



The Royal Society OF VICTORIA

Promoting science since 1854

PATRON: The Hon Linda Dessau AC
Governor of Victoria

PRESIDENT: Mr David Zerman

This Month's Events...



12th October: Dr Thomas Oxley
"Neural Interfaces: a New World of Brain Augmentation"



26th October: Professor Paul Sunnucks
"Understanding Persistence & Adaptation of Wildlife in the Genomic Age"

October 2017 Newsletter

October Advance Notice:

Print Post Approved 100009741



9th November: Tanya Ha
"The Spock and Kirk of Science Communication"

The Royal Society of Victoria Inc.
8 La Trobe Street,
Melbourne Victoria 3000
Tel. (03) 9663 5259
rsv.org.au



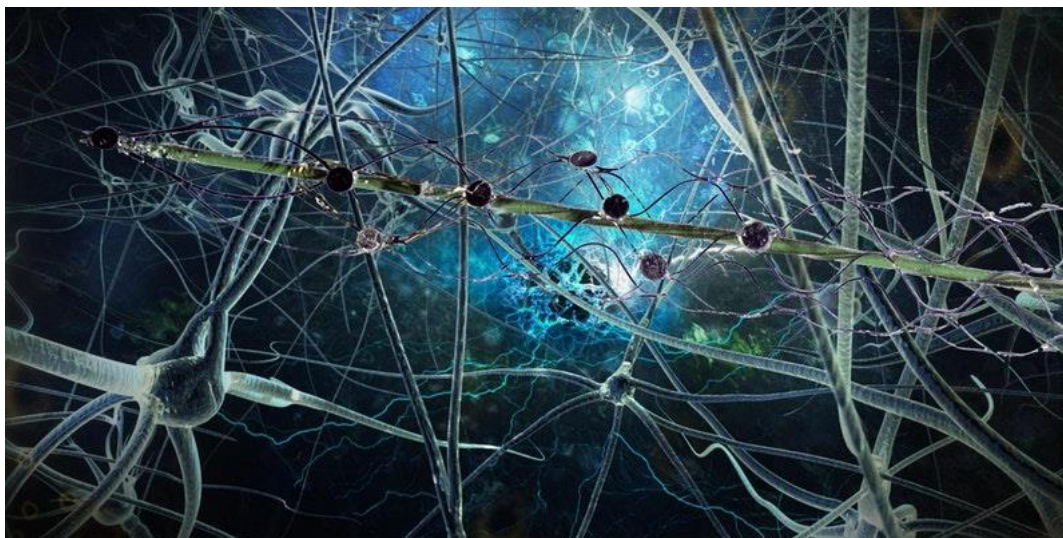
23rd November: Very Young Scientists
Celebrating RSV Bursary Winners of the 2017 Science Talent Search Competition



October Meetings & Events

Neural Interfaces: a New World of Brain Augmentation

Thursday, 12th October 2017 at 7:00pm.



Speaker: Dr Thomas Oxley
Founding CEO, Synchron
Head, Vascular Bionics Laboratory, The University of Melbourne
Director of Innovation Strategy, Mt Sinai Hospital, New York City

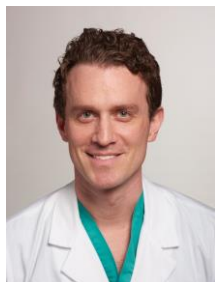
Synchron is a minimally invasive neural interface company, established with the vision to restore brain function to patients with impairment; to take the brain's capacity for rewiring, digitally apply it to the Internet of Things, and facilitate re-establishment of physical interaction with the environment.

Synchron's technology, the Stentrode, came into the spotlight following the publication of seminal research in the top-ranking journal *Nature Biotechnology* in 2016. This research demonstrated the potential for a neural recording device to be engineered onto a stent and implanted into a blood vessel in the brain, without the need for open brain surgery.

Initially funded by the ground-breaking DARPA program RE-NET, this research has progressively attracted \$10M in investment to complete a Series A fundraise in 2017. The Stentrode technology, currently under FDA review, is planned for a first in human trial in 2018. Patients with tetraplegia due to spinal cord injury, stroke and ALS will be recruited into a trial of direct brain control over a suite of assistive technologies at the Royal Melbourne Hospital.

Join Dr Thomas Oxley, an interventional neurologist and the founding CEO of Synchron, to learn more about the Stentrode journey and plans for the technology's further development and application.

About the Speaker:



Dr Thomas Oxley is an attending physician in the Neurosurgery department and Director of Innovation Strategy at the Mount Sinai Hospital, New York City. He is also the Head of the Vascular Bionics Laboratory at the University of Melbourne. Dr Oxley completed both internal medicine and neurology training in 2013 at the Royal Melbourne and Alfred Hospitals, Melbourne, Australia. He has a PhD in Neural Engineering, awarded in 2016, and has already published 25 internationally peer-reviewed publications, amassing 2160 citations.

During his PhD, he raised a total of \$4.4 million dollars in funding from US and Australian governments, for the development of a novel stent electrode (stentrode) array. In February 2016, the breakout scientific report of the technology was published in *Nature Biotechnology* (IF 41). His research laboratory now includes two post-docs, two research engineers, 3 PhD students and 4 honours students. The lab collaborates across 16 departments at the University of Melbourne including medicine, neurology, neurosurgery, engineering, physics and pathology. The research group is working towards a first-in-human clinical trial at the Royal Melbourne Hospital of a pioneering minimally invasive brain-machine interface technology for the thought-control of electronic devices including exoskeletons for patients with paralysis due to spinal cord injury.



A free event, places limited, bookings essential! Register online now at <https://rsv.org.au/events/neural-interfaces/>, call or email the RSV office to secure your place: 9663 5259, rsv@rsv.org.au.

October Meetings & Events



Grand Final

Thursday, 5 October 2017 at 6:00pm, The Royal Society of Victoria

The Royal Society of Victoria is proud to support a new **public speaking competition for undergraduate science students** in Melbourne to present on a Science, Technology, Engineering or Mathematics (STEM) concept, and explain how it will benefit Australia economically, environmentally or socially. Let's Torque has been organised by a dynamic group of students from the [Advanced Science – Global Challenges](#) program at Monash University.

With entries submitted, preparatory workshops completed with expert coaching from Nous Group, and September's semi-finals all done, finalists will be competing at the Grand Final here at the Society on the evening of 5 October. Entrants will be assessed by the judges on their speaking skills, ability to explain their STEM concept and its application to a specific solution, the feasibility of their intervention and the scope of its potential impact – all combined with that all-important “pizzaz.”

8 finalists will come together for the Let's Torque Grand Final, showcasing their STEM communication skills and sharing the exciting future of STEM in Australia with friends, family and the community. The winner and runner up will each receive a cash prize, a year's membership of the Royal Society of Victoria, and a two year subscription to Cosmos Magazine.

The Grand Finalists and their amazing talks:

- Zyg Chapman* - **Bee bold and live for the buzz it**
- Michael Millward* - **The use of faecal microbial transplants for the treatment of autism spectrum disorder**
- Hafsa Omer* - **Healthy adults and how to get there**
- Tarik Zepcan* - **A new body condition assessment to help fight animal cruelty in livestock**
- Liam Mudge* - **Human Energy Harvesting**
- Rannee Li* - **Magnets and mental health**
- Caleb Hosking* - **Solar Power: A brighter future**
- Fergus McLaren* - **Plastic: a Problem of Consumerism and a Solution of Consumption.**

Register now to attend, see these fantastic presentations and network with the science community over tasty snacks!



Tickets \$5, places limited, bookings essential! Register online now at <https://www.trybooking.com/book/event?eid=308182>

GRAND FINAL JUDGES



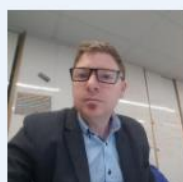
ELIZABETH
FINKEL

Editor in Chief of
Cosmos Magazine



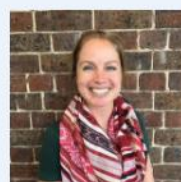
LYNETTE
PLENDERLEITH

President of the
Victorian Branch of
Australian Science
Communicators



CHRIS
THOMPSON

Associate Dean of
Education, Faculty
of Science, Monash
University



ALISON
STOKLEY

Engineers Without
Borders Challenge
and Education
Coordinator



MARK
SCHULTZ

Senior Consultant
at Nous Group

October Meetings & Events

Understanding Persistence & Adaptation of Wildlife in the Genomic Age

Thursday, 26th October 2017 at 7:00pm.



Speaker: Professor Paul Sunnucks
Evolutionary & Conservation Biologist
Head, Persistence & Adaptation Research Team
School of Biological Sciences, Monash University

Human impacts on wildlife populations reduce the numbers of individuals, shrink geographical ranges, and isolate population fragments. These effects have intertwined ecological and evolutionary outcomes, with negative consequences for the ability of populations to survive and maintain ongoing evolution. The key elements of evolution of concern in conservation biology are the harmful consequences of loss of genetic variation, and reduced ability to adapt to environmental pressures. We are in exciting times in these regards, thanks to a genuine technical revolution in our ability to understand, quantify and monitor these evolutionary processes and improve outcomes by conservation actions.

Join evolutionary and conservation biologist Professor Paul Sunnucks, who will give examples from ongoing research of how evolutionary processes have been assessed in wildlife, and how such information can be incorporated into practical conservation.

About the Speaker:



Paul Sunnucks studied Zoology at Oxford University, and then completed a PhD in population biology at University College London. During three years in one of the world's first conservation genetics groups at the Institute of Zoology London, Paul married Australian Andrea Taylor and migrated to Australia. Following research positions in Sydney, and embarking on parenting, he moved to Melbourne. Since 2005 at Monash University, he has headed the Persistence and Adaptation Research Team. Paul's highly collaborative research applies evolutionary thinking to conservation biology on a wide range of wildlife. A major recent outcome of Paul's work was co-authorship of a new book, '*Genetic Management of Fragmented Animal and Plant Populations*' by Richard Frankham and others, published by OUP: this book seeks to provoke a paradigm-shift in the application of genetic management of wildlife.



A free event, places limited, bookings essential! Register online now at <https://rsv.org.au/events/persistence-adaptation/>, call or email the RSV office to secure your place: 9663 5259, rsv@rsv.org.au

Nominations for RSV Membership

A nomination for membership of the Society has been received on behalf of:

Ms Vanessa **BARRIGA**, Student

Unless Members request a ballot, she will be considered for election by Council and if elected, will be announced at the Ordinary Meeting of the Royal Society of Victoria to be held on 9th November.

Recently elected members who have not yet signed the Society's membership book are invited to attend the 26th October meeting to be formally welcomed as members. **Please inform the office if you plan to attend, so we can prepare your membership certificate for collection.**



This month we bid a sad farewell to building tenants Federation University as they consolidate their Melbourne operations around a new Berwick campus; it has been a highlight of our working day welcoming the University's vibrant staff members and students to their many meetings and forums on the Society's premises over the past three years, and we aim to continue the professional relationships formed through our fond association.

Meanwhile, we are absolutely delighted to welcome Simon Torok and Paul Holper of science communication agency [Scientell](#) to the Society's historic building.



Simon Torok (left) and Paul Holper receiving a Monash Business Award earlier this year

Simon and Paul are seasoned science communicators, writers, editors, marketers, media strategists and business developers. They have

acquired extensive experience as program managers and communications specialists with CSIRO over many years.

Scientell recently won the 2016-17 Monash Business Award in the "Micro Business" category in recognition of their significant achievements and innovations, which includes one of their pieces being included in [The Best Australian Science Writing 2017](#) – in some very fine company indeed.



Scientell launching their latest book, [Securing Australia's Future](#), developed from the Australian Council of Learned Academies' detailed, interdisciplinary research to help guide Australian thinking and policy decisions.

The Scientell team joins our friends and partners at [Eucalypt Australia](#) as a co-tenant aligned with the Society's mission to promote the awareness and appreciation of science and nature in Victoria. Please make Simon and Paul very welcome on your next visit to our building.

Another Gong for *The Invisible War*



We're very excited for our friends from art-science collaborative [Scale Free Network](#), winners of the Australian Publishers Association's overall Award for Excellence in Australian Educational Publishing with their fabulous graphic novel *The Invisible War: A Tale on Two Scales*!

Launched last year at the Royal Society of Victoria, this cross-curriculum resource, which spans science, history and English subjects, introduces readers to the microbiology of the gut and life on the Western Front during World War I. Congratulations to the whole creative team for due recognition of an outstanding collaboration.



RSV Member Dr Gregory Crocetti, microbiologist and co-convenor of Scale Free Network with partner in art/science/crime, Briony Barr (photo).

More information about this terrific book is available online at <https://theinvisiblewar.com.au/>.

Vale William Fenner



Bill Fenner at the Society in 2013

The Council of the Royal Society of Victoria records with sadness the passing of a much valued member in Mr William Fenner on 21 August, 2017 at the age of 95.

A member since 2001, Bill was a regular feature at the Society's lectures and events until moving

into care last year. An engineer with expertise in quality and productivity improvement and a keen interest in geology, geophysics, evolutionary biology and international politics, he was a forthright individual, brim full of ideas and a memorable feature of the Society's meetings, forums and events.

Fondly remembered by all who knew him. Our thoughts and condolences are with Monnie and family at this sad time.

RSV Support for Marriage Equality



Acknowledging there will be a plurality of views on this matter within our broad membership, the Executive and Council of the Royal Society of Victoria has expressed support for the equal rights for sexually and gender diverse members of the RSV, the science community and the broad Australian society to have their significant life partners recognised through the valuable legal instrument of marriage.

I urge everyone to likewise support the natural rights of our friends and colleagues, and return your postal surveys for inclusion in the count well before 6pm, 7 November, which is the cut-off point for the Australian Bureau of Statistics to receive your mail – Friday, 3 November is technically your last opportunity for the survey to hit the post.

The Society's full and official statement is posted online at <https://rsv.org.au/marriage-equality/>.

- **Mike Flattley, CEO**

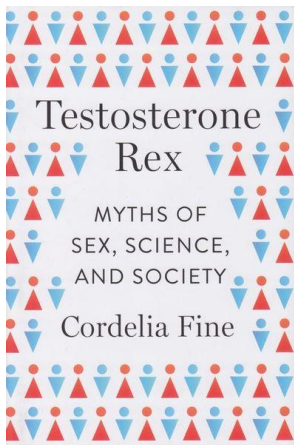
The Big Ideas Book Club

Wednesday, 29 November 2017

September brought us exciting news from London with the announcement of Melbourne-based academic **Professor Cordelia Fine's** book "Testosterone Rex" being selected as The Royal Society's **Science Book of the Year!** Warmest congratulations to Professor Fine, who is based at

the University of Melbourne's School of Historical and Philosophical Studies, on an outstanding achievement.

Testosterone Rex: Myths of Sex, Science and Society



"Testosterone Rex" will be November's book of the month for the **Big Ideas Book Club**.

In *Testosterone Rex*, psychologist Cordelia Fine wittily explains why past and present sex roles are only serving suggestions for the future, revealing a much more dynamic situation through

an entertaining and well-documented exploration of the latest research that draws on evolutionary science, psychology, neuroscience, endocrinology, and philosophy. She uses stories from daily life, scientific research, and common sense to break through the din of cultural assumptions. Testosterone, for instance, is not the potent hormonal essence of masculinity; the presumed, built-in preferences of each sex, from toys to financial risk taking, are turned on their heads.

Moving beyond the old "nature versus nurture" debates, *Testosterone Rex* disproves ingrained myths and calls for a more equal society based on both sexes' full, human potential.

Grab a copy, register to attend at <https://www.meetup.com/Big-Ideas-Book-Club/events/242538260/>, read up and join the discussion!

About the Big Ideas Book Club

This is a book club for anyone interested in Big Ideas. Each month we alternate between non-fiction and fiction in search of Big Ideas that we can explore, examine and openly discuss together. We meet at 6:30pm on the last Wednesday of every month at **Embiggen Books** in the Melbourne CBD. Hosted by Drs George Aranda and Kirsty Jones.

The 2017 Parliament Prize

Warmest congratulations to RSV member **Andre Coker**, who took out the second prize in this year's Parliament Prize in the **Years 7-9 category**!

It is the second year for the Victorian Parliament's competition and this year students were asked to respond to the question: 'The cloud is the limit:

how can technology be used to engage people in our democracy?'



Winners were announced and presented with their prizes on 20 September by the President of the Legislative Council, the Hon Bruce Atkinson MLC (MRSV), Legislative Assembly Speaker the Hon Colin Brooks MLA, the Hon Melina Bath MLC and the Hon Chris Couzens MLA.

Andre's essay examined the potential of digital platforms enabling a higher rate of participation in democratic processes and institutions. It goes the whole ten yards! Here's an excerpt:

"Looking to the future, a fully automated system of government could be established where citizens vote on every issue via digital devices. This would be very similar to direct democracy, a system where the public votes on government policy, but extending it to be fully automated with minimal human involvement. If a particular policy receives more than 50% yes votes, AIs (artificial intelligence) would implement it into official government policy. Elected human government representatives would no longer be needed, with the only humans in the chain being the citizens and the people who maintain the AIs."



Andre Coker receives his award from the Hon Melina Bath MLC

Andre's full essay is online at https://www.parliament.vic.gov.au/images/Education/Parliament_Prize_Winners/ParliamentPrize2017_AndreCoker.pdf

Well done Andre, we're really looking forward to your future efforts.

The 2017 Research Medal

Professor Trevor Lithgow



Warmest congratulations to Professor Trevor Lithgow, this year's winner of the prestigious **RSV Medal for Excellence in Scientific Research** in Category I: Biological Sciences (non-human).

The Medal is awarded on the strength of an exemplary publication track record, consistent excellence in innovation, groundbreaking research and patents, a track record of incorporating novel scientific techniques and methods, and exemplary leadership in science through public promotion, advocacy and influence across the scientific community.

The award of the Medal to Professor Lithgow acknowledges his outstanding contributions to the fields of Biochemistry and Cell Biology. Based at the Department of Microbiology within Monash University's Biomedicine Discovery Institute, he heads a team of postdoctoral fellows, research assistants and PhD students to examine cellular microbiology. He and his team uncover clues on how to tackle important issues like the rise of antibiotic-resistant bacteria – a priority on the Global Health Agenda. The knowledge his work has uncovered provides an essential step towards developing new anti-microbial strategies required by this century's environmental, agricultural and health industries.

"Victoria lays claim to some of the world's finest science talent, so the competition for the Research Medal is particularly vigorous," reported the Society's CEO, Mike Flattley. "The assessors can have a very tough time of it indeed, so Professor Lithgow can be justly proud of this outcome; it distinguishes him as one of the very best in a very broad field within our State."

Assessment panel members were suitably impressed with Professor Lithgow's nomination. "Trevor is a really excellent candidate, who has made a major contribution to the study of microbial evolution, structure and function that impacts on

knowledge of the tree of life and how evolution works by small, incremental steps," observed Professor Lynne Selwood AO, a distinguished biological scientist based at the University of Melbourne and former President of the Royal Society of Victoria.

Former Monash University Deputy Vice-Chancellor and vertebrate palaeontologist, Emeritus Professor James Warren commended Professor Lithgow for his contributions, noting his "approach to the question of origins is multifaceted, touching on biological systems at several levels. He approaches research in a collaborative way, involving others and participating effectively with international teams. He is well worthy of the Medal."

Professor Lithgow will present his work to the Society at the last meeting of the year, on Thursday, 14th December, where he will be presented with the Research Medal by Victoria's Lead Scientist, Dr Amanda Caples. Meanwhile, our grateful thanks to Professor Lynne Selwood AO, Dr Robert Day and Emeritus Professor James Warren for their challenging work on the assessments.

From the President

I'm ecstatic to announce that the RSV Council has elected two new Fellows – Professor Lynne Selwood AO and Professor Fiona Stanley AC. More details next month.

I'm delighted that the RSV Executive and Council has issued a statement in support of marriage equality. Since 1854 we have been making statements of support on matters of interest to our members. Please read our full statement on the website.

I've just started reading [*Women In Science – 50 fearless pioneers who changed the world*](#) by Rachel Ignatofsky. A very easy read – especially for younger people interested in science. If you want to borrow it after I've finished it – I'll leave it in the office for anyone to borrow - but I'd eventually like it returned so I can share it with other people who I encounter.

I'm embarrassed that I was in so many photos in last month's newsletter – my apologies. I prefer to see photos of our members and my fellow RSV Councillors.

I'm pleased to speak to any of our members – especially at our regular lectures. Also please feel free to contact me by email president@rsv.org.au or call me on 0418 346 999.