

The Royal Society of Victoria

Promoting science since 1854

SCIENCE VICTORIA

NEWS FROM THE ROYAL SOCIETY OF VICTORIA

JULY 2021

ACCLIMATISE.

Welcome to National Science Week 07



Climate Notes
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THE OFFICIAL
NEWSLETTER OF
RSV

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08

News and notices



New RSV Members

Mr Gordon Chisholm
BARRISTER

Mr Gordon Noble
DIRECTOR GNBK ADVISORY

Ms Dorothy McLaren
HEALTH PROMOTION MANAGER WEST
WIMMERA HEALTH SERVICE

Professor Bronwyn Fox,
CHIEF SCIENTIST, CSIRO



Unless Members request a ballot, these will be considered by Council and, if elected, will be confirmed at the next Ordinary Meeting of the Royal Society of Victoria.



Local Implementation of Global Goals - Progress on the Marine and Coastal Environment 2021 Report

I wanted to share an update on how we're building on the United Nations Sustainable Development frameworks and policy, to operationalise the Sustainable Development Goals (SDGs) locally through our work in Victoria - tracking progress on the SDGs at a subnational level and supporting how we manage against the SDGs locally, at place.

In a nutshell, this is how we do it: my team and I are currently working on the State of the Marine and Coastal Environment 2021 Report, which will report against 87 indicators – all aligned with SDG targets. However, we know that a subset of these indicators will be more relevant than others, uniformly, for coastal managers across Victoria, and we are collaborating with them to find out which ones.

On 26 May we delivered our 'Uniform local indicators for the State of the Marine and Coastal Environment 2021 Report workshop' in collaboration with the Royal Society of Victoria. The workshop was opened by the Minister, the Hon. Lily D'Ambrosio, and brought together coastal managers from a range of organisations, including catchment management authorities, local councils, the Department of Environment, Land, Water and Planning, Parks Victoria and a range of non-government and volunteer organisations including Landcare, CoastCare and other community members, to determine the subset of indicators that uniformly apply, for coastal managers across Victoria.

These uniform local indicators are important for local management practices - areas where local action can make a big difference for the environment - as well as contributing to state level reporting, without additional monitoring requirements. In this way we are tracking against the SDGs at a subnational level and managing against the SDGs locally.

Discover more about the Commissioner for Environmental Sustainability's approach to localising the SDGs at <https://www.ces.vic.gov.au/articles/getting-down-nitty-gritty-implementing-un-sustainable-development-goals-locally>.



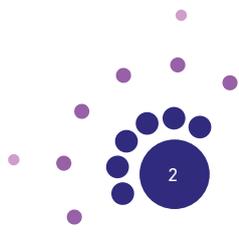
SCIENCE VICTORIA

Monthly newsletter of the RSV
THE ROYAL SOCIETY OF VICTORIA INC.
The Royal Society of Victoria
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Melbourne, Victoria 3000

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COVER IMAGE: Acclimatise



Dr Gillian Sparkes AM MRSV,
COMMISSIONER FOR ENVIRONMENTAL
SUSTAINABILITY



SEEKING EXPRESSIONS OF INTEREST: mRNA VICTORIA INDUSTRY PANEL

Victorian Government Initiative



Supported by



mRNA Victoria Industry Panel

mRNA Victoria, in collaboration with AusBiotech and BioMelbourne Network, is seeking companies with relevant industry experience in mRNA or RNA-related manufacture, supply chain and systems support, to self-nominate for the Industry Panel. The Industry Panel will meet as required to support mRNA Victoria including the Scientific Advisory Group.

mRNA Victoria's Mission Statement

mRNA Victoria, a newly established initiative, is responsible for the Victorian Government's commitment to establish a world-class Victorian mRNA and RNA industry by supporting supply chain and R&D for pre and clinical research, commercialisation and manufacturing investments. mRNA Victoria identifies key capabilities, gaps and opportunities and leads the engagement and partnership with domestic and international companies, researchers and stakeholders on behalf of the Victorian Government, to build RNA capability and supply chain through a suite of investments and programs. [Read more >>](#)

Interested to participate?

Register your expression of interest no later than Thursday 8 July 2021.

Registrants may be contacted and asked to provide further information once the initial EOI has been submitted.



The Victoria Prize for Science and Innovation celebrates leadership, determination and creativity, highlighting the many ways in which research and development of international significance are conducted in Victoria.

The following stage cannot be undertaken until a nomination has been submitted;

Two Referee Reports to be received by 5.00pm (AEST) Monday, 26 July 2021

All eligible nominations for the Victoria Prize for Science and Innovation will be considered by the Selection Panel. The Selection Panel will be drawn from leading members of Victoria's science, engineering and technology sectors. The panel may seek assistance from appropriate learned specialists, professional associations or consultants. The Selection Panel will, in its absolute discretion, select the proposed recipients of the Victoria Prize for Science and Innovation on the basis of the Key Criteria. The Selection Panel's recommendations are submitted to the Minister for Innovation, Medical Research, and the Digital Economy.

The recommendations of the Selection Panel are final and appeals will not be considered. The Victorian Government and veski reserve the right not to award a Victoria Prize for Science and Innovation in any given year. The total value of each Prize will remain at \$50,000 and will be evenly apportioned between joint recipients.

Obligations of recipients

Each nominee shall give permission for details contained in the nomination to be released to the nomination process & eligibility members of the selection panel and referees (both those listed in the nomination form and external referees) for the purposes of the selection process. Whenever such material is considered by the selection panel or referees, this information and details of their deliberations and recommendations will remain confidential, except for information that is required to be disclosed by law or used by an employee of veski in carrying out their duties. Nominees should note that a description of the work being acclaimed and images of the recipients will be publicised.

Eligibility

Candidates for the Victoria Prize must be nominated by an individual, a group of individuals or a professional association. Self-nominations will be excluded.

Nominees should be active in research. Their field of endeavour may be in:

- research (pure or applied); or
- development (for example, implementation of research outcomes in an industrial setting).

Eligibility for the Victoria Prize for Science & Innovation is limited to Australian citizens or permanent residents who:

- have been resident in Victoria for at least the three years prior to the closing date of the call for nominations; and
- have performed the major part of the work being acclaimed within Victoria.

Other major collaborators involved in the discovery or innovation, or potential discovery or innovation must be referenced within the nomination process & eligibility

Recipients of other professional, state, national or international awards are eligible for the Victoria Prize for Science & Innovation, providing they meet all eligibility criteria.

Life Sciences

The Life Sciences category comprises the fields of science that involve the scientific study of living organisms and their life processes and ecosystems, covering fields such as biology, medicine or anthropology.

Physical Sciences

The Physical Sciences category encompasses the branches of science that study non-living systems, including but not limited to fields such as physics, chemistry,

earth sciences, engineering, ICT, mathematics and statistics, or astronomy.

Joint-appointment

The Victoria Prize for Science and Innovation is typically awarded to an individual. It is recognised, however, that outstanding achievement is often the result of long-term collaboration between individuals making equivalent and complementary contributions. The Prize, therefore, may be awarded to a maximum of two individuals in each category, if the outstanding achievement can be clearly shown to be the outcome of a long-term collaboration. 🗨️

[The RSV congratulates its 2020 Research Medallist, Professor Bronwyn Fox, on her appointment as CSIRO's new Chief Scientist.](#)

CSIRO appoints new Chief Scientist

CSIRO, Australia's national science agency, has appointed Professor Bronwyn Fox as Chief Scientist, close to 30 years after she began her career with CSIRO as a research assistant

Professor Fox, CSIRO's fourth female Chief Scientist, joins the agency from Swinburne University of Technology, where she is Deputy Vice-Chancellor (Research and Enterprise).

CSIRO Chief Executive Dr Larry Marshall said Professor Fox brings great depth of scientific experience to the role.

"Bronwyn exemplifies the CSIRO way – driven to deliver, brilliant but humble, leading by listening, and a generous collaborator," Dr Marshall said.

"She has a long history of bringing together researchers from across multiple scientific domains and



institutions, leveraging digital science, and helping industry to translate brilliant ideas into real world solutions.

"Her sustained commitment to supporting the growth of the manufacturing industry in Australia strongly supports our purpose to deliver solutions from science that drive Australia's economic recovery and resilience."

As a materials and engineering scientist, Professor Fox was the founding Director of Swinburne's Manufacturing Futures Research Institute, with a mission to support the transition of Australia's manufacturing sector to Industry 4.0 – the fourth industrial revolution.

Professor Fox said she had worked with CSIRO scientists for close to 30 years.

"It is wonderful to return to CSIRO as Chief Scientist after starting as a 22-year-old research assistant, and to be able to champion science research and capability, working with industry and fostering STEM careers," Prof Fox said.

"The depth of scientific research at CSIRO and its committed people are a unique and special national treasure and I look forward to taking up the role."

Professor Fox is Chair of the Australian Academy of Technology and Engineering (Victorian Division), a Fellow of the Academy of Technological Sciences and Engineering (ATSE), a Fellow of the Royal Australian Chemical Institute (RACI) and a Graduate of the Australian Institute of Company Directors (GAICD). 🗨️



Events for the month



LECTURE

Thursday 8 July, 2021

6:30 PM - 8:00 PM

Decarbonising Energy:
At the Tipping Point

Mr Simon Holmes à Court

SENIOR ADVISER TO THE CLIMATE AND
ENERGY COLLEGE, ENERGY TRANSITION HUB,
THE UNIVERSITY OF MELBOURNE

Australia installed more renewable generation in the last three years than in the thirty years prior. It seems that every week a new renewable energy record

is smashed. Yet despite this, Australia has the highest per-capita greenhouse emissions of any advanced economy, we're on track to miss our Paris Agreement commitments and we're nowhere near achieving net zero.

How did we get here,
and how can we turn
it around?

COLLABORATIVE
EVENT

Wednesday 14 July, 2021

6:00 PM - 7:00 PM

STEM and Society:
A Hard-Won Theory -
Tectonic Plates in Victoria

Mr Jerome Holleman

HEAD OF MIDDLE SCHOOL,
NORTHCOTE HIGH SCHOOL

Dr William Birch AM

EMERITUS CURATOR (GEOSCIENCES),
MUSEUMS VICTORIA

Professor Andy Gleadow

PROFESSORIAL FELLOW
(THERMOCHRONOLOGY),
THE UNIVERSITY OF MELBOURNEAssociate Professor Sandra
McLaren

GEOLOGIST, UNIVERSITY OF MELBOURNE

Professor Peter Betts

GEOLOGIST, MONASH UNIVERSITY

In a 'post-truth' society, fuelled by soundbites and status updates, opinions and personal theories are often presented with unwavering certainty but remain untested.

In this climate, it can be confusing when we hear from scientists reluctant to deal in absolutes, who instead engage in conversations about 'degrees of certainty'. In the

world of science, a 'theory' is the closest something may ever come to being 'the truth'.

To understand what modern scientists can go through to arrive at an accepted theory, we're taking a look at one of the major revelations of the past century: the theory of tectonic plates. This theory describes how the enormous fragments of our planet's shell move against, over and under one another at their boundaries to slowly change the shape and location of our continents and oceans.

In this special online discussion, you'll meet four eminent Victorian geologists who, not so long ago, started out as university students to find themselves amid a global battle of contesting ideas. Hear about their experience as a fiercely held status-quo gave way to a hard-won new theory within the international scientific community.

Our panel of experts will be joined by teacher **Jerome Holleman** and his students from Northcote High School, who have been taking part in the Big History learning program that aims to connect knowledge across disciplines and challenge students to embrace science, think critically, solve problems and drive innovation. 🎧


 Advance Notice

Talks, Tours, Lectures, Conferences & Symposia

The Royal Society of Victoria offers a rich program of events concerned with science in Victoria and its place in our society. Our "ordinary meetings" represent our core lecture program, generally provided on the second and fourth Thursday of the month. The

lectures are low cost and open to the public, free to our members. Evening lectures generally start at 7:00pm; the venue is the Society's Ellery Theatre, upstairs at 8 La Trobe Street, Melbourne. We also convene ad-hoc events, forums and conferences each month with our partners, and occasionally host events at other locations around the state.

For a small cost, members and guests are invited to socialise and network over food and drink ahead of

our lectures; tickets for both lectures and social components are available from each event's page. The listings below provide details of all currently programmed events.

Statewide events convened under the Inspiring Victoria program, including National Science Week events, are generally listed on the related website maintained by the Society:

inspiringvictoria.org.au



Upcoming EVENTS

Event type	Title	Presenter & Details
LECTURE Thursday 19 August, 2021 6:30 PM - 9:30 PM	Young Scientist Research Prizes Competition: Presentations, Judging and Prize Ceremony	Earth Sciences: FINALISTS TO BE ADVISED <hr/> Biological (non-human) Sciences: FINALISTS TO BE ADVISED <hr/> Physical Sciences: FINALISTS TO BE ADVISED <hr/> Biomedical & Health Sciences: FINALISTS TO BE ADVISED
LECTURE Thursday 23 September, 2021 6:30 PM - 8:00 PM	Foodprint Melbourne: Building the Resilience of Melbourne's Food System	Dr Rachel Carey LECTURER IN FOOD SYSTEMS, THE UNIVERSITY OF MELBOURNE
COLLABORATIVE Friday 13 August, 2021 6:30 PM - 7:45 PM	Indigenous Food and Agriculture	Luke Williams RMIT UNIVERSITY, <hr/> Kerrie Saunders YINARR-MA, <hr/> Joshua Gilbert RECONCILIATION NSW, <hr/> Karlie Noon SYDNEY OBSERVATORY


 Inspiring Victoria

Climate Change and Environment Program

by Kate Phillips

The key message of this project is that there are many ways to act on climate change. To illustrate this, we have been publishing stories from members of the Neighbourhood House network.

museums victoria.com.au/climate-and-environment/community-stories/

This has flowed naturally out of the 'Thriving Futures' workshops. Staff and volunteers of the neighbourhood houses across Victoria participated in workshop series in May where they shared their ideas and inspired each other. The participants value being part of the shared endeavour of helping their communities understand and respond to climate change. The next workshop series will run in July.

In May we held an expert connection webinar titled 'Frogs, bogs and bushfire' looking at the state of frog populations across Victoria and at the research which is needed to understand how they are faring after the 2019/20 bushfires. In June we held a webinar called 'The Cosy Project' with a practical focus on home energy efficiency and other measures to stay warm in winter, such as adding more insulation, blocking gaps that let in drafts, installing curtains and pelmets and selecting energy efficient heating with reverse-cycle air conditioner (heat pumps).

I was delighted to attend the sector luncheon held by the neighbourhood house network and I met several of the workshop participants that I had come to know on the screen, in person. Many are now planning events in National Science Week. I will organise an 'online reunion' for all the workshop participants in September for us to touch base and reflect on what we have learned and what has worked well at their centres. 

The Climate Change and Environment Program is a partnership initiated by Inspiring Victoria with Melbourne Museum and Neighbourhood Houses Victoria providing climate science literacy through a range of initiatives including 'Thriving Futures' local focus groups, research demonstration and public website platform.



Kate Phillips,

SENIOR CURATOR, SCIENCE AND THE ENVIRONMENT, MUSEUMS VICTORIA



ACCLIMATISE

The Science of Sustainability & Adaptation



Welcome to National Science Week

August 14-22

inspiringvictoria.org.au

We acknowledge the Traditional Owners from all First Nations communities across Victoria. To you we convey our deep respect.

ACCLIMATISE is a series of live audience and broadcast events presented in collaboration with Museums Victoria, Royal Botanical Gardens Victoria, Zoos Victoria, Public Libraries Victoria, Parliament of Victoria, State Library of Victoria, Philip Island Nature Reserve,

Neighbourhood Houses Victoria and Royal Society of Victoria.

Follow us on all social media channels via #ACCLIMATISE

ONLINE PROGRAM:

inspiringvictoria.org.au/programs/national-science-week-victoria/acclimatise/

Earth's climate is incredibly complex and essential to sustaining all life on our planet. In just a few short

centuries, the global land use and energy consumption practices of the human species have disrupted the balances in a system that had remained stable and conducive to human activities for thousands of years. Confronted with the existential threat of a warming, drying climate system that could even prove inhospitable to life on Earth if left unchecked, our global civilization has embarked on a search for creative solutions through multidisciplinary fields of science.

Join us as we explore the science at the center of this critical physical, intellectual, social and

economic frontier; the physics of weather, our First Nations peoples knowledge of Country, the citizen scientists measuring and managing local impacts, the foundation of the sustainability movement, the Victorian researchers assessing and working to slow the threat of plant and animal extinction, and the scientists charting the impacts of bushfire, drought and sea level rise in our state and beyond.

Featuring scientists from Victoria's major public scientific and cultural institutions with a strong broadcast focus for our regional audience engagement, alongside local Victorian communities working

towards solutions, ACCLIMATISE seeks to delve into the Sciences of Sustainability and Adaptation and the pathways they offer towards our future. 

 **national science week**
14 - 22 AUGUST 2021 - AUSTRALIA WIDE


Inspiring
AUSTRALIA
Victoria



Collecting insights: Environmental adaptation in Victoria @ Parliament of Victoria

The ACCLIMATISE Major Partner Special Collaboration Event.

Sunday 22 August 2pm

What do our best-loved public science engagement institutions tell us about future environmental adaptation through their collections and research in Victoria? When you visit the Museum or Zoo or Botanical gardens, it can be a fascinating and fun day out, yet many don't realise our public institutions are engine rooms of important environmental research. There is a diverse range of work happening behind the scenes to measure, understand, plan, and adapt for the future of biodiversity in Victoria.

Join us for our ACCLIMATISE special panel conversation, streamed live from the Legislative Council Chamber at Parliament House with a small invited live audience of families, to learn from the botanists, zoologists and collection managers leading this important work. Find out the ways they are planning to help our plants and animals adapt to our state's warming, drying climate.

THE PANEL:



Professor Tim Entwisle,
DIRECTOR AND CHIEF
EXECUTIVE, ROYAL BOTANIC
GARDENS VICTORIA.

Professor Tim Entwisle is Director and Chief Executive of Royal Botanic Gardens Melbourne. A highly respected scientist and scientific communicator with a broad interest in plants, science and gardens, he was director of Sydney's Royal Botanic Gardens and Domain Trust for eight years, and spent two years at Royal Botanic Gardens, Kew before returning to Australia. His PhD from La Trobe University concerned the discovery and

classification of a group of algae never studied before in this country. Tim is interested more generally in the seasonality of plants and algae and is the author of *Sprinter and Sprummer: Australia's Changing Seasons* published in 2014



Dr Ken Walker,
SENIOR CURATOR OF
ENTOMOLOGY, MUSEUMS
VICTORIA.

I am a senior curator in the entomology (insects and spiders) section. I have worked at Museums Victoria since 1981. My research interests are in native Australian bees (in particular the family Halictidae) and pollination syndromes (what bee pollinates what plant). I have actively promoted my entomological experiences through several museum exhibitions, biodiversity, biosecurity and citizen science websites and I have given talks to field naturalists groups throughout Victoria as well as Australian and overseas conferences.

I have described over 150 new species of native bees, especially in the genera *Homalictus* and *Lasioglossum* and I have several species of Australian bees named after me.



Dr Sally Sherwen,
DIRECTOR OF WILDLIFE
CONSERVATION AND SCIENCE,
ZOOS VICTORIA.

Dr Sally Sherwen is the Director of Wildlife Conservation and Science at Zoos Victoria. She manages the team that has a strategic focus across the zoos conservation and education programs, science and research programs, life sciences development (animal welfare, species planning, animal husbandry optimisation) and environmental sustainability. Sally's background is in Animal Welfare Science and Human-Animal Relationships.



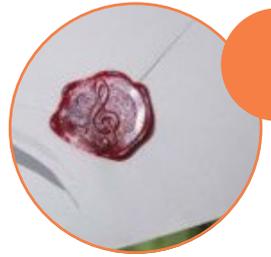
Kate Phillips,
SENIOR CURATOR SCIENCE
EXHIBITIONS, MUSEUMS VICTORIA
(FACILITATOR AND ANALYST).

I develop content for exhibitions, public events and publications on topics relating to science, technology and society for audiences of different ages, interests and backgrounds. As a member of creative exhibition teams I am responsible for content development and public communication across whole gallery spaces, an entire exhibition or individual exhibits depending on the scope of the project. To create dynamic and relevant experiences we use a range of media – from physical interactives and interactive multimedia and games, to immersive environments, to push button models and heritage object displays.

[Join the webinar live streams here >>](#)

After live streaming, the conversation will be available on the Parliament of Victoria's Youtube Channel
youtube.com/user/parliamentofvictoria

Climate Notes @ Royal Botanical Gardens Victoria



Climate Notes by Anna McMichael and Louise Devenish is a multimedia installation that invites us to explore and communicate how we feel about climate change through music, letter writing and video. The work builds on collections of handwritten letters by leading science researchers from all over the world, as well as archives from the State Botanical Collection of Victoria.

This emotive exhibition features five new musical works by Australian composers exploring the emotional impacts of climate change and propels us to consider what it feels like to live through a time when climate change affects every aspect of our lives.

Visit the interactive video installation during National Science Week, contribute your own letter about climate change, or attend a live performance of the new compositions featuring highly acclaimed violinist Anna McMichael and contemporary percussionist Louise Devenish.

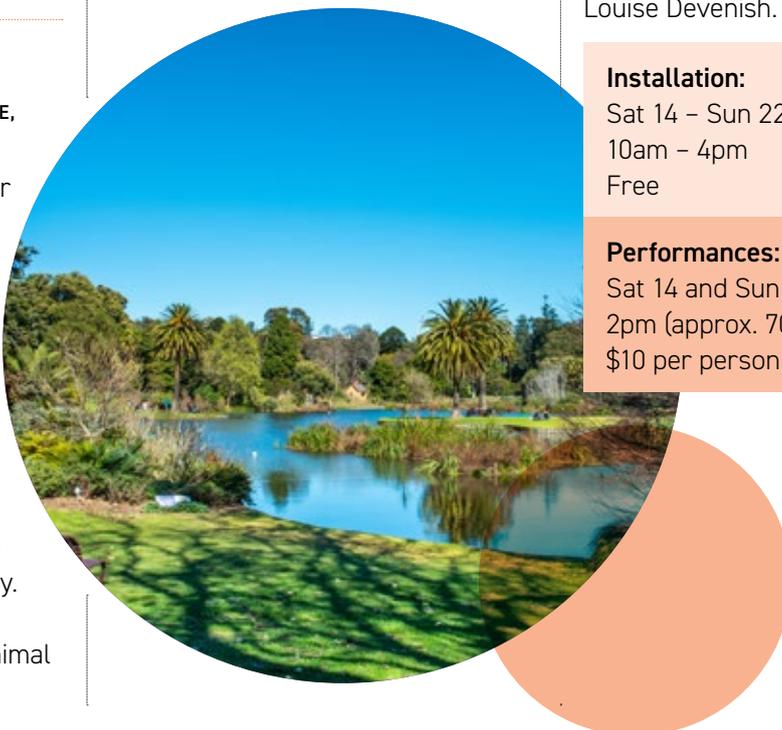
Installation:

Sat 14 – Sun 22 Aug
10am – 4pm
Free

Performances:

Sat 14 and Sun 15 Aug
2pm (approx. 70mins)
\$10 per person

[Read More >>](#)





Future Landscapes @ Royal Botanical Gardens Victoria

Learn about some of the important climate science projects underway at Royal Botanic Gardens Melbourne with Future Landscapes, a special one-day talks program.

Join acclaimed writer and climate activist Sophie Cunningham (Melbourne and City of Trees) as she discusses the future of fungi with Tom May, Principal Research Scientist (Mycology). Uncover the story of the Gardens' Landscape Succession Strategy with Sophie and Clare Hart, Manager Horticulture and Peter Symes, Curator Horticulture to find out how this led to the creation of Climate Change Alliance of Botanic Gardens; or go on a First Nations Climate Change Justice Walk with Christopher Jakobi, Aboriginal Learning Facilitator and become versed in Indigenous land management practices. ☞

[Read More >>](#)



First Nations Climate Change Justice Walk @ Royal Botanical Gardens Victoria

First Nations people have long lived in balance with nature. On this walking tour with Christopher Jakobi, Aboriginal Learning Facilitator, celebrate Country and learn from the environmental knowledge and practices First Nations people have employed for thousands of years.

Become versed in Indigenous land management, culturally important endangered species and more as you walk in solidarity to help protect and care for this precious planet. ☞

Saturday 21st August 2021 11am

[Read More >>](#)



The Botanic Garden that Thought it Could Change the World @ Royal Botanical Gardens Victoria

Join acclaimed writer and climate activist Sophie Cunningham (author of Melbourne and City of Trees) in conversation with Clare Hart, Manager Horticulture, and Peter Symes, Curator Horticulture, about the Gardens' Landscape Succession Strategy and the international Climate Change Alliance of Botanic Gardens. Collaboration between botanic gardens across the globe is essential in understanding how plants will grow and survive in a warming climate. Clare and Peter will discuss how the Climate Change Alliance was formed right here in Melbourne, and how botanic gardens can harness their expertise to share and exchange skills and information on a global platform. ☞

21 August 2021, 1pm

LIVE AUDIENCE AND LIVESTREAMED.

[Read More >>](#)



The Future of Fungi @ Royal Botanical Gardens Victoria

Join Tom May, Principal Research Scientist (Mycology) in a discussion with writer and climate activist Sophie Cunningham (author of Melbourne and City of Trees) about the future of fungi. Fungi are

megadiverse, estimated at several million species globally. Discover the role of fungi in ecosystems and how they will fare in future climates; and learn how fungi experts tackle the challenge of documenting the numerous "dark fungi". ☞

Saturday 21st August 2021 3pm

LIVE AUDIENCE AND LIVESTREAMED.

[Read More >>](#)

Climate Change: Families for a thriving future @ Melbourne Museum

SUNDAY 15 AUGUST, 4PM-5PM

FREE ONLINE EVENT

Museums Victoria invites families to build their understanding of climate science as they work together to create a climate pledge for their family.

We are hearing more and more how climate change is affecting our Earth. But what does this really mean for humans and our natural environments, and is there anything we can do about it?

As part of National Science Week, Climate Change: Families for a thriving future provides an exciting opportunity for families to deepen their understanding of climate science and our changing world, as they discuss climate action and work together as a family to create a climate pledge.

The webinar will begin by unpacking the science behind why our climate is changing. Participants will engage with information from the latest reports as they learn about how climate change is specifically affecting us here in Victoria.

The second part of the program will

invite families to work together to create a pledge of actions to help us all have a thriving future.

Suitable for families (recommended for children 8 and older) 

[Read More >>](#)

Nature illustrated @ State Library of Victoria

Wednesday 18 August, 6pm – 7pm

ONLINE VIA ZOOM (LIVE STREAMED TO YOUTUBE)

Natural history illustrations have helped communities worldwide to document biodiversity, track changes in our environment and keep records of species that may go extinct. Join us for an online discussion with experts in the field about the history of documenting nature through illustration. We'll explore how and why we record nature through illustrations, and spotlight the iconic yet unappreciated work of ornithological illustrator Elizabeth Gould whose work documented bird species around the world. You'll leave this event with a new respect for nature, and appreciation for this essential blend of art and science. 



Hayley Webster

MUSEUMS VICTORIA LIBRARY
MANAGER AND NATURAL HISTORY
RARE BOOKS EXPERT.



Melissa Ashley

AUTHOR OF THE
BIRDMAN'S WIFE.



Bernadette Drabsch

LECTURER IN NATURAL HISTORY
ILLUSTRATION AT THE UNIVERSITY
OF NEWCASTLE.

[Read More >>](#)

STEM & Society Webinar Series @ Parliament of Victoria

With the **Royal Society of Victoria** and **Victorian Parliamentarians for STEM**. This special series of online presentations leading towards National Science Week, explores the science and stories behind the game-changing work undertaken by Victoria's scientific community. Our leading experts will talk about the work they're doing to engage the community and affect meaningful change in their field of study and in our everyday lives. Watch these webinars on the Parliament of Victoria's Youtube channel below. 



Citizen Science: SealSpotters

12 May 6pm

Join Dr Rebecca McIntosh and Ross Holmberg from the Phillip Island Nature Parks team as they prepare to launch the annual SealSpotter Challenge, when citizen scientists around the globe jump online to count Australian fur seals and contribute to vital conservation research. The SealSpotter program allows anyone with a computer to help with the management and protection of our oceans by counting seals in images captured with a UAV drone. The count enables scientists to analyse seal population and marine debris entanglement data faster and more accurately, leading to a greater understanding of the

fur seal's world and the threats they face.

Last year citizen scientists participated from every continent on the planet – including Antarctica! By offering a taste of what scientists in the field see and experience, Rebecca and Ross and the team at Phillip Island Nature Parks have started a movement, bringing the wider community along with them to affect necessary behavioural change and achieve their conservation goals. How many seals will you find? 



Dr Rebecca McIntosh,
RESEARCH SCIENTIST AT
PHILLIP ISLAND NATURE PARKS.



Ross Holmberg,
PHILLIP ISLAND
NATURE PARKS.

[Join the webinar stream here >>](#)



The Anthropocene: Where on Earth are we going?

16 June 6pm

Human pressures on the planet as a whole – the 'Earth System' – have now become so great that scientists have proposed that we have now left the Holocene, the geologic epoch that has been humanity's accommodating home for the last 11,700 years. It's proposed we've entered a new geologic epoch, the Anthropocene, characterised by extremely rapid changes to the

climate system and the biosphere, driven primarily by a range of direct and indirect human pressures.

To understand what these changes mean for nature, ecosystems, and the future of humanity, and what we can do about it, join Professor Will Steffen, an Earth System scientist and researcher at the Australian National University, and Professor Brendan Wintle, Director of the Threatened Species Recovery Hub based at the University of Melbourne.

Professor Steffen's research focuses on the incorporation of human processes in Earth System modelling and analysis; and on sustainability and climate change. Professor Wintle specialises in decision support for threatened species conservation, ecological modelling and monitoring, and measuring the cost-effectiveness of conservation programs.

Will and Brendan will describe how we must become stewards of the Earth System to secure our prosperity and conserve our natural and cultural heritage, based on transformed societies, with a greater level of equity and a focus on the maintenance of a well-functioning biosphere. 🌍



Professor William Steffen,
EARTH SYSTEM SCIENTIST AND
RESEARCHER, AUSTRALIAN
NATIONAL UNIVERSITY.



Professor Brendan Wintle,
DIRECTOR OF THE THREATENED
SPECIES RECOVERY HUB,
UNIVERSITY OF MELBOURNE.

[Join the webinar stream here >>](#)



A hard-won theory: Tectonic Plates in Victoria

14 July 6pm

Dr William Birch AM

Professor Andy Gleadow

Associate Professor Sandra McLaren

Professor Peter Betts

Teacher **Jerome Holleman** and
students from **Northcote High School**.

In a 'post-truth' society, fueled by soundbites and status updates, opinions and personal theories are often presented with unwavering certainty but remain untested. In this climate, it can be confusing when we hear from scientists reluctant to deal in absolutes, who instead engage in conversations about 'degrees of certainty'. In the world of science, a 'theory' is the closest something may ever come to being 'the truth'. To understand what modern scientists can go through to arrive at an accepted theory, we're taking a look at one of the major revelations of the past century: the theory of tectonic plates. This theory describes how the enormous fragments of our planet's shell move against, over and under one another at their boundaries to slowly change the shape and location of our continents and oceans.

In this very special online discussion, you'll meet four eminent Victorian geologists, Dr William Birch AM, Professor Andy Gleadow, Mr Alfons VandenBerg and Mr Clive Willman - who, not so long ago, started out at university to find themselves amid a global battle of contesting ideas. Hear how their

new research overwhelmed a fiercely held status-quo, originating a hard-won new theory within the international scientific community.

Our panel of experts will be joined by teacher Jerome Holleman and his students from Northcote High School, who have been taking part in the Big History learning program that aims to connect knowledge across disciplines and challenge students to embrace science, think critically, solve problems and drive innovation.

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<https://www.youtube.com/user/parliamentofvictoria>



Human Change, Not Climate Change @ Phillip Island Nature Parks

Thursday 19 August, 1:00pm - 2:15pm

FACEBOOK LIVE STREAM.

How are seals, penguins and people adapting in a climate crisis? Phillip Island Nature Parks present a discussion between marine scientist's Dr Rebecca McIntosh and Associate Professor Andre Chiaradia and PhD student Lauren Tworkowski.

The conversation will focus on the impact of a changing climate on iconic native species: little penguins and Australian fur seals and explore the science and conservation actions at Nature Parks aimed at understanding and mitigating

these impacts. A small live audience of local students have been invited to attend. **This conversation will be Live streamed from 1pm on Facebook Live Stream**

Available after National Science Week at: [Youtube](#)

Associate Professor Andre Chiaradia,

MARINE SCIENTIST, PHILLIP ISLAND NATURE PARKS. ANDRE CHIARADIA CHASES PENGUINS FOR A LIVING. HE USES PENGUINS AS A MODEL FOR ECOSYSTEM ECOLOGY.



Dr Rebecca McIntosh,

MARINE SCIENTIST, PHILLIP ISLAND NATURE PARKS.



I have always loved nature and wanted to work in the ocean. My undergraduate degree at Melbourne

University included a double major of Marine Science and Zoology. My PhD at La Trobe University explored the life history of the Australian sea lion on the offshore islands of South Australia. I have since worked with government, academia, the private sector and now Phillip Island Nature Parks, where I live with my family and research the Australian fur seal as a sentinel of the ocean ecosystem. The population, diet, behaviour and health of the seals are used to understand the status of the ecosystem and help us tackle human caused impacts to conserve biodiversity; so we can continue to appreciate the gifts the ocean provides.

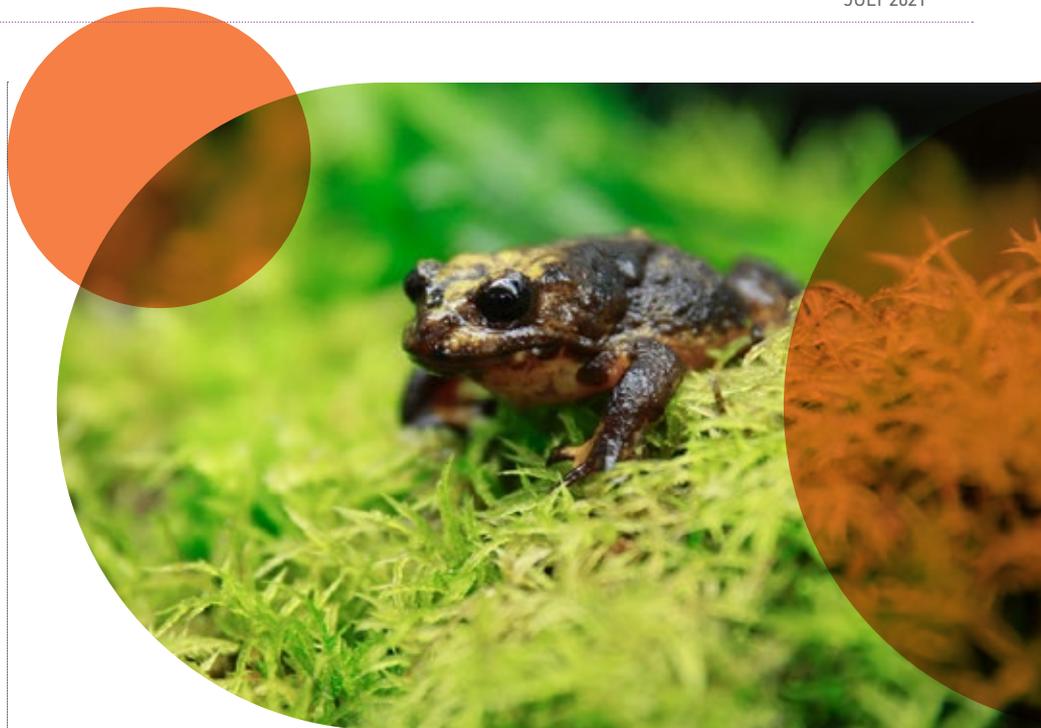
Lauren Tworkowski,

PHD CANDIDATE AT LA TROBE UNIVERSITY.



Lauren's work has focused on understanding the impacts of climate on little penguins, specifically the impact of heat wave events in their terrestrial habitat. She is also investigating and designing adaptive approaches to mitigating these impacts. 

[Read More >>](#)



Amphibians, situation critical: Insights from the leaders in the field saving Victoria's frogs @ Zoos Victoria

Wednesday 18 August 2021, 6pm.

The Baw Baw Frog, endemic to the Mt Baw Baw plateau in the Central Highlands of Victoria – now have an estimated wild population of less than 500.

Climate change and the infectious disease Chytrid Fungus have devastated species like the Baw Baw Frog across Victoria and around the world. Hear from experts working in the field in a race against the clock to prevent the extinction of local frog species. From bushfires to climate change, find out how they are working together with partners to tackle the many challenges that come with wildlife conservation.

Bring your questions! There will be a Q & A session at the end of the event with the panel. This event will be AUSLAN interpreted for onsite attendees. Priority seating will be available in the front row.

If you are joining us online, you will still need to register the event. Registration closes at 10.30am on event day. 



Dr Sally Sherwen,

DIRECTOR OF WILDLIFE CONSERVATION AND SCIENCE AT ZOOS VICTORIA.



Dr Deon Gilbert,

THREATENED SPECIES BIOLOGIST ZOOS VICTORIA.



Nick Clemann,

PROGRAM LEADER, ARTHUR RYLAH INSTITUTE FOR ENVIRONMENTAL RESEARCH, DEPARTMENT OF ENVIRONMENT AND PRIMARY INDUSTRIES.



Dr Matt West

RESEARCH FELLOW (AMPHIBIAN ECOLOGY), UNIVERSITY OF MELBOURNE



Adam Lee,

SPECIALIST KEEPER - AMPHIBIAN BUSHFIRE RECOVERY PROGRAMS AT ZOOS VICTORIA

[Register >>](#)



Sustainability Showcase @ Neighbourhood Houses Victoria

Climate change has been a key priority for **Neighbourhood Houses Victoria** in 2021 after forging a new partnership with Inspiring Victoria, Museums Victoria and The Royal Society of Victoria. The aim of the **Climate Change and Environment Program** has been to generate community conversations and greater local action on the issue of climate change in Neighbourhood Houses across Victoria. The small grants program for Science Week has since funded over 20 Neighbourhood Houses across Victoria to deliver workshops, activities and presentations showcasing local initiatives or projects in the many sciences associated with sustainability and adaptation for Science Week.

[Read More >>](#)

Our Treasured Earth at Museums Victoria

MONDAY 16 AUGUST 7.00PM-.30PM

Join us to explore the complexity and beauty of Earth's climate, the impacts of how it is changing, and hopeful messages as we move into an uncertain climate future.

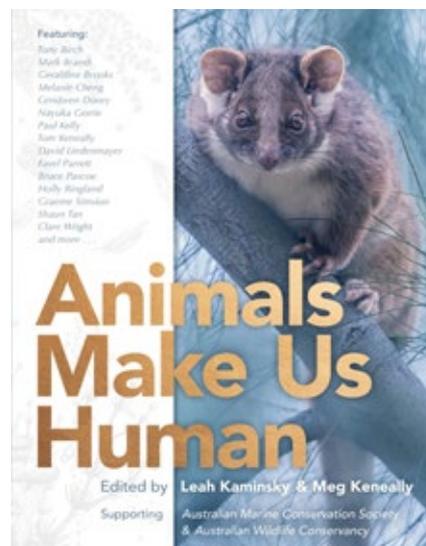
Earth's climate is incredibly complex and essential to sustaining all life on our planet. First Peoples of Australia have looked after this land sustainably since time immemorial – with scientific evidence of over 100,000 years. As the world's oldest living cultures and the first scientists in Australia, they continue their connection to Country, physically and spiritually. Continuing caring for Country, Indigenous youth in Australia and around the world are inspiring action and leadership critical to address our climate crisis.

Simultaneously, researchers across many disciplines are working together to confront this crucial challenge of our time, and Museums Victoria Sciences will share insights from their research on different facets of climate change.

As we are confronted with the existential threat of a warming, drying climate system, Museums Victoria invite you to join a conversation with scientists and Indigenous youth at the forefront of climate action and leadership.

This important discussion will be delivered as an in-person event at Melbourne Museum and also available to stream online. We will invite audience interaction through Q+A and polls through the session. Please bring a smart phone if you're attending in person and would like to participate in the polls and Q+A.

[Read More >>](#)



Can Stories Save Us? Using fiction and creative non-fiction to start conversations about climate change @ Public Libraries Victoria

PVL is proud to present an exciting online professional development session for library staff in Victoria to mark National Science Week 2021.

Tuesday 17 August, 9.30am – 11.30am,

ONLINE EVENT. \$10 PER PERSON.

This event aims to raise awareness of Australian fiction and creative non-fiction that engages with the big scientific issues of the day—including climate change, environment, mass extinctions and pandemics. We've brought together an enviable line-up of authors (and one poet!) who will discuss their works, and works of other writers in the field. They'll also discuss strategies for introducing these works to readers in order to stimulate conversations in our communities.

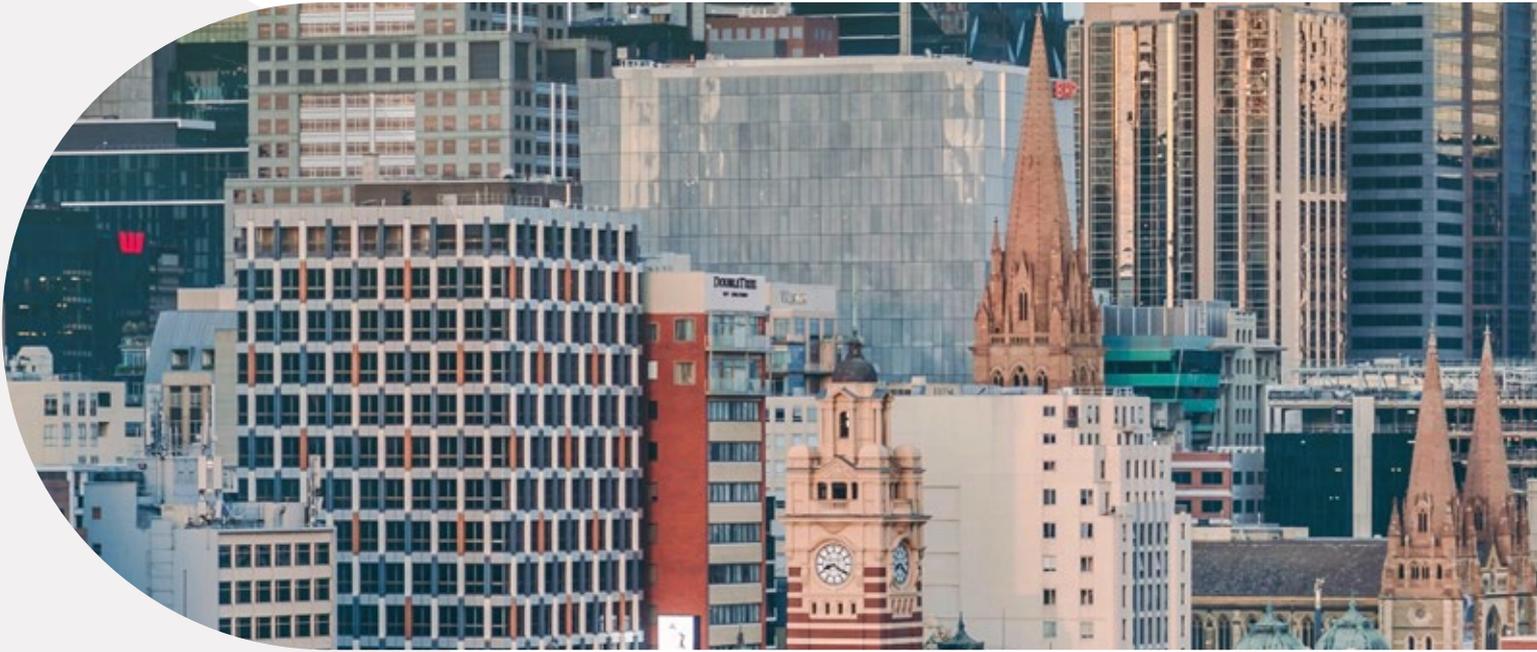
You'll hear these wonderful writers in a panel discussion, have a chance to ask questions in a Q&A and break off into smaller groups to discuss strategies to bring these works to attention of readers in your communities. At the end you will receive carefully curated, subject specific reading lists, book club questions and other resources to take away.

[Read More >>](#)

ACCLIMATISE is presented to Victoria for National Science Week 2021

Science Week
national
website

Check out all national events and activities on the event calendar at <https://www.scienceweek.net.au/>



Are we living in liveable cities?

Catriona Nguyen-Robertson, RSV Science Communications Officer



THIS ARTICLE FOLLOWS A PRESENTATION TO THE ROYAL SOCIETY OF VICTORIA ON 10TH JUNE 2021 TITLED "LIVEABLE CITIES FOR ALL: ARE WE THERE YET?" DELIVERED BY PROFESSOR BILLIE GILES-CORTI (RMIT UNIVERSITY). ALL IMAGES USED HERE WERE CAPTURED DURING HER PRESENTATION.

Melbournians are proud of having been ranked the most liveable city for seven consecutive years – although we have recently dropped slightly in the rankings. But what makes a liveable city? Professor Billie Giles-Corti investigates measures of liveability and assesses whether we are actually creating liveable cities that support healthy and sustainable lifestyles for both individual and planetary health.



One of the first questions that Billie had to address was "what is liveability?". Many people talk about the concept in different ways and so Billie and her team came up with a comprehensive definition.

The combination of rapid urbanisation and population growth is growing concern. By 2050, 68% of the global population will be living in cities. 'We have a problem – we need to carefully think about how we are planning our cities,' says Billie.

The population rise would mean that around 1.6 million new residences would need to be built, it would put pressure on our resources and infrastructure, and more people packed together would severely increase traffic congestion. A problem we tend only to think about when stuck in a traffic jam ourselves, congestion is quite economically expensive. Infrastructure Australia estimates that by 2030, traffic congestion will reach \$53 billion per year in lost productivity. Our cities will not be equipped to support us if nothing changes.

For over three decades, Billie has worked towards solutions. A Distinguished Professor at RMIT University and Director of the Healthy Liveable Cities Lab, she leads a multi-disciplinary research studying the impact of the built environment on health and wellbeing.

Ten years ago, when Billie first came to Melbourne, she was challenged by her colleague Dr Ian Butterworth to provide evidence that good urban planning is connected to health that could influence policy.

They looked into the social determinants of health: the economic, social and political systems that shape conditions of daily life. They believed that health is linked to access to reliable public transport, health food, local parks, places of leisure, and friends and family. While it may seem obvious that these factors play into our physical and mental health, to bring government officials on board, Billie and Ian needed supporting data. They therefore defined "liveability" to include these social determinants that create good or poor health



Liveability was a highly valued concept at the time and would hence be more appealing to policymakers like the Minister for Transport Infrastructure. Having a compact city is all well and good, but to avoid traffic congestion and resulting air quality and noise problems, land use and transport need to be considered together. There is little point in building houses at the fringes of cities that are not well connected to amenities, services, and places

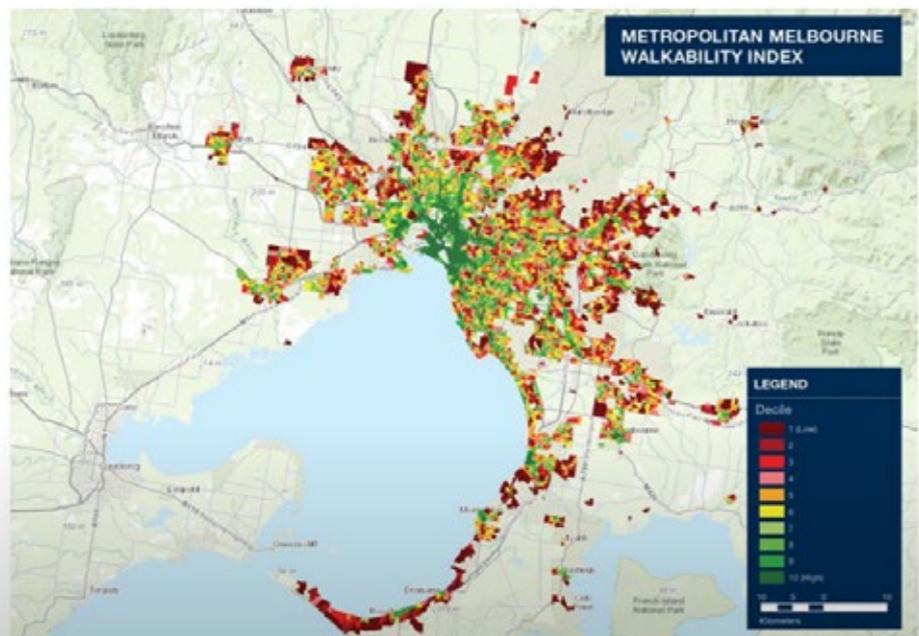
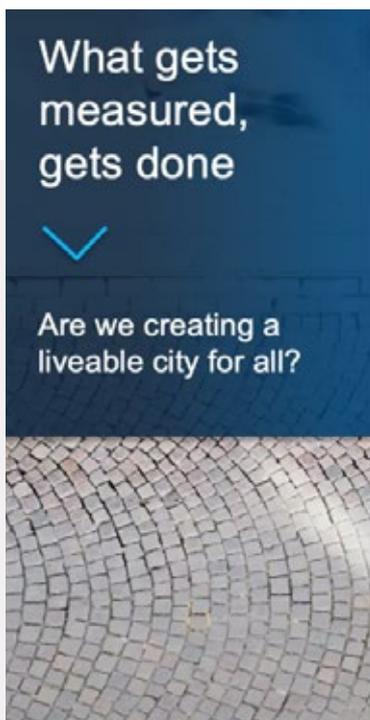
of work. It becomes unaffordable and unsustainable if people have no way of getting around except to drive.

'If you want to have a compact city - which we need on from a global perspective - we also need to manage traffic.'

By placing bike paths near train stations, Billie has seen that more people are encouraged to take public transport and accumulate more incidental exercise as they walk or cycle to/from stations. To encourage this sustainable mobility, we require a shift from the traditional transport planning approach. If we want more people using public transport instead of cars to get around, the infrastructure needs to be better.

'If we want people to change, they need to be supported by policies that are well-implemented.'

Billie looked at the policies that she wanted to influence and structured studies to assess the built environment in Metropolitan Melbourne around them. She found that there were variations in access to health-promoting amenities based on location: inner suburbs had greater walkability and connectivity, more people getting around on foot, bike or public transport, and better access to social infrastructure compared to outer suburbs. In contrast, heart attack rates were greater in areas with poorer access and connectivity, showing a direct link between location, built environment, and health.





The seven domains of urban liveability that also promote the health and wellbeing of Australians – walkability, public transport, public open space, housing affordability, employment and food and alcohol environments.

Following the success of her studies in Melbourne, Billie set about creating the first baseline measure of liveability in all Australian capital cities. Over five years, her team mapped liveability indicators and urban policy implementation in a report, *'Creating liveable cities in Australia'* (published 2017). They assessed seven domains of urban liveability and found that, in many cases, government planning policies were failing to deliver them equitably within and between cities. No capital city performed well across all seven.

..... 'Climate change is the biggest threat to human health – this isn't a dress rehearsal,' says Billie.

Greenhouse gas emissions produced by transport are warming the planet and are one of the main causes of air pollution, which kills 4.2 million people worldwide per year. Climate change has also seen an increase in the length and intensity of bushfire seasons which impacts the health of people and ecosystems alike. During the 2020 bushfires, air pollution (PM2.5) levels in Sydney and Melbourne reached levels that were classified as

hazardous by the World Health Organisation. By moving towards more sustainable mobility and having fewer cars on the road, we can reduce the impact of our daily travel on the environment, and it will also benefit our health.

The COVID-19 pandemic was a reminder of just how important city planning is. With Melbourne's lockdown restricting people to remain within a 5km radius from their homes, those who had shops, parks, and family and friends nearby were more likely to manage better. We still have a way to go in terms of building liveable cities in Australia, but Billie hopes that has acted as a wake-up call.

Billie's work highlights the need for consistent evidence-informed urban planning policies and integrated planning of housing, transport, land use and infrastructure to optimise health outcomes and reduce liveability inequities. We need people like Billie advocating for the implementation of policies that improve urban liveability, thereby improving the health and wellbeing of the community, and ensuring that our quality of life is maintained as our cities continue to grow. 🌱

Grey Clouds

Priya Mohandoss, RSV Member.

As the chill of winter is upon us, we are more likely to come across a spread of grey clouds draping layer upon layer within the sky.

Unlike white and some other hues of clouds that are a result of atmospheric optics, clouds tend to appear grey due to their thickness, height, the amount of water being held and the positioning of other clouds and the sun in the vicinity. Also, the presence of these clouds during the day or night is a sign that precipitation is near.

Hence, when rainfall is initially about to appear, clouds begin to darken due to the water vapour forming into raindrops, causing there to be more gap between each of the beads of water. In turn, this process leads to less sunlight being reflected and as a consequence, causes the cloud to be grey in colour.

The blocking of sunlight is likely to happen for a number of reasons and indicates that what is being observed

is a shadow due to the effect of internal factors within the cloud. For example, hydrometeors, which are water or ice particles that are carried from the ground and into the air such as rain, hail, snow, fog and dew are condensed in a cloud. Elements such as these have the capacity to hinder sunlight from infiltrating the whole of the cloud, especially when they are found in larger amounts of size and intensity and as a result, create multiple scattering. Blocking can also take shape if there is a cloud that is large enough to absorb the sun's energy when it is passing through the cloud.

Although a blanket of grey clouds can be a sign of despair, their presence is vital in order to predict the severity of what lies ahead. ☁

Image: Grey clouds lurking in the sky. Photo courtesy of Priya Mohandoss.



A fighting memory: tissue-resident memory T cells

Catriona Nguyen-Robertson, RSV Science Communications Officer

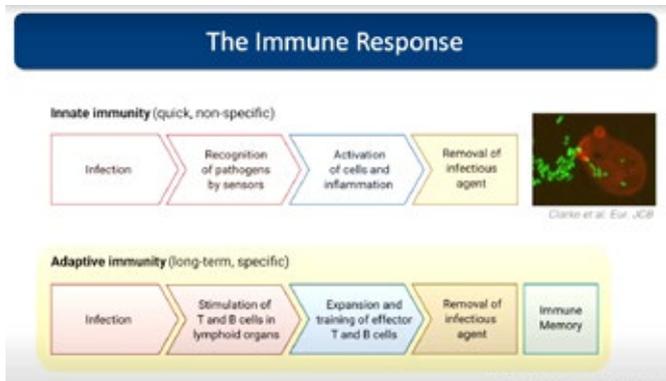


THIS ARTICLE FOLLOWS A PRESENTATION TO THE ROYAL SOCIETY OF VICTORIA ON 27TH MAY 2021 TITLED "LOCATION, LOCATION, LOCATION: IMMUNE PROTECTION BY TISSUE-RESIDENT T CELLS" DELIVERED BY PROFESSOR LAURA MACKAY (UNIVERSITY OF MELBOURNE). ALL IMAGES USED HERE WERE CAPTURED DURING HER PRESENTATION.



Rob Gell (RSV President), Catriona Nguyen-Robertson (RSV Science Communications Officer), Professor Laura Mackay (Presenter), Mike Flattley (RSV CEO), Jane Canestra (RSV Councillor), Viktor Perunicic (RSV Councillor).

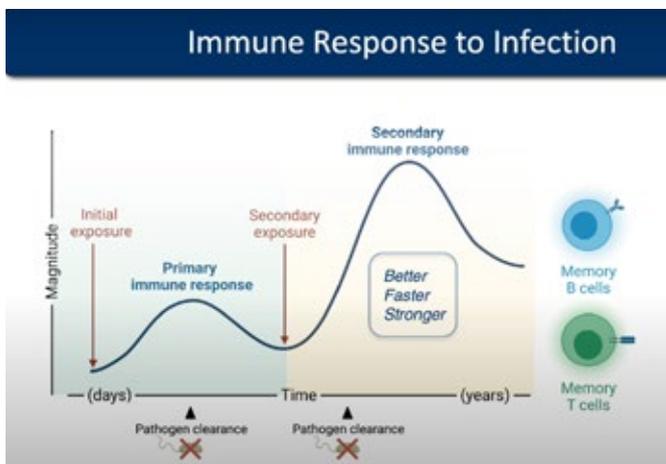
Immune systems have good memories. T cells are specialised immune cells that are central to the complex, adaptive immune responses to infection and disease. T cells are “trained” to recognise specific fragments or components of viruses, bacteria, and other infectious pathogens.



There are two arms to the immune system: fast-acting but non-specific innate immunity, and slower but more long-term and specific adaptive immunity.

Each T cell is tailored to fight one of the many different pathogens that we might encounter in our lives, and the number that we have that responds to any given pathogen is relatively low. During an infection, it takes time for the right T cells to get into gear, but once they are activated, they multiply to generate large numbers of T cells that specifically recognise the invading pathogen. These T cells then travel to the site of infection and actively destroy infected cells or recruit other immune cells to participate in the immune response.

Once they have eliminated the pathogen and the infection has cleared, most T cells die in order to prevent excessive, unnecessary damage. Some, however, remain behind as memory T cells that provide better, faster, stronger responses upon re-encountering the pathogen because there are more of them – and they are already trained fighters.



The second time we encounter a pathogen, our memory T (and B) cells provide a better, faster and stronger response to quickly eliminate it.

Generally, memory T cells were thought to constantly patrol the entire body, scouting for the return of the pathogen they are trained against. Then, ten years ago, some memory T cells were found to permanently reside in the site of infection where they are poised to mediate local immune responses should the pathogen come back. They are hence called “tissue-resident memory T (T_{RM}) cells” and reside in common sites of infection, including the skin, intestine and respiratory tract. Professor Laura Mackay’s research at the University of Melbourne has been instrumental in the understanding the role of these cells and harnessing them in novel immunotherapies to fight infection, cancer and autoimmunity.

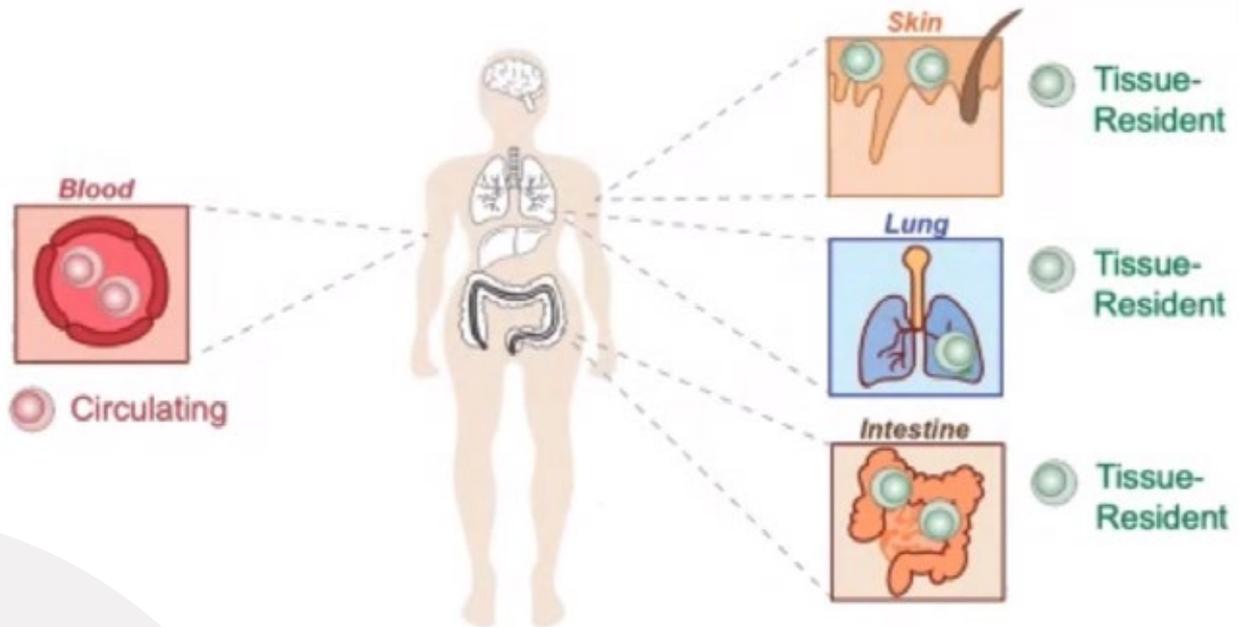
The discovery of T_{RM} cells by Frank Carbone, David Masopust and Leo Lefrancois was revolutionary in the field of immunology. While the idea of specialised immune cells in tissues where infections are common seems like a no-brainer, this entire subset of T cells were missed for decades because studies of human immune cells were mostly limited blood – and if memory T cells were found in other tissues, they were presumed to merely be passing through. But T_{RM} cells are in fact distinct from circulating memory T cells – they stand guard in the tissues and never leave their post.

Laura initially wanted to be an artist but her mother, who was an artist, wanted her to do a “sensible” degree for better future job prospects. With an interest in microbiology and immunology, she studied biology at university and has since put her creative mind towards innovative biomedical research. In the third year of her degree, she contracted glandular fever, which led her down a rabbit hole of Epstein-Barr virus research as she endeavoured to understand what was happening in her body. By doing self-directed research, she began to realise how fascinating viruses and the immune system are. She went on to undertake a PhD in Epstein-Barr virus research, studying the virus that causes glandular fever, before moving to Melbourne to join Frank Carbone in the emerging field of T_{RM} cells.

Because memory immune cells safeguard against the return of a pathogen, the development of vaccines is paramount. The first time we encounter a pathogen, it can take several days for the adaptive immune response to kick in. A vaccine mimics the first infection, providing the immune system with the same target practice while remaining healthy. Following vaccination, we will have a supply of memory cells that can fight the infection immediately.

Laura wants to develop vaccines that utilise T_{RM} cells so that we have T cells ready for combat in vulnerable tissues. Her team at the Peter Doherty Institute for Infection and Immunity explores the use of adjuvants

Memory T cells occupy distinct sites



Memory T cells were originally thought to only circulate around the body in the blood, but tissue-resident memory T cells have now been identified in different tissues where they are poised to mount immune responses.

(immune system boosters) in vaccines to encourage T cells to move into certain tissues. For example, a COVID-19 or influenza vaccine would ideally generate T_{RM} cells in the airways, while a malaria vaccine would ideally generate protection in the liver where the infection manifests.

Recent evidence indicates that T_{RM} cells also play a vital role in preventing the development and spread of solid tumours. Laura's laboratory and other research groups have found that they accumulate in various human cancers where they have been associated with better survival and disease outcomes. In melanoma, for example, they are important in keeping tumours in a dormant state, suppressing cancer progression.

The field of T_{RM} cells is still in its infancy, partly due to their differences in different tissues. T_{RM} cells are

tailored to suit their tissue of residence, where they may not have the same access to nutrients as in the blood. Laura's group has identified some markers that distinguish skin, gut and liver T_{RM} cells, highlighting that, while T_{RM} cells are essentially a group of cells with similar functions, they receive cues from their local environment and become fine-tuned to fit into the place they reside. Being able to direct particular responses in particular locations is currently a work in progress.

Knowledge of the immune system is continually evolving. Parts of the immune response that Laura has helped uncover are working their way into textbooks, and she is constantly updating her lectures for undergraduate students. Our immune systems are highly adept at protecting us, and researchers like Laura are developing immunotherapies and vaccines that help the immune response reach its full potential to fight disease. 🧬

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