboring disciplines such as archaeology and anthropology to generate a detailed and comprehensive portrait of human prehistory over the last 20,000 years. His research portfolio ranges from global outlooks on population affinities, prehistoric human migrations and past demography to intra-group relationships, which also encompasses human health, evolution of diseases, and interaction and response to changing climates, environments and diets

09:15 – 10:45

SYMPOSIUM 49

PROTEIN REGULATION BY PTMs

Chairs: Prof James Murphy, Walter & Eliza Hall Institute, VIC
Prof Catherine Day, University of Otago, New Zealand
Dr Katherine Davies, Walter & Eliza Hall Institute, VIC

Location: Goldfields Theatre

09:15 SYM-49-01

Structural mapping of the PEAK pseudokinase interactome identifies 14-3-3 as a molecular switch regulating PEAK3/Crk signalling

Roy, M.J., Surudoj, M.G., Kropp, A., Hou, J., Dai, W., Hardy, J.M., Liang, L.-Y., Cotton, T.R., Lechtenberg, B.C., Dite, T.A., Ma, X., Daly, R.J., Patel, O. and **Lucet, I.S.** (Australia)

09:35 SYM-49-02 NZSBMB Custom Science Award Lecture

Redox signalling comes of age

Hampton, M. (New Zealand)

09:55 SYM-49-03

Location, location, location. Using glycoproteomics to understand the substrates and targeting specificities of bacterial PgIL glycosylation systems

Scott, N.E. (Australia)

10:15 SYM-49-04

FBXL4 mediates the degradation of BNIP3 and NIX mitophagy receptors to restrict mitophagy

Nguyen-Dien, G., Kozul, K.L. and **Pagan, J.K.** (Australia)

10:30 SYM-49-05

Dissecting Tribbles pseudokinase function in transcriptional regulation

Mace, P.D. (New Zealand)

09:15 – 10:45

SYMPOSIUM 50

PLANT SUCCESS – ENLISTING THE POWER OF MODELS

Chairs: Prof Christine Beveridge, University of Queensland, QLD
Dr Akila Wijerathna-Yapa, University of Queensland, QLD

Location: Eureka Room 1

09:15 SYM-50-01

Detecting recurrent evolution in Sorghum

Mitchell, J.D., Holland, B.R., Tao, Y., Jordan, D., Mace, E. and Sumner, J.G. (Australia)

09:35 SYM-50-02

An advanced cross-scale model for understanding and quantifying effects of photosynthetic bioengineering on crop growth and yield for supporting crop improvement

Wu, A.W. (Australia)

09:55 SYM-50-03

Modelling hormone signalling networks to better predict branching phenotypes

Fortuna, N.Z., Wijerathna-Yapa, A. and Beveridge, C.A. (Australia)

10:15 SYM-50-04

StomaAI (SAI): fast automated quantification of stomatal parameters on microscope images

Sai, N., Bockman, J.P., Chen, H., Watson-Haigh, N., Xu, B., Feng, X., Shen, C. and Gilliam, M. (Australia)

10:30 SYM-50-05

Dynamics of water, hormone and genetic control of apically mediated bud dormancy in pea

Ray, C., Humphreys, J., Correa Lozano, A., Smith, S. and Brodribb, T. (Australia)

09:15 – 10:45

SYMPOSIUM 51

EPIGENETICS AND TRANSCRIPTIONAL CONTROL

Chairs: A/Prof Pilar Blancafort, Harry Perkins Institute for Medical Research, W.A.
Dr Pilar Dominguez, Peter MacCallum Cancer Centre, VIC

Location: Eureka Room 2

09:15 SYM-51-01

Dynamics and regulation of bivalent chromatin in development and cancer

Ho, W., Seneviratne, J., Fennell, K. and **Eckersley-Maslin, M.** (Australia)

09:35 SYM-51-02

Response and resistance to transcriptional CDK inhibitors - uncovering novel regulators of RNA Polymerase II

Welsh, S., Fan, Z., Devlin, J., Todorovski, I., Gardini, A., Johnstone, R. and **Vervoort, S.** (USA and Australia)

09:55 SYM-51-03

New epigenetic players in diffuse intrinsic pontine glioma

Colino-Sanguino, Y., Rodriguez De La Fuente, L., Kearne, P., Jackson, E., Duchatel, R., Tsoi, M., Ziegler, D., Dun, M. and **Valdes-Mora, F.** (Australia)

10:15 SYM-51-04

MEK1/2 regulates male germline development independent of FGF signalling

Blucher, R., Lim, R., Jarred, E., Blewitt, M., Ritchie, M. and Western, P. (Australia)

10:30 SYM-51-05

The non-catalytic protein ERG28 plays a functional role in mammalian cholesterol synthesis and is co-regulated transcriptionally

Capell-Hattam, I.M., Fenton, N.M., Coates, H.W., Sharpe, L.J. and Brown, A.J. (Australia)

09:15 – 10:45

SYMPOSIUM 52

GENOMES AND HISTORY

Chairs: Prof Vanessa Hayes, University of Sydney, NSW
Prof Damian Dowling, Monash University, VIC

Location: Eureka Room 3

- 09:15** **SYM-52-01**
Modern and ancient gene regulation in Island Southeast Asia
Gallego Romero, I. (Australia)
- 09:35** **SYM-52-02**
How the archaic silk road shaped modern human immunity
Grey, S.T. (Australia)
- 09:55** **SYM-52-03**
Righting the wrongs with indigenous-led genomic sciences
Llamas, B. (Australia)
- 10:15** **SYM-52-04**
National centre for indigenous genomics enabling the
inclusion of indigenous Australians in precision medicine
Patel, H., Hermes, A., Martin-Reis, A., Deveson, I., Easteal,
S. and Mann, G. (Australia)
- 10:30** **SYM-52-05**
Genomic inference of demographic history and mutation load
in the Lord Howe Island stick insect, *Dryococelus australis*
Stuart, O.P., Cleave, R., Pearce, K., Magrath, M. and
Mikheyev, A. (Australia)

09:15 – 10:45

SYMPOSIUM 53

CARDIOVASCULAR DISEASE

Chairs: Prof Chris Sobey, La Trobe University, VIC
A/Prof Anna Calkin, Baker Heart & Diabetes Institute, VIC
Location: Courtyard Room 1

09:15 SYM-53-01

Sex-specific control of human heart maturation by the progesterone receptor

Sim, C.B., Phipson, B., Gregorevic, P., Lal, S., Konstantinov, I.E., Elliott, D.A., El-Osta, A., Oshlack, A., Hudson, J.E. and Porrello, E.R. (Australia)

09:35 SYM-53-02

Regulation of cardiac cellularity and gene expression by gonadal hormones

Pinto, A.R., Squiers, G., McLellan, M., Skelly, D. and Dona, M. (Australia and USA)

09:55 SYM-53-03

G protein-coupled estrogen receptors: novel therapeutic targets in aldosterone-induced hypertension?

Dinh, Q.N., Vinh, A., Kim, H.A., Saini, N., Diep, H., Judkins, C., Drummond, G.R. and Sobey, C.G. (Australia)

10:15 SYM-53-04

Longevity genes that work by reducing risk of death from hypertension, coronary artery disease or diabetes

Morris, B.J., Chen, R., Donlon, T.A., Masaki, K.H., Willcox, D.C., Davy, P.M.C., Allsopp, R.C. and Willcox, B.J. (Hawaii, Australia and Japan)

10:30 SYM-53-05

Novel small molecule mitochondrial Drp1 inhibitors for cardioprotection

Rosdah, A.A., Smiles, W., Lees, J., Oakhill, J., Langendorf, C., Delbridge, L., Lim, S. and Holien, J. (Australia)

09:15 – 10:45

SYMPOSIUM 54

GENE THERAPY

Chairs: Dr Adi Idris, Griffith University, QLD
A/Prof Kaylene Simpson, Peter MacCallum Cancer Centre,
VIC

Location: Hospitality Suite 1

09:15 SYM-54-01

Gene therapy for cone-rod dystrophy: when more isn't better
Rashwan, R., Brunet, A.A., Miller, A.L., Bhatt, Y., Lim, X.R.,
Voigt, V., Fuller-Carter, P.I., Hunt, D.M. and **Carvalho, L.S.**
(Australia)

09:35 SYM-54-02

Application of CRISPR/Cas9-mediated genome editing to
investigate a potential 'Hit-and-Run' mechanism in HPV-
positive oropharyngeal Cancer
Assis Ferreira, D., Idris, a. and McMillan, N. (Australia)

09:55 SYM-54-03

De novo design of CRISPR-Cas13 enables systematic
silencing of undruggable oncogenic fusions with single-base
precision
Hu, W., Kumar, A., Qi, S., Sadras, T., Casan, J.M.L., Ma, D.,
Brown, L.M., Haber, M., Voskoboinik, I., Trapani, J.A.,
Ekert, P.G. and **Fareh, M.** (Australia)

10:15 SYM-54-04

Polymers as delivery agents for short barcode
oligonucleotides in single-cell sequencing
Evans, C.W. (Australia)

10:30 SYM-54-05

Stochastic ribosomal co-localisation on messenger RNA
refines translational control of the cell
Horvath, A., Janapala, Y., Hannan, R.D., Eyraas, E., Preiss, T.
and **Shirokikh, N.E.** (Australia)

09:15 – 10:45

SYMPOSIUM 55

COMPUTATIONAL BIOLOGY

Chairs: Prof Colin Jackson, Australian National University, ACT
Dr Carolyn Hogg, University of Sydney, NSW
Dr Elspeth McLennan, University of Sydney, NSW

Location: Courtyard Room 2

09:15 SYM-55-01

Simultaneous identification of m6A and m5C reveals coordinated RNA modification at single-molecular resolution
Eyras, E. (Australia)

09:35 SYM-55-02

Improving access to bioinformatics to assist with efforts to sequence life on earth
Farquharson, K.A., Belov, K. and Hogg, C.J. (Australia)

09:55 SYM-55-03

A network-based analysis of phosphoproteomics data to identify information flow in signalling networks
Huckstep, H., Mohamed, A., Bhuva, D., Fearnley, L. and **Davis, M.** (Australia)

10:15 SYM-55-04

Robust public computational services supporting genome assembly and annotation for Australian researchers
Nelson, T.M., Christiansen, J.H., Al Bkhetan, Z., Gladman, S., Gorse, D., Gustafsson, O.J.R., Burke, M., Price, G., Stott, A. and Lonie, A. (Australia)

10:30 SYM-55-05

Novel splice variants of chromatin remodelling genes are associated with temperature induced sex reversal in a dragon lizard
Whiteley, S.L., Wagner, S., Deveson, I., Marshall Graves, J.A., Holleley, C.E. and Georges, A. (Australia)

09:15 – 10:45

SYMPOSIUM 56

UBIQUITIN AND UBIQUITIN-LIKE SIGNALLING

Chairs: Dr Natalie Borg, RMIT University, VIC
Dr Rebecca Feltham, Walter & Eliza Hall Institute, VIC
Location: Hospitality Suite 2

- 09:15** **SYM-56-01**
Regulation of the biogenesis/release of extracellular vesicles
by ubiquitination
Farooq, A., Gembus, K., Sandow, J., Webb, A., Mathivanan,
S., Manning, J., Shah, S., Lim, Y., Foot, N. and **Kumar, S.**
(Australia)
- 09:35** **SYM-56-02**
Unexpected roles for ubiquitin in immunity
Mintern, J.D. (Australia)
- 09:55** **SYM-56-03**
Nanotacs - a small tag with big potential
Magtoto, C. (Australia)
- 10:15** **SYM-56-04**
Identification of inhibitors of E2 ubiquitin conjugating
enzymes
Middleton, A.J., McAlpine, J., Zhu, J. and Day, C.L. (New
Zealand)
- 10:30** **SYM-56-05**
Deciphering the molecular mechanism of HOIL-1L, an
unconventional ubiquitin ligase
Wang, X.S., Lee, W.T., Cobbold, S.A. and Lechtenberg, B.C.
(Australia)
-

10:45 – 11:30 **MORNING TEA**
Location: **Exhibition Hall**

11:30 – 13:00

SYMPOSIUM 57

DYNAMICS IN FUNCTION AND DISORDER

Chairs: Prof Megan O'Mara, University of Queensland, QLD
Dr Craig Morton, CSIRO, VIC

Location: Goldfields Theatre

11:30 SYM-57-01

Structures of the interleukin 11 signalling complex reveal dynamics of gp130 extracellular domains and a surprising inhibitory mechanism of a cytokine variant

Metcalf, R.D., Hanssen, E., Fung, K.Y., Aizel, K., Kosasih, C.C., Zlatic, C.O., Doughty, L., Morton, C.J., Leis, A.P., Parker, M.W., Gooley, P.R., Putoczki, T.L. and **Griffin, M.D.W.** (Australia)

11:50 SYM-57-02

Single-molecule studies of DNA replication: the plasticity of the replisome

van Oijen, S.M. (Australia)

12:10 SYM-57-03

Lactoferrin-derived peptides synergistically increase the activity of antifungal drug Amphotericin B.

Hao, Y., Ramakrishnan, B., Fernandes, K., Kulkarni, S., Payne, R., Carter, D. and **Deplazes, E.** (Australia)

12:30 SYM-57-04

Sequence grammar underlying unfolding and phase separation of globular proteins

Ruff, K.M., Choi, Y.H., Cox, D., Ormsby, A.R., Myung, Y., Ascher, D.B., Radford, S.E., Pappu, R. and **Hatters, D.M.** (USA, Australia, UK)

12:45 SYM-57-05

The monomer-dimer dynamics of the C-terminal regulatory domain underpins the enzymatic activity of *Mycobacterium tuberculosis* isocitrate lyase 2

Kwai, B.X.C., Jiao, W., Bhusal, R.P., Bashiri, G. and Leung, I.K.H. (New Zealand and Australia)

11:30 – 13:00

SYMPOSIUM 58

REPRODUCTION AND SEED DEVELOPMENT

Chairs: Dr Jim Weller, University of Tasmania, TAS
Dr Sarah Pilkington, Plant & Food Research, New Zealand
Location: Eureka Room 1

11:30 SYM-58-01

Pectin methylesterase genes control cell wall composition in the germline niche of cereal ovules and affect downstream grain development

Yang, X., Wilkinson, L.G., Aubert, M.K., Shirley, N.J. and **Tucker, M.R.** (Australia)

11:50 SYM-58-02

How do *Plantago ovata* seed capsules shatter?

Burton, R.A., Herliana, L., O'Donovan, L.A., Cowley, J.M. and Bianco-Miotto, T. (Australia)

12:10 SYM-58-03 NZSPB ECR Roger Slack Award Lecture

Arabidopsis keeps its cool: *ICU11* is required for the memory of winter

Bloomer, R., Hutchison, C., Baurle, L., Walker, J., Goodrich, J. and Dean, C. (New Zealand and Scotland)

12:45 SYM-58-04

Mechanical control of seed shape in *Arabidopsis*

Bauer, A., Ingram, G., Golz, J. and Landrein, B. (France and Australia)

11:30 – 13:00

SYMPOSIUM 59

DEVELOPMENT AT THE SINGLE CELL LEVEL

Chairs: A/Prof Alex Pinto, Baker Heart and Diabetes Institute, VIC
A/Prof Delphine Merino, Olivia Newton-John Cancer
Research Institute, VIC

Location: Eureka Room 2

11:30 SYM-59-01

Understanding mouse mammary epithelial lineages during developmental stages

Pal, B., Yunshun, C., Milevskiy, M.J.G., Vaillant, F., Prokopuk, L., Dawson, C.A., Capaldo, B.D., Lindeman, G.J., Smyth, G.K. and Visvader, J.E. (Australia)

11:50 SYM-59-02

Single cell profiling reveals how Prox1 regulates venous to lymphatic endothelial cell differentiation in the developing embryo

Mason, E.A., Grimm, L., Yu, H., Dudczig, S., Panara, V., Chen, T., Bower, N., Paterson, S., Okuda, K.S., Rondon Galeano, M.C., Kobayashi, S., Senabouth, A., Lagendijk, A., Powell, J., Smith, K.A., Koltowska, K. and Hogan, B.M. (Australia and Sweden)

12:10 SYM-59-03

Clonal tracking using LoxCode barcoding identifies heterogeneity in epiblast contribution to fetal organs

Weber, T. S., Biben, C., Mies, D., Hilton, D., Taoudi, S. and Naik, S.H. (Australia)

12:30 SYM-59-04

Exploring WNT-mediated cellular interactions in nephron progenitor maintenance and commitment

Moreau, J.L., Lawlor, K.T., Little, M.H. and Combes, A.N. (Australia)

12:45 SYM-59-05

Role of clusterin (CLU)-expressing cells in promoting chemoresistance in colorectal cancer

Chan, W.H., Hlavca, S., Engel, R.M., Jarde, T., McMurrick, P.J. and Abud, H.E. (Australia)

11:30 – 13:00

SYMPOSIUM 60

EPIGENETICS AND ENVIRONMENTAL VARIATION

Chairs: A/Prof Phillippa Taberlay, University of Tasmania, TAS
Dr Peter Crisp, University of Queensland, QLD

Location: Eureka Room 3

11:30 SYM-60-01

Understanding how the maternal supply of SMCHD1 impacts gene expression in the next generation

Benetti, N., Gouil, Q.A., Keniry, A., Wanigasuriya, I., Beck, T., Lee, H., Ritchie, M.E., McGlenn, E. and **Blewitt, M.E.** (Australia)

11:50 SYM-60-02

Epigenetic sex determination

Graves, J.A.M. and Waters, P.D. (Australia)

12:10 SYM-60-03

Epigenetics and environmental sex determination in the dragon

Georges, A., Whiteley, S., Wagner, S., Graves, J.A.M. and Holleley, C. (Australia)

12:30 SYM-60-04

Chromatin-based gene regulatory mechanisms controlling plant architecture

Humphreys, J., Ray, C., Beveridge, C. and **Tanurdzic, M.** (Australia)

12:45 SYM-60-05

Sex-specific effects of HDACi exposure during development

Campbell, G.J., Hands, E.L., Wallmann, A., Storrar, S.E. and Van de Pette, M. (United Kingdom)

11:30 – 13:00

SYMPOSIUM 61

INFECTION AND IMMUNITY

Chairs: A/Prof Jerome Le Nours, Monash University, VIC
A/Prof Karla Helbig, La Trobe University, VIC

Location: Courtyard Room 1

11:30 SYM-61-01

Viral deactivation of the antiviral state: mechanisms and targeting for vaccine development

Moseley, G.W. (Australia)

11:50 SYM-61-02

A CRISPR toolbox to identify novel pro and cellular restriction factors involved in viral lifecycles

Beard, M.R. (Australia)

12:10 SYM-61-03

Discovery of mRNA modifying enzymes in *Legionella pneumophila*

McCaffrey, K., Garama, D., Alshareef, M., Ng, G. and Hartland, E.L. (Australia)

12:30 SYM-61-04 ASBMB Eppendorf Edman ECR Award Lecture

Molecular insights into metabolite-mediated T cell immunity

Awad, W. (Australia)

12:45 SYM-61-05

The immunopeptidomes of two transmissible cancers demonstrate a dominant peptide motif for major histocompatibility complex molecules

Gastaldello, A., Remarathinam, S.H., Bailey, A., Owen, R., Turner, S., Elliott, T., Skipp, P., Purcell, A.W. and **Siddle, H.V.** (UK and Australia)

11:30 – 13:00

SYMPOSIUM 62

LIGHTENING TALK 1

Chairs: Dr Kim Johnson, La Trobe University, VIC
Prof Marc Kvensakul, La Trobe University, VIC

Location: Hospitality Suite 1

11:30 SYM-62-01

Activation of the insulin receptor without insulin

Kirk, N.S., Wu, Y., Asante, A.L., Hu, H., Espinosa, J.F., Margetts, M.B., Mohamed, F.A., Chen, Q., Barrett, D.G. and Lawrence, M.C. (Australia and USA)

11:35 SYM-62-02

Peptide-bismuth bicycles: stable constrained peptides with superior bioactivity

Nitsche, C. (Australia)

11:40 SYM-62-03

Keeping it in the family: ATG8 proteins as models for protein-metal complex interaction studies

Eade, L.M., Goldstone, D.C. and Hartinger, C.G. (New Zealand)

11:45 SYM-62-04

Blending proteins: democratising access to beautiful molecular landscapes

Johnston, B.A. (Australia)

11:50 SYM-62-05

Self-cyclization as a general and efficient platform for peptide and protein macrocyclization

Chin, Y.K.Y., Jia, X., Crawford, T., Zhang, A., Zhu, Y., Fletcher, N.L., Zhou, Z., Hamilton, B.R., Stroet, M. and Mobli, M. (Australia)

FRIDAY 30 SEPTEMBER 2022

- 11:55 SYM-62-06**
The influence of TMAO and urea on the structural landscape of human islet amyloid polypeptide
Moore, S.J. and Mancera, R.L. (Australia)
- 12:00 SYM-62-07**
Control of plant development by cell-type boundaries
Yu, X., **Wu, Y.**, Bhatia, N., Caggiano, M.P., Ohno, C.K. and Heisler, M.G. (Germany and Australia)
- 12:05 SYM-62-08**
How and why strigolactones repress auxin transport
Zhang, J., Mazur, E., Balla, J., Gallei, M., **Brewer, P.B.** and Friml, J. (China, Czechia, Austria and Australia)
- 12:10 SYM-62-09**
Deciphering aquaporin functional roles in regulating water and ion homeostasis in salt-secreting mangrove *Avicennia marina*
De Rosa, A., Magrath, I., Tristram, A., Ganguly, D., Ball, M. and Byrt, C.S. (Australia)
- 12:15 SYM-62-10**
An association between the circadian clock and senescence in bread wheat (*Triticum aestivum*)
Buckley, C.R. and Haydon, M.J. (Australia)
- 12:20 SYM-62-11**
Do turgor changes trigger abscisic acid (ABA) biosynthesis?
Vo, H.M., Charleston, M., Brodribb, T. and Sussmilch, F.C. (Australia)
- 12:25 SYM-62-12**
Trees need closure, too: how do trees genetically heal?
Karunarathne, S., Bossinger, G., Golz J. and Spokevicius, A. (Australia)

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- 12:30 SYM-62-13**
Virus silencing in honey bees and their mites
Remnant, E.J., Damayo, J., McKee, R., Buchmann, G. and Ashe, A. (Australia)
- 12:35 SYM-62-14**
Understanding the selective forces that maintain mitochondrial haplotypes within populations of *Drosophila melanogaster* using experimental evolution
Kannangara, J.R. and Dowling, D.K. (Australia)
- 12:40 SYM-62-15**
Landscape genetics and persistence of Onchocerciasis transmission in Ghana
Shrestha, H., Hedtke, S.M., Chisholm, R.H. and Grant, W.N. (Australia)
- 12:45 SYM-62-16**
Population genomics indicates transmission of onchocerciasis between project areas is not due to vector migration
Hedtke, S.M., Sirwani, N., Wanji, S., Elias, S., Crawford, K.E. and Grant, W.N. (Australia and Cameroon)
- 12:50 SYM-62-17**
Genomic insights into the failing biocontrol agent *Microctonus hyperodae*
Inwood, S.N., Skelly, J.G. and Dearden, P.K. (New Zealand)
- 12:55 SYM-62-18**
Bacterial effectors bind DDX3X to hitch a ride out of the nucleus to the cytoplasm via exportin-1
Audsley, M.A., Elmazi, S., Sweeney, M.N., Wubben, J., Atkinson, S.A. and **Borg, N.A.** (Australia)

11:30 – 13:00

SYMPOSIUM 63

DRUG DISCOVERY

Chairs: Dr Melissa Pitman, University of Adelaide, SA
Prof Jonathan Baell, MIPS, Monash University, VIC

Location: Courtyard Room 2

11:30 SYM-63-01

Deubiquitinases: opportunities, observations and open questions

Komander, D. (Australia)

11:50 SYM-63-02

The potential of shapeshifting vancomycin dimers as novel antibiotics

Wyllie, J.A., Ottonello, A., Yahiaoui, O., Fallon, T., Moses, J.E. and Soares Da Costa, T.P. (Australia and USA)

12:10 SYM-63-03

Ultra-high throughput, cloud-based compound screening for Dengue virus therapeutic leads

Bruning, J.B., McDougal, D., Eyre, N. and Rajapaksha, H. (Australia)

12:30 SYM-63-04

Probing and modulating the function of the retromer endosomal trafficking complex through the novel macrocyclic peptides

Chen, K.-E., Hill, T.A., Tillu, V.A., Kendall, A.K., Ruan, J., Fairlie, D.P., Ariotti, N., Jackson, L.P., Passioura, T. and Collins, B.M. (Australia)

12:45 SYM-63-05

Identification of novel therapeutic targets in mucinous ovarian cancer

Craig, O., Pilcher, C., Lee, S., Truong, J., Gorrings, K. and **Holien, J.** (Australia)

11:30 – 13:00

SYMPOSIUM 64

BIOLOGY OF AGING

Chairs: A/Prof Gawain McColl, Florey Institute of Neuroscience,
VIC

Prof Victoria Cogger, University of Sydney, NSW

Location: Hospitality Suite 2

11:30 SYM-64-01

Apolipoprotein E and aging: mechanisms and implication for disease

Belaidi, A.A., Bush, A. and Ayton, S. (Australia)

11:50 SYM-64-02

Ageing and disease phenotypes in a tissue specific model of DNA polymerase gamma dysfunction

Bond, S.T., King, E.J., Yang, C., Fang, H., Nath, A., Greening, D., Inouye, M., Meikle, P.J., Henstridge, D.C. and **Drew, B.G.** (Australia)

12:10 SYM-64-03

Rejuvenating old holes in ageing livers, and watching this happen

McCourt, P. (Norway and Australia)

12:30 SYM-64-04

Exercise increases the release of NAMPT in extracellular vesicles to promote healthy aging

Chong, M.C., Silva, A., James, P.F., Wu, S.S.X. and Howitt, J. (Australia)

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12:45 SYM-64-05

The footprint of death

Rutter, S.F., Poon, I.K., Atkin-Smith, G., Hodge, A.L., Ozkocak, D.C., Kang, T., Ratcliffe, J.D., Geoghegan, N. and Rajasekhar, P. (Australia)

13:00 – 14:30 LUNCH / EXHIBITION / POSTERS

Location: Exhibition Hall

13:30 – 14:30 POSTER SESSION B

Location: Exhibition Hall

14:30 – 14:45 PASSPORT DRAW

Location: Exhibition Hall

14:45 – 16:15

SYMPOSIUM 65

MEMBRANE PROTEINS, RECEPTORS, ION CHANNELS

Chairs: Dr Alisa Glukhova, Walter & Eliza Hall Institute, VIC
A/Prof Mehdi Mobli, University of Queensland, QLD
Dr Yanni Chin, University of Queensland, QLD

Location: Goldfields Theatre

14:45 SYM-65-01

The membrane attack complex: studying the assembly pathway of a membrane-inserted complex
Ho, B., Bayly-Jones, C., Walsh, J.C., Boecking, T., Spicer, B.A. and **Dunstone, M.A.** (Australia)

15:05 SYM-65-02

Calcium-gated potassium ion channel activity and modulation
Flood, E., Corbett, K., Nimigean, C.M. and **Allen, T.W.** (Australia and USA)

15:25 SYM-65-03

Two for one: the clinical candidate xanomeline displays a dual orthosteric and allosteric binding profile at the M4 muscarinic acetylcholine receptor
Thal, D.M. (Australia)

15:45 SYM-65-04

Ion currents through KIR potassium channels are gated by anionic lipids
Black, K.A., Jin, R., He, S., Gulbis, J.M. and Smith, B.J. (Australia)

16:00 SYM-65-05

Structure, function and evolution of the orally active insecticidal toxin complex, YenTc
Landsberg, M.J. (Australia)

14:45 – 16:15

SYMPOSIUM 66

PLANTS AND THEIR ENVIRONMENTS

Sponsored by [Plant-Environment Interactions](#)

(an open access journal published by Wiley)

Chairs: Prof Susanne Schmidt, University of Queensland, QLD
Prof Ros Gleadow, Monash University, VIC
Prof Owen Atkin, Australian National University, ACT

Location: Eureka Room 1

14:45 SYM-66-01

The effects of nitrogen form on the water use of Australian tropical tree seedlings

Krishnan, V., Robinson, N., Firn, J., Herbohn, J. and Schmidt, S. (Australia)

15:05 SYM-66-02

X-ray computed tomography imaging for rapid and automated 3D cereal spike phenotyping

Lou, H., Tanjung, G., Clarke, K. and Berger, B. (Australia)

15:25 SYM-66-03

Coordination of plant photosynthetic properties across climate and soil gradients

Westerband, A.C. and Wright, I.J. (Australia)

15:45 SYM-66-04

Prior knowledge-driven branching phenotype prediction for shoot architecture improvement

Wijerathna-Yapa, A., Fortuna, N., Cooper, M. and Beveridge, C. (Australia)

16:00 SYM-66-05

Root morphological traits and arbuscular mycorrhizal symbioses mediate salt tolerance in maize

Chen, Y. and Wang, H. (Australia and China)

14:45 – 16:15

SYMPOSIUM 67

iPSC, STEM CELLS AND CELL FATE

Chairs: A/Prof Robin Hobbs, Hudson Institute of Medical Research, VIC
Dr Thierry Jarde, Monash University, VIC
Dr Seb Dworkin, La Trobe University, VIC

Location: Eureka Room 2

14:45 SYM-67-01

Investigating kidney development to guide cellular engineering
Piran, M., Powell, D.R. and **Combes, A.N.** (Australia)

15:05 SYM-67-02

Leveraging spatial transcriptomics to study organ ageing
Kanupriya, T., Alhomrani, M., Zhang, J., Teoh, M., Nguyen, Q. and **Nefzger, C.M.** (Australia)

15:25 SYM-67-03

Large-scale iPSC modelling of complex retinal disease
Pebay, A. (Australia)

15:45 SYM-67-04

CRIPTO promotes pluripotency and malignancy of the male germline in mice
Spiller, C.M., Burnet, G., Feng, C.W. and Bowles, J. (Australia)

16:00 SYM-67-05

Identification and lineage tracing of mesendoderm progenitor cells in mammalian embryo
Masamsetti, P., Kim, H., Aryamanesh, N., Westherstone, M., Sun, J., Osteil, P., Yang, P. and Tam, P. (Australia)

14:45 – 16:15

SYMPOSIUM 68

EVOLUTIONARY GENETICS

Chairs: A/Prof Charles Robin, University of Melbourne, VIC
Prof John Bowman, Monash University, VIC

Location: Eureka Room3

14:45 SYM-68-01

Do endosymbionts affect sexual ornament expression in butterflies?

Wedell, N. (Australia and United Kingdom)

15:05 SYM-68-02

Indigenous Australian genomic variation reveals deep population structure

Leslie, S., Silcocks, M., Farlow, A., Hermes, A., Tsambos, G., Patel, H., Huebner, S., Vukcevic, D. and Eastale, S.
(Australia)

15:25 SYM-68-03

Insights into the dynamics of species range expansion by hybridisation in Tasmanian eucalypts

Jones, R.C., Pfeilsticker, T.R., Steane, D.A., Harrison, P.A., Vaillancourt, R.E. and Potts, B.M. (Australia)

15:45 SYM-68-04

Analysis of the Y-linked anti-mullerian hormone gene-the candidate master sex determining gene of monotremes

Shearwin-Whyatt, L., Fenelon, J., Yu, H., Galbraith, J., Shearwin, K., Adelson, D., Renfree, M. and Grutzner, F.
(Australia)

16:00 SYM-68-05

Stop and smell the roads: genomic techniques unlock the secrets of a novel nematode living within a toxic invader

Eyck, H.J.F., Brown, G.P., Zhou, J., Edwards, R.J., Stewart, A., Shine, R., Rodriguez Lopez, C.M. and Rollins, L.A.
(Australia and USA)

14:45 – 16:15

SYMPOSIUM 69

COVID-19

Chairs: Prof Wei-Hong Tham, Walter & Eliza Hall Institute, VIC
Dr Dimitra Chatzileontiadou, La Trobe University, VIC
Prof Paul Young, University of Queensland, QLD
Prof Stephanie Gras, La Trobe University, VIC

Location: Courtyard Room 1

14:45 SYM-69-01

Immunological features of SARS-CoV-2 breakthrough infection

Juno, J.A. (Australia)

15:05 SYM-69-02

Rapid resolution of contemporary SARS CoV-2 variants

Turville, S.G., Aggarwal, A., Anouschka, A., Milogiannakis, V., Kidinger, A., Ruiz Silva, M. and Walker, G. (Australia)

15:25 SYM-69-03

Neurotoxic amyloidogenic peptides in the proteome of SARS-Cov2; potential implications for neurological systems in COVID-19

Reynolds, N.P., Charnley, M., Berryman, J.T., Hulett, M.D. and Mezzenga, R. (Australia, Luxembourg and Switzerland)

15:45 SYM-69-04

An effective intranasal RNAi therapy against SARS-CoV-2

Supramaniam, A., Tayyar, Y., Morris, K., McMillan, N.A.J. and **Idris, A.** (Australia)

16:00 SYM-69-05

Structural characterization of SARS-CoV-2 spike derived peptides presented by the Human Leukocyte Antigen A*29:02

Murdolo, L., Swaminathan, S., Szeto, C., Smith, C. and Gras, S. (Australia)

14:45 – 16:15

SYMPOSIUM 70

LIGHTENING TALK 2

Chairs: Prof Marnie Blewitt, Walter & Eliza Hall Institute, VIC
Dr Wilson Wong, Hudson Institute of Medical Research,
VIC

Location: Hospitality Suite 1

14:45 SYM-70-01

Phosphorylation of alpha-enolase regulates nuclear transport and cytoskeletal organisation in triple negative breast cancer
Marshall, M.L., Jans, D.A., Fung, K.Y.C. and Wagstaff, K.M. (Australia)

14:50 SYM-70-02

Frozen in time - the aftermath of plant-fungal interaction
Moolhuijzen, P., Sanglard, L.M.V.P., Paterson, D.J., Gray, S., Khambatta, K., Hackett, M.J., Zerihun, A., Gibberd, M.R. and **Naim, F.** (Australia)

14:55 SYM-70-03

Investigating the role of the inflammatory enzyme Heparanase in atherosclerosis
Nguyen, T., Paone, S., Baxter, A., Phan, K., Mayfosh, A., Chen, E., Poon, I., Thomas, S. and Hulett, M. (Australia)

15:00 SYM-70-04

Hereditary xanthinuria in Australian Munchkin cats
Pritchard, E., Gowan, R., O'Brien, C., Wall, M., Mizzi, K., Kicinski, A., Samaha, G., Boland, L. and Waud, B. (Australia)

15:05 SYM-70-05

Congenital NAD deficiency disorder: causes and possible prevention
Szot, J.O., Cuny, H., Martin, E.M.M., Iyer, K., Alankarage, D., Chapman, G. and Dunwoodie, S.L. (Australia)

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- 15:10 SYM-70-06**
Diurnal regulation of hepatic protein processing and secretion
Weger, M., Parton, R.G., Johnston, J., Templeman, I. and Gachon, F. (Australia and UK)
- 15:15 SYM-70-07**
Structural basis of resistance to herbicides that target acetoxyacid synthase
Lonhienne, T., **Cheng, Y.**, Garcia, M., Hu, S.H., Low, Y.S., Schenk, G., Williams, C. and Guddat, L. (Australia and Ecuador)
- 15:20 SYM-70-08**
Human arylamine N-acetyltransferase 1 expression alters mitochondrial function in metabolic diseases
Choudhury, C., Butcher, N. and Minchin, R. (Australia)
- 15:25 SYM-70-09**
How do microbes swap their allosteric enzymes?
Compton, J.A., Yosaatmadja, Y., Bashiri, G., Vickers, C.J. and Patrick, W.M. (New Zealand)
- 15:30 SYM-70-10**
Unlocking the role of *meso*-DAP and lysine for growth and pathogenicity in *Pseudomonas aeruginosa*
Hawkins, D.A., Impey, R.E., Hind, C.K., Sutton, J.M. and Soares da Costa, T.P. (Australia and UK)
- 15:35 SYM-70-11**
Repurposing the *Plasmodium falciparum* mitosis mechanism to drive cellular elongation and chromosomes reorganization in gametocytes
Li, J., Shami, G., Cho, E., Liu, B., Hanssen, E., Dixon, M. and Tilley, L. (Australia)
- 15:40 SYM-70-12**
The lipidomic signatures of colorectal cancer
Salita, T., Rustam, Y.H., Mouradov, D., Sieber, O.M. and Reid, G.E. (Australia)

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- 15:45** **SYM-70-13**
Protective role of succinate dehydrogenase assembly factor 2 (SDHAF2) during OXPHOS dysfunction
Roopasingam, K., Sacharz, J., Muellner-Wong, L. and Stroud, D. (Australia)
- 15:50** **SYM-70-14**
Antifungal and lipid-binding activity of crocodile defensin CpoBD13 is dependent on a histidine-mediated pH switch
Williams, S., Lay, F., Bindra, G., Banjara, S., Phan, K., Kvensakul, M. and Hulett, M. (Australia)
- 15:55** **SYM-70-15**
Grainyhead-like target genes in craniofacial development and disease
Fuller, J. and Dworkin, S. (Australia)
- 16:00** **SYM-70-16**
From heart to brain: leveraging genomics data to investigate the anti-depressive effects of statins
Jiang, J.C., Hu, C., McIntosh, A.M. and Shah, S. (Australia and UK)
- 16:05** **SYM-70-17**
Targeting the PI3K-Hippo-ERK signalling crosstalk network to devise effective combinatorial treatment for breast cancer
Hoang, N., Ghomlaghi, M., Zhang, T., Shin, S. and Nguyen, L.K. (Australia)
- 16:10** **SYM-70-18**
Investigating disease-causing mutations of the cholesterol synthesis enzyme NSDHL
Fitzsimmons, D.M., **Fenton, N.M.**, Capell-Hattam, I.M. and Brown, A.J. (Australia)

14:45 – 16:15

SYMPOSIUM 71

MITOCHONDRIA IN HEALTH AND DISEASE

Chairs: Dr Diana Stojanovski, University of Melbourne, VIC
Dr Luke Formosa, Monash University, VIC

Location: Courtyard Room 2

14:45 **SYM-71-01**

Mitochondria, ubiquitin and pathological cell death

Dewson, G. (Australia)

15:05 **SYM-71-02**

A cancer rheostat that regulates nuclear and mitochondrial gene expression

Filipovska, A. (Australia)

15:25 **SYM-71-03**

Optimising the prescription of exercise for mitochondrial health

Bishop, D.J. (Australia)

15:45 **SYM-71-04 *Melbourne Protein Group SIG Lecture***

Mitochondrial COA7 is a heme-binding protein with disulfide reductase activity, which acts in the early stages of complex IV assembly

Formosa, L.E., Maghool, S., Sharpe, A.J., Reljic, B., Meullner-Wong, L., Stroud, D.A., Ryan, M.T. and Maher, J.M. (Australia)

16:00 **SYM-71-05**

Landscape of mitochondrial proteostasis governed by the UPR-MT

Uoselis, L., Lindblom, R., Skulsuppaisarn, M., Schittenhelm, R. and Lazarou, M. (Australia)

14:45 – 16:15

SYMPOSIUM 72

IMAGING TECHNOLOGY/SYSTEMS MICROSCOPY

Chairs: Dr John Lock, University of New South Wales, NSW
Dr Renee Whan, University of New South Wales, NSW
Location: Hospitality Suite 2

- 14:45** **SYM-72-01**
Piezo1 channels as regulators of integrin-mediated focal adhesions in cardiac fibroblasts
Cheng, D., Zhou, Z., Li, J., Yao, M. and Cox, C.D. (Australia and China)
- 15:05** **SYM-72-02**
4D lattice light sheet microscopy of malaria disease
Geoghegan, N.D., Evelyn, C., Whitehead, L.W., McConville, R., Pasternak, M., Healer, J., Boddey, J., Cowman, A.F. and Rogers, K.L. (Australia)
- 15:25** **SYM-72-03**
Visualising subcellular real-time heterogeneities orchestrating mouse preimplantation embryogenesis
Hawdon, A., Geoghegan, N.D., Elsenhans, A., Ferguson, C., Parton, R.G. and Zenker, J. (Australia and Germany)
- 15:45** **SYM-72-04**
TMEM41B and VMP1 are scramblases and regulate the distribution of cholesterol and phosphatidylserine
Li, Y., Du, X., Qi, S. and Yang, H. (Australia and China)
- 16:00** **SYM-72-05**
The Keap1-Nrf2 pathway regulates TFEB/TFE3-dependent lysosomal biogenesis
Ong, A.J.S., Evason, K.J., Brown, K.K. and **Cox, A.G.**

16:20 – 17:00

PLENARY 22

ASBMB GRIMWADE KEYNOTE LECTURE

Chair: Prof Ian van Driel, University of Melbourne, VIC
Dr Laura Edgington-Mitchell, University of Melbourne,
VIC

Location: Goldfields Theatre

PLE-FRI-22 - virtual live talk

Genes from the Fountain of Youth

Kenyon, C. (USA)

Professor Cynthia Kenyon



Cynthia Kenyon is Vice President, Aging Research, at Calico and expert on the genetics of aging. In 1993, Cynthia's discovery that a single-gene mutation could double the lifespan of the roundworm *C. elegans* has led to a new understanding of the genetics of aging. She has received many honors and awards for her findings. Cynthia graduated valedictorian in chemistry and biochemistry from the University of Georgia in 1976. She received her PhD from MIT in 1981, and then did postdoctoral studies with Nobel laureate Sydney Brenner at the MRC Laboratory of Molecular Biology in Cambridge, UK. From 1986 she was at the University of California, San Francisco, where she was the Herbert Boyer Distinguished Professor and an American Cancer Society Professor. In 2014 she joined Calico. She is a member of the US National Academy of Sciences, the American Academy of Arts and Sciences, and the Institute of Medicine and she is a past president of the Genetics Society of America.

FRIDAY 30 SEPTEMBER 2022

17:00 – 17:20

**CLOSING CEREMONY
&
SOCIETY AWARD PRESENTATIONS**

Location: Goldfields Theatre

Prof Jacqueline Wilce, Monash University, VIC
ComBio2022 Conference Chair

Prof Mark Hulett, La Trobe University, VIC
ComBio2022 Program Chair

Prof Jacqueline Matthews, University of Sydney, NSW
ASBMB President

Dr Peter Ryan, CSIRO Agriculture & Food, ACT
ASPS President

Prof Kieran Harvey, Peter MacCallum Cancer Centre/
Monash University, VIC
ANZSCDB President

A/Prof Lee Ann Rollins, University of New South Wales, NSW
GSA President

A/Prof Peter Mace, University of Otago, New Zealand
NZSBMB President

17:20 – 18:30 CLOSING DRINKS

Location: Goldfields Foyer
