

AuPS/ASB CONFERENCE

4-7th DEC 2016

Hosted by

The University of South Australia
City West Campus, Adelaide

Adelaide Oval



Vineyards



Images: South Australia Tourism Commission

CONFERENCE HANDBOOK





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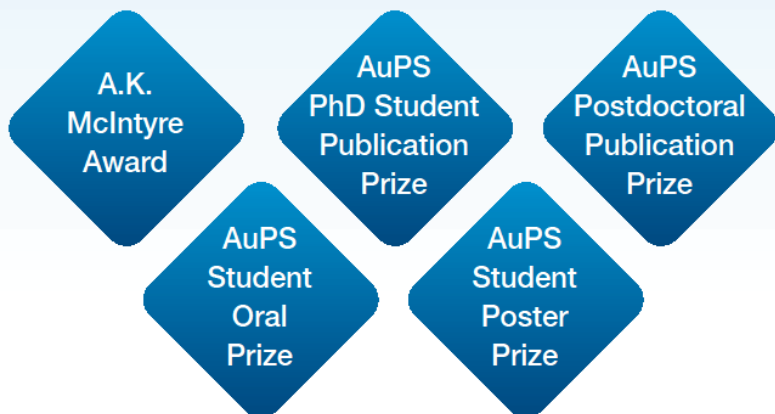
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Adelaide

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Image: Andy Steven

WELCOME

On behalf of the Australian Physiological Society (AuPS), and Australian Society for Biophysics (ASB), we welcome you to the 2016 Meeting in Adelaide. The meeting is hosted by The University of South Australia at the City West campus, from Sunday December 4 to Wednesday December 7 and features:

- Fifteen symposia across the physiological and biophysical sciences.
- Eleven international speakers.
- The physiological education symposium.
- Oral and poster free communication sessions with awards for student and post-doctoral presentations.
- AuPS Invited Plenary Lecturer:
Prof Lea Delbridge, The University of Melbourne
- Plenary Lecturer:
Prof Suzanne Scarlata, Worcester Polytechnic Institute, USA
- AuPS Michael Roberts Education Prize Lecturer (2015 winner):
Dr Julia Choate, Monash University

The welcome reception on the Sunday night features Prof. Delbridge's plenary lecture, followed by drinks and food. The annual conference dinner on the Tuesday night is at the world famous Adelaide Oval and should not be missed, especially not the optional tour of the Oval. The student and early career researcher mixer on Monday evening promises to be a terrific social event.

I would like to thank the members of the LOC, including Ingo Koeper, Damien Keating (Flinders University) and David Saint (University of Adelaide), Kate Doyle (Sansom Institute of Health Research administrative assistant) and our HDR volunteers for all of their help in putting together what we hope will be an excellent meeting scientifically with many fabulous opportunities for networking.



Professor Janna Morrison
Chair of the AuPS/ASB Local Organizing Committee
Janna.Morrison@unisa.edu.au / Ph. 0410 344 232

GENERAL INFORMATION

University of South Australia—City West Campus

Located in the centre of Adelaide's major arts, culture and entertainment precinct, City West provides a hub for artists and academics alike, and an atmosphere that is ripe for the exploration of ideas and the pursuit of excellence.

The campus is located on the western edge of the CBD, just a short stroll along North Terrace from Adelaide Railway Station. The campus has permanent sculpture displays and is also home to the Hawke Building, which features the Anne & Gordon Samstag Museum of Art (open weekdays, free admission) and Hawke Centre.

TRANSPORT

BY CAR

City west does not offer on campus parking. Parking is available throughout the city via metered or free on-road parking and/or commercial off-road parking.

- City West Wilson Carpark: 189-207 Hindley Street (enter via Clarendon Street). Rates – Mon-Fri \$17/\$18 earlybird, weekend \$6 flatrate

BY TAXI

There is a Taxi Rank available outside the Adelaide Casino, North Terrace. Adelaide Independent Taxis – phone: 13 22 11

PUBLIC TRANSPORT

The Adelaide Metro bus service provides a free city connector bus and free tram travel within the Adelaide CBD. <https://www.adelaidemetro.com.au/>

The nearest Tram stop is 'City West' and unsecured bike racks are available

USEFUL CONTACTS

- Emergency assistance (police, fire, ambulance): 000
- Police General Assistance: 131 444
- Royal Adelaide Hospital, North Terrace: (08) 8222 4000



Adelaide

CONFERENCE INFORMATION

EVENT ASSISTANCE

Should you require any assistance during the conference, please look for LOC members with a purple name tag

In case of emergency, please contact campus security located at the Jeffrey Smart Building, Level 1, Room JS1-05C. Ph: 1800 500 911 (24-hour, free call)

NAME BADGES

Please wear your name badge at all times, as it is your entry into all sessions and enables security to identify you as a conference delegate.

CATERING

Lunch, Morning and Afternoon Tea will be available in the Bradley Forum, Level 5 (H5-02) in the Hawke Building. There are also two cafes within 25m of the Hawke Building (Aroma and Espresso) if you prefer to purchase coffee (see campus map on page 11).

IT SUPPORT AND INFORMATION

If you require Wi-Fi access for your device during the conference, you may:

- Visit the following website to register for access to the UniSA network:
<https://guest.unisa.edu.au/>
- Connect via Eduroam
- Use the UniSA login sent to you by UniSA IT prior to the meeting. This will give you internet access during the meeting.



ORAL PRESENTATIONS AND POSTERS

Oral presentations & Speaker preparation room

The speaker preparation room is located in room H6-12.

All speakers must upload their presentation at least 30min before the start of their session. Files may be uploaded from 8am – 5 pm each day in any of the meeting rooms, including H6-12.

We recommend that you check any embedded videos or animated files at this time to ensure the file format is supported.

Poster Presentations

Posters can be mounted in the Bradley Forum from 7:45am on Monday, 5th December. Please put your poster on the numbered poster board, pins will be provided. Posters should be A0 or smaller and in portrait orientation.

Posters should remain on display for the duration of the conference. The official poster session will take place on Tuesday, but all meals are in the area of the posters so you may wish to visit posters throughout the meeting.

VENUES

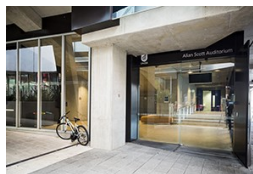
Welcome Reception and Gallery

The Welcome reception will take place on Sunday evening in the Kerry Packer Civic Gallery, Level 3, Hawke Building. You can access the room from the North Terrace entrance to the Hawke Building via stairs or elevator or via the back of the Allan Scott Auditorium.

Presentations, workshops and discussions

Presentations, symposia, free communications and workshops will take place in one of the following rooms (as indicated in the programme):

- Allan Scott Auditorium
Ground Floor, H2-16 Hawke Building
- Bradley Forum
Level 5, H5-02 Hawke Building
- Lecture Theatre BH2-09
Level 2, Barbara Hanrahan Building
- Lecture Theatre HH3-08 and HH3-09 Level 3,
Sir Hans Heysen Building
- Room H6-12, Level 6
Hawke Building



Posters

Posters will be displayed from Monday on level 5 in the Bradley Forum (H5-02) in the Hawke Building.

Speaker preparation and assistance

The speaker preparation area and IT support is located in room H6-12, Level 6 of the Hawke Building

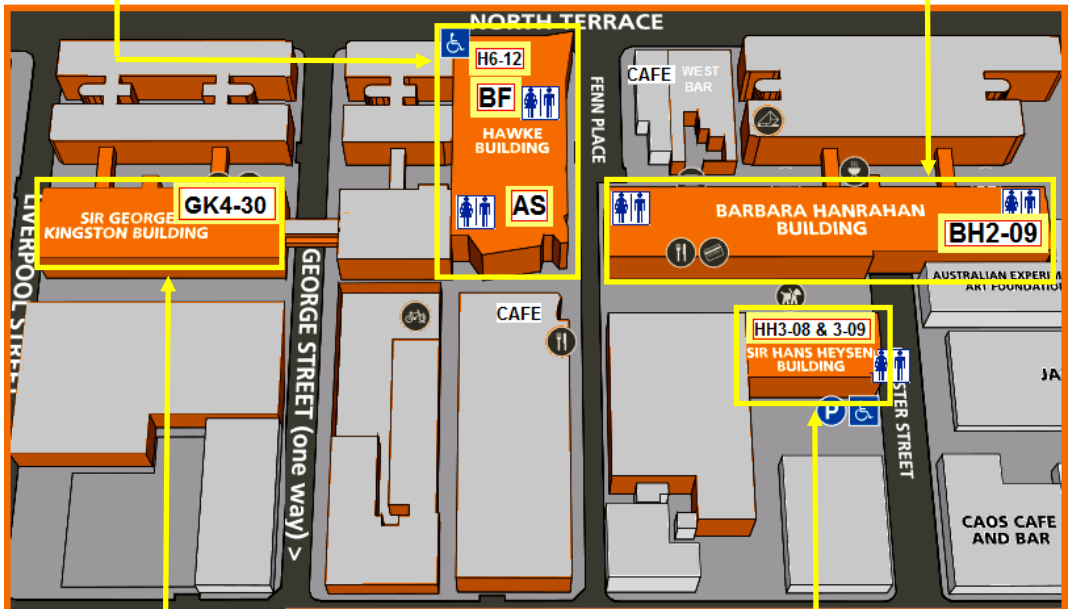
VENUES - FLOOR PLAN

Hawke Building

- **Allan Scott Auditorium [AS]**
Ground Floor, H2-16
- **Bradley Forum [BF]**
Level 5, H5-02
- **Speaker Prep./ECR workshop**
Level 6, H6-12

Barbara Hanrahan Building

- **BH2-09**
Lecture Theatre, Level 2



Sir George Kingston Building

- **GK4 -30 (Education workshop)**
Tutorial room, Level 4

Sir Hans Heysen Building

- **HH3-08 & HH3-09**
lecture Theatre, Level 3



Image: The Cumby

STUDENT & ECR MIXER - MONDAY 5TH DECEMBER

Time: 7pm

Location: The Cumberland Arms Hotel 'The Cumby'
205 Waymouth St, Adelaide

Dress: Casual

The Student and ECR function will start at 7pm after the ECR workshop on Monday. The Cumberland Arms Hotel is a short walk from the conference venue (see map below). This is a great opportunity to share a drink and a meal with new and old friends!





Image: Adelaide Oval Stadium Management Authority

CONFERENCE DINNER - TUESDAY 6TH DECEMBER

- Time:** Pre-dinner drinks at 6:30pm, dinner at 7pm.
(Tour of the Oval—pre-registered guests only: 6pm*)
- Location:** Ian McLachlan Room, Adelaide Oval
- Dress:** Lounge Suit

Located in the parklands between the city centre and North Adelaide, Adelaide Oval is one of South Australia’s most impressive venues boasting picturesque views of the hallowed turf, the city, Torrens River and St Peter’s Cathedral.

The Oval has been headquarters to the South Australian Cricket Association (SACA) since 1871 and South Australian National Football League (SANFL) since 2014. The stadium underwent major redevelopments between 2008 and 2014. and is internationally renowned as one of the most picturesque Test cricket grounds in Australia, if not the world.



* Tour guests: please meet at the Concierge Desk, South Gate War Memorial Drive at 5:50pm

The logo for ADINSTRUMENTS features a stylized white 'A' with a diagonal slash above the word 'ADINSTRUMENTS' in white, bold, uppercase letters, all set against a dark blue rectangular background.

ADINSTRUMENTS

The logo for SDR SCIENTIFIC consists of the letters 'SDR' in a large, bold, blue font, with 'SCIENTIFIC' in a smaller, blue font below it. Underneath, the text 'EQUIPMENT • SUPPORT • RESULTS' and the website 'WWW.SDR.COM.AU' are written in a smaller, blue font.

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GeneWorks

The MAWA logo features the letters 'MAWA' in a white, bold, serif font, centered within a black rectangular box. A red, curved ribbon-like shape passes behind the box, extending from the left and curving upwards to the right.

MAWA
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THE UNIVERSITY
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Adelaide Oval

Image: South Australia Tourism Commission

CONFERENCE PROGRAMME 2016





Image: John Wardle Architects

SUNDAY 4TH DECEMBER

Sunday 4th December 2016

Allan Scott Auditorium
Ground Floor, Hawke Building

GK4-30
Sir George Kingston Building

13:30

Registration

Location: Foyer of Allan Scott Auditorium, ground floor, Hawke Bldg

14:00

Education Workshop
Developing teaching resources to aid with large scale teaching and assessment

14:30

15:00

Chairs: Charles Sevigny & Julia Choate

15:30

16:00

16:30

17:00

AuPS Invited Lecture - Prof Lea Delbridge

Chair: Graham Lamb

L.M.D. Delbridge:
17:30 Cardiac adventures in autophagy

18:00

[182P](#)

Welcome Reception

Location: Kerry Packer Gallery, Level 3, Hawke Building

18:30

19:00

19:30



2-5PM, SUNDAY 4TH DECEMBER

AUPS EDUCATION WORKSHOP

**DEVELOPING TEACHING RESOURCES TO AID WITH LARGE SCALE
TEACHING AND ASSESSMENT**

Chairs: Charles Sevigny & Julia Choate

During this workshop we will work together to develop an on-line learning module for thermoregulation. We will be assisted by education designer Jairus Bowne who has been developing physiology modules for the Smart Sparrow platform. By the end of the session we will have created a module together which can ultimately be embedded into your teaching.

While we will use the Smart Sparrow platform for this workshop, many other similar platforms for education content delivery are also available. These platforms facilitate learning and teaching in large cohorts through delivery of rich media, custom content design, live tailored feedback, and multiple avenues for assessment. Student interaction is tracked by a suite of analytics which report on many facets of student learning, and can function as an early warning system to identify students who are performing poorly. In this manner, the modules serve to both deliver content, and report on student interaction on scale.

For further information please contact Workshop convenors Charles Sevigny sevignyc@unimelb.edu.au or Julia Choate julia.choate@monash.edu



Adelaide Oval, Image: Al Toetu

5:30PM, SUNDAY 4TH DECEMBER

AUPS INVITED LECTURE

Cardiac adventures in autophagy



Prof Lea Delbridge
University of Melbourne

Prof Lea Delbridge heads the Cardiac Phenomics Laboratory in the Department of Physiology at the University of Melbourne. Her research goals are to understand structural and functional cardiopathology in different forms of diabetic and hypertrophic cardiomyopathy. Her current work is supported by NHMRC and ARC funding. Lea has published over 120 peer reviewed papers in many top-discipline journals. She completed her PhD at the University of Melbourne, and had training positions at Dalhousie University (Halifax, Canada) and at Loyola University (Chicago, USA) as an International Fellow of the American Heart Association. Lea is elected World Council Secretary General of the International Society of Heart Research (ISHR) and was President of the Australasian ISHR Section 2007-2013. She is an elected Fellow of the Cardiac Society of Aust & New Zealand and Council member of the Australian Physiological Society (AuPS). She is an editorial board member for a number of international journals, including J Molecular & Cellular Cardiology, Frontiers in Physiology and Am J Physiol (Heart).

7:30PM, SUNDAY 4TH DECEMBER

WELCOME RECEPTION

The Welcome reception will take place on Sunday evening in the Kerry Packer Civic Gallery, Level 3, Hawke Building.

The Kerry Packer Civic Gallery

The Kerry Packer Civic Gallery within the Bob Hawke Prime Ministerial Centre of the University of South Australia celebrated its opening with the Hawke Building on 11 October 2007.

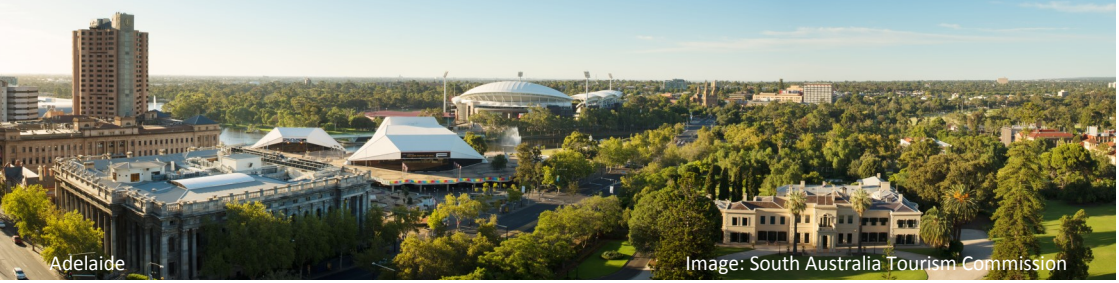
The Kerry Packer Civic Gallery is a gallery with exhibitions that reflect our themes:

Strengthening our Democracy - Valuing our Diversity - Building our Future.

Using a multi-media approach, the Gallery draws attention to the main issues that govern a fair society - through images, quotes, socially oriented art/technology installations and other special features. The Gallery has been generously endowed by the family of the late Kerry Packer, a highly influential figure in Australia's media industry history, and superbly designed by outstanding architect, John Wardle in association with Hassell Adelaide. Funding support has also been provided by Mitsubishi Motors Australia.

Exhibitions are presented by the Hawke Centre throughout the year and are free to the general public. The Gallery is open weekdays 9am – 5pm and until 7pm on Thursdays as part of Arts after Dark.

<http://www.unisa.edu.au/Business-community/Hawke-Centre/Kerry-Packer-Civic-Gallery/>



8AM MONDAY 5TH DECEMBER

AUPS MICHAEL ROBERTS EDUCATION PRIZE LECTURE 2015 WINNER

Preparing our students for employment with in-curriculum skills development



Dr Julia Choate
Monash University

Dr Julia Choate is the director of undergraduate physiology education and the deputy program convener of the Bachelor of Biomedical Science Course at Monash University. She is passionate about enhancing students' university experiences and equipping them for life-long learning, using novel guided-inquiry lectures (for large cohorts) to improve student participation, understanding and skills development and developing students' employability skills with an in-curriculum professional development program. The guided-inquiry lectures use a learning cycle of exploration, concept invention and application to guide students in constructing new knowledge, as well as developing their problem solving and communication skills, and were acknowledged with a 2016 Dean's award (Excellence in Education). The professional development program was developed in response to high levels of biomedical student anxiety and stress (especially about their careers options). This course-wide program raises student awareness of potential careers and their employability skills, assists them to effectively communicate their skills and is assessed via a transferable electronic portfolio. Julia is on the Higher Education Research and Development Society of Australasia Victorian Executive and is the recipient of a 2016 Monash Education Academy fellowship

Monday 5th December

HH3-08 3rd floor, Sir Hans Heysen Bldg
 Allan Scott Auditorium Ground Floor, Hawke Building
 HH3-09 3rd floor, Sir Hans Heysen Bldg
 BH2-09 2nd floor, Barbara Hanrahan Bldg

Registration

In foyer of Allan Scott Auditorium, ground floor Hawke Bldg until 09:30, then in Bradley Forum, level 5, Hawke Bldg

08:00

Roberts Lecture

Chair: Graham Lamb

J.K. Choate: Enhancing students' university experiences by engaging them with their course and equipping them for life-long learning **18:4P**

08:30

Free Communications - Skeletal Muscle

Chairs: Severine Lamon & Tony Bakker

K.F. Howlett: Role of the extracellular matrix protease ADAMTS5 in diet induced insulin resistance **1P**

S. Lamon: Dysregulation of miRNA biogenesis machinery, miRNA/RNA ratio and miRNA normalizing targets in skeletal muscle of ALS mice **2P**

X. Ren: Characteristics of MMP-2 protein in rat skeletal muscle **3P**

X. Koenig: Real time imaging of trans-sarcolemma Ca^{2+} -fluxes in mammalian skeletal muscle **4P**

J. Lam: Effect of curcumin exposure on skeletal muscle contractile function **5P**

M.A. Wallace: The influence of low carbohydrate and ketogenic diets on longevity and skeletal muscle maintenance with ageing **6P**

N.A. Beard: Anthracycline-induced skeletal muscle weakness: a role for chronic oxidative stress and disrupted calcium homeostasis? **8P**

09:00

M.K. Smith: Transforming the classroom and helping others to adopt teaching innovations
 Chair: Kay Colthorpe
 08:30 classroom and helping others to adopt teaching innovations **9P**

A.J. Moorhouse: "Hands-on" practical class activities to engage students in basic principles of cell physiology **10P**

09:30

T.D. Mulhern: Strategies for overcoming students' misconceptions in large class settings **11P**

P. Poronnik: Creating and supporting transformation in physiology teaching **12P**

10:00

N. Packner: Visualising 10,000 N-glycosylation patterns in cancer and non-cancer cells **16P**

10:30

Morning Tea (Bradley Forum, Level 5, Hawke Bldg)

Symposium: Membrane active peptides and proteins
 Chair: Frances Separovic

E. Deplazes: Phospholipid binding activity of the spider venom peptides ProTx-I and ProTx-II **17P**

Symposium: Thinking small: Seeing biological processes with nanotechnology and photonics
 Chair: Andrea Yool

A. François: Whispering gallery mode lasers for biosensing applications **13P**

Symposium: Transforming the classroom and helping others to adopt teaching innovations
 Chair: Kay Colthorpe

M.K. Smith: Transforming the classroom and helping others to adopt teaching innovations **9P**

M.-A. Sani: Structure and membrane topology of the pore-forming peptide maculatin 1.1 depends on lipid composition **18P**

S. Heng: Reversible sensing with a flip of the switch **14P**

S.T. Henriques: Membrane-binding and cellular uptake of cyclolides: scaffolds that stabilize and deliver drugs **19P**

M.R. Hutchinson: Nanoscale Biophotonics - using light to measure the previously unmeasurable within the central nervous system **15P**

M.B. Ulimshneider: How membrane active peptides partition into bilayers and spontaneously assemble into functional membrane proteins **20P**

N. Packner: Visualising 10,000 N-glycosylation patterns in cancer and non-cancer cells **16P**

MONDAY 5TH DECEMBER

Monday 5th December			
HH3-08 3rd floor, Sir Hans Heysen Bldg	Allan Scott Auditorium Ground Floor, Hawke Building	HH3-09 3rd floor, Sir Hans Heysen Bldg	BH2-09 2nd floor, Barbara Hanrahan Bldg
<p>Symposium: Latest advances in fluorescence and applications to physiological problems Chair: Pierre Moens</p> <p>11:00 F.A. Meunier: Nanoscope odyssey into the presynapse <u>21P</u></p> <p>11:30 A.C.F. Coster: On and off again: Tools and models for single molecule fluorescence imaging of actin and tropomyosin <u>22P</u></p> <p>12:00 A.H.A. Clayton: Probing and perturbing receptor signaling with microscopy, nanotechnology and microfluidics <u>23P</u></p> <p>12:30 R.J. Davey: Profilin membrane dynamics in live cells <u>24P</u></p>	<p>Symposium: Enteric neural functional circuits of intestinal motility Chair: Marcello Costa</p> <p>11:00 F.C. Britton: Inspiring student learning through the introduction of The Reading Game <u>25P</u></p> <p>11:15 R.A. Taylor: Online simulations to support the teaching of physiology wet lab practicals <u>26P</u></p> <p>11:30 K. Colthorpe: Assessing critical evaluation skills of undergraduate science students <u>27P</u></p> <p>11:45 L. Ainscough: Learning hindrances and strategies reported by undergraduate physiology students: What makes a student resilient? <u>28P</u></p> <p>12:00 Y.M. Hodgson: Using simple online quizzes to prepare students for lectures <u>29P</u></p> <p>12:15 T.M. Lewis: Online adaptive tutorials that support learning in data interpretation and scientific reasoning <u>30P</u></p>	<p>Symposium: Enteric neural functional circuits of intestinal motility Chair: Marcello Costa</p> <p>11:00 M. Costa: Neuromechanical factors of intestinal motility <u>31P</u></p> <p>11:30 G. O'Grady: High-resolution analysis of human gastrointestinal motor patterns and the clinical applications <u>32P</u></p> <p>12:00 J.C. Bornstein: Synaptic transmission in enteric circuits <u>36P</u></p> <p>12:30 N.J. Spencer: High resolution neuronal imaging reveals a novel enteric neural firing pattern that underlies colonic motor patterns in the mouse colon <u>37P</u></p>	<p>Free Communications - Membrane Transport Chairs: Ingo Koepfer & Renaee Ryan</p> <p>11:00 R.J. Vandenberg: Molecular basis for substrate and inhibitor interactions with the glycine transporter, GlyT2 <u>39P</u></p> <p>11:15 S. Mostyn: Heads and tails: lipid inhibitors of glycine transport <u>40P</u></p> <p>11:30 R.J. Clarke: A possible Achilles heel of ion pumps <u>41P</u></p> <p>11:45 N.J. Freidman: Developing novel inhibitors of the glutamine transporter ASCT2 to treat cancer <u>42P</u></p> <p>12:00 O. Alghamdi: The effect of ageing and hypertension on the proton-coupled transporters PEPT1 and PEPT2 in the renal proximal tubule <u>43P</u></p> <p>12:15 R.J. Cater: Tuning the ion selectivity of glutamate transporter associated uncoupled conductances <u>44P</u></p> <p>12:30 Q. Wu: Investigating the elevator mechanism in a human nucleoside transporter (hCNT3) <u>45P</u></p> <p>12:45 A. Garcia: Effects of cholesterol depletion on the parital reactions of the Na⁺, K⁺-ATPase <u>46P</u></p>
<p>Lunch</p> <p>13:00 ASB AGM Location: H6-12, Hawke Bldg</p>			

Monday 5th December	
Allan Scott Auditorium	
Ground Floor, Hawke Building	
HH3-08	BH2-09
3rd floor, Sir Hans Heysen Bldg	2nd floor, Barbara Hanrahan Bldg
14:00	
Free Communications - Cardiac muscle and vessels	Symposium: Mechanisms of pumps, channels and transporters
Chair: Mary Wlodke	Chair: Ron Clarke
C.M. Loescher Novel fluorescent techniques for investigating calcium handling properties of the cardiac sarcoplasmic reticulum (SR) and calsequestrin in the presence and absence of dantrolene 47P	T.W. Allen Mechanisms of sodium selectivity in membrane ion transport 64P
14:15	14:00
M.E. Reichelt Cavin-1 deficiency modifies cardiac and coronary responses to stretch and ischemia by augmenting NOS activity 48P	E. Cao The impact of intestinal lymph drainage on adipose tissue function and whole body insulin resistance 60P
14:30	14:30
A.F. Duffhury Further consideration of FKBP12 association with RyR1 and RyR2 and regulation of RyR channel activity 49P	E.W.L. Sun Melformin directly triggers GLP-1 and PYY secretion in human colon and ileum 61P
14:45	14:30
A.J.A. Raaijmakers Characterising the intact rat cardiomyocyte 51P	A.M. Martin The nutrient sensing capacity of mouse enterochromaffin cells is dictated by gastrointestinal location 62P
15:00	14:45
H.H. Ng Serelaxin treatment reverses vascular dysfunction and cardiomyocyte hypertrophy in the streptozotocin-induced mouse model of Type 1 diabetes 52P	A.L. Lumsden Characterisation of glucose-induced serotonin secretion from primary cultured human enterochromaffin cells in health and disease 63P
15:15	15:00
M. Frontus Shear force responsiveness of arteries depends on an interdependent activity of the epithelial Na ⁺ channel and the endothelial glycoalkal 53P	K. Poole Mechanoelectrical transduction at the membrane-matrix interface 66P
15:30	15:30
M. Christie The effect of intrauterine growth restriction on Ca ²⁺ -activated force in β -escan skinned mesenteric arteries of 6-month old male Wistar-Kyoto rats 54P	F. Tadini-Buoninsegni Functional characterisation of P-type ATPases using solid-supported membrane based electrophysiology 67P
15:45	
C.H. Leo Short term serelaxin treatment reduces prostanoind-mediated endothelium-derived vasoconstriction and restores endothelial vasodilator function without concomitant changes to cardiac remodelling in spontaneously hypertensive rats 55P	
16:00	
Afternoon tea	

4:30pm, MONDAY 5TH DECEMBER

PLENARY LECTURE

CAVEOLAE MEMBRANE DOMAINS CONNECT G PROTEIN-MEDIATED CALCIUM SIGNALS WITH MECHANICAL DEFORMATION



Prof Suzanne Scarlata
Worcester Polytechnic Institute, USA.

Prof Suzanne Scarlata's research uses biophysical approaches, and in particular advanced fluorescence imaging methods, to understand the regulation of G protein signaling in living cells, and how these signals in turn impacts cell function including post-transcriptional gene regulation. Prof. Scarlata began her career as a staff scientist at AT&T Bell Laboratories before joining the faculty at Cornell Medical College in New York. She later moved to the Dept of Physiology & Biophysics at Stony Brook University on Long Island NY where she became a full professor. Last year, she accepted the Richard Whitcomb endowed chair at Worcester Polytechnic Institute in Worcester, Massachusetts. Dr. Scarlata was an American Heart Association Established Investigator and has had continuous supported from the National Institutes of Health. She is currently associate editor of the Journal of Bioenergetics and Biomembranes and has served as a member of the editorial boards of BBA Biomembranes (2009-16), Analytical Biochemistry (2002-15), and the Journal of Biological Chemistry (2004-09). She is currently serving as President of the Biophysical Society.

Supported by an [ARC Georgina Sweet Travel Support Award](#)

Monday 5th December

Allan Scott Auditorium
Ground Floor, Hawke Building

H6-12
(Level 6, Hawke Building)

16:30

Plenary Lecture

S.F. Scarlata Caveolae membrane domains connect G protein – mediated calcium signals with mechanical deformation

68P

17:30

ASB GM

AUP'S Early Careers Workshop
Location: H6-12, Hawke Bldg

18:30

EARLY CAREER INVESTIGATOR WORKSHOP:

CAREER CHALLENGES, SOCIAL MEDIA, AND SEEKING OPPORTUNITIES THAT LIE AHEAD

The Student/ECI interaction session will focus on several topics that are pertinent for early career scientists today. The first part of the discussion will revolve around an editorial article recently published in Nature, titled "Early career researchers need fewer burdens and more support". We will ask the panel's response to this article, and discuss advice for ECIs taking on these roles and being faced with these challenges. Following this discussion, we will move onto topics that you have asked to hear about - specifically, the transition between PhD to postdoc, benefits (or not) of social media (twitter, blogging) communication, and preferential times for searching/applying for jobs. We anticipate a lively discussion based on scenarios and personal experience, highlighting considerations and strategies for us to consider as we progress through our own careers. We encourage (we need!) audience participation in the discussion, so please come with questions and opinions!

19:00

Student/ECR mixer

Meet after the ECR workshop (room H6-12 Hawke Building) and walk to the venue, or meet at The Cumberland Arms Hotel (see details on page 13)

08:30 Chair: Damien Keating Symposium: The many pathways of gut control of metabolism	Symposium: Stem cells and tissue engineering: New tools for experimental physiology and regenerative medicine Chairs: Enzo Porello & James Hudson	Symposium: Alternative approaches to the use of animals in physiology and biophysics Chairs: Toby Allen & Boris Martinac
08:30 F. Reimann: L-cell physiology and glucagon-like peptide-1 (GLP-1) secretion 69P	08:30 M. Tiburcy: Engineered heart muscle for modelling human cardiac disease 73P	08:30 E. Perozo: Structural basis of Mg ²⁺ import in bacteria and mitochondria 181P
09:00 R.L. Young: Augmented capacity for intestinal serotonin release in obese subjects 70P	09:00 J.E. Frith: Manipulation of mechanoreceptive miRNAs to drive mesenchymal stem cell fate in biomaterial composites 74P	09:05 A.D.H. Peterson: Modelling for understanding and prediction of epileptic seizures as a viable replacement for animal models 77P
09:30 A.J. Page: Satiety signals from the gastrointestinal tract in health and obesity 71P	09:30 R.J. Mills: Bioengineering skeletal muscle: how to build an intact human motor unit 75P	09:25 A.P. Hill: Examining the contribution of environmental factors to arrhythmogenesis using human induced pluripotent stem cell derived cardiomyocytes 78P
10:00 D.J. Keating: Use of a novel Down syndrome genetic screen identifies a regulator of pancreatic β -cell function linked to type 2 diabetes 72P	09:45 S.P. Lal: The Sydney Heart Bank: An international resource to help understand human heart failure while minimising the use of animals 79P	10:05 M.A.B. Baker: Droplet-hydrogel lipid bilayers as an alternative model for studying mechanosensation 80P

Tuesday 6th December	
HH3-08 3rd floor, Sir Hans Heysen Bldg	HH3-09 3rd floor, Sir Hans Heysen Bldg
Allan Scott Auditorium Ground Floor, Hawke Building	BH2-09 2nd floor, Barbara Hanrahan Bldg
<p>11:00 Symposium: Skeletal muscle physiology in health, disease and ageing Chair: Bradley Launikonis</p> <p>11:00 TH. Pedersen: Role of CIC-1 Cl⁻ ion channels for skeletal muscle function in health and disease <u>81P</u></p> <p>11:30 C.J. Barclay: Using energetics to understand the basis of diverse muscle function <u>82P</u></p>	<p>Free Communications - Cell signalling Chairs: Grygori Rychkov & Trevor Lewis</p> <p>11:00 R.A. Taylor: Blocking fatty acid uptake reduces prostate cancer progression <u>89P</u></p> <p>11:15 D. Poger: Stimulating biologically relevant membranes: tackling lipid diversity in bacterial membranes <u>90P</u></p> <p>11:30 C.W. Gray: AK translocation under increasing insulin stimulation <u>91P</u></p> <p>11:45 V. Suresh: Barrier function and ion transport in an oleic acid-induced model of lung injury <u>92P</u></p> <p>12:00 R.M. Dwyer: Vitamin D and sex affect metabolic function and the development of NAFLD <u>93P</u></p> <p>12:15 A.A. Peters: Golgi calcium pump secretory pathway Ca²⁺-ATPase 1 (SPCA1) in breast cancer cells <u>94P</u></p> <p>12:30 G.Y. Rychkov: Regulation of Ca²⁺ intracellular pH <u>95P</u></p> <p>12:45 G.D. Housley: Phenotyping the differential innervation of the peripheral knockout mouse cochlea <u>7P</u></p>
<p>11:30 C.J. Barclay: Using energetics to understand the basis of diverse muscle function <u>82P</u></p> <p>12:00 C.R. Lambolley: Sarcoplasmic reticulum function in human skeletal muscle during ageing and inactivity <u>83P</u></p> <p>12:30 B.S. Launikonis: Altered Ca²⁺-handling in human skeletal muscle to alleviate Ca²⁺-induced damage in the days associated with delayed onset muscle soreness <u>84P</u></p>	<p>Free Communications - Membrane and protein biophysics Chairs: Charles Cranfield & Jacob Anderson</p> <p>11:00 I.Y. Hasan: Nano-domain equilibria in biomimetic membranes <u>98P</u></p> <p>11:15 C.G. Cranfield: How the morphology of lipid bilayers is altered by pH <u>97P</u></p> <p>11:30 I. Köper: Tethered bilayer lipid membranes to study membrane proteins <u>98P</u></p> <p>11:45 J. Andersson: A model of the outer membrane of Gram-negative bacteria <u>99P</u></p> <p>12:00 P.D.J. Moens: Analysis of profilin dynamics at the cell membrane by image pair correlation and number and brightness analysis <u>101P</u></p> <p>12:15 M.H. Rashid: Exploring the binding of amyloid fibril by docking and all-atom simulations <u>102P</u></p> <p>12:30 D.M. Hatters: Huntingtin inclusions trigger cellular quiescence, deactivate apoptosis and lead to delayed necrosis <u>103P</u></p> <p>12:45 L.M. Sternik: Investigating the role of the N-terminal domain unique to eukaryotic class III Botlin Protein Ligases <u>104P</u></p>
<p>12:00 M.J.J. Morris: Investigating the impact of exercise during pregnancy <u>87P</u></p> <p>12:30 G.K. McConnell: Developmental origins of health and disease: can exercise early in postnatal life improve adult outcomes? <u>88P</u></p>	<p>Symposium: Developmental origins of health and disease: metabolism and exercise Chair: Glenn McConnell</p> <p>11:00 K.L. Gattford: Developmental origins of health and disease – can exercise improve adult outcomes? <u>85P</u></p> <p>11:30 M. Lane: Exercise before conception – dads matter too <u>86P</u></p>

Lunch

13:00

Tuesday 6th December

Bradely Forum (H5-02, Hawke Building)

13:30

Posters and Afternoon Tea

- 1 105P **A. Das:** Impairment of an endothelial NAD⁺-H₂S signaling network is a reversible cause of vascular aging
- 2 106P **P.T.T. Nguyen:** A general discretization method for connecting free-energy landscape models of biomolecular motors to motor behaviour
- 3 107P **M. Oda:** Structural dynamics and physical properties of single-chain Fv antibodies against (4-hydroxy-3-nitrophenyl)acetol
- 4 108P **D.M. Houstey:** A HEK293 bioreporter cell line demonstrates temporally differentiated effects on impedance and γ -aminobutyric acid receptor modulation by venom fractions from the Australian scorpion *Loxocleles weigmanni*
- 5 109P **E. Deplazes:** Thumbs up for PCTX1 – mechanistic insight into the binding of the venom peptide PCTX1 to the acid sensing ion channel 1a from free energy calculations
- 6 110P **D. Kloosterman:** Delayed post-prandial insulin secretion in individuals with low diabetes risk and its reversibility with exercise training
- 7 111P **L. Kiriaev:** Age related changes in mass contractile properties and eccentric contraction damage of fast- and slow-twitch mouse muscles
- 8 112P **H. Dockrell:** Serotonin distribution in the colon: insights from computational biology
- 9 113P **S. Inaba:** Structural dynamics of c-Myb DNA-binding domain revealed by variable temperature and pH studies
- 10 114P **E. Flood:** Simulations of ion selectivity in the acid-sensing ion channel ASIC1a
- 11 115P **D. Patel:** Computational study of aggregation mechanism in lysozyme [D67H]
- 12 116P **K. Javed:** Development of biomarkers for the protein restriction using *S66a19* knock out mice
- 13 117P **Q. Cheng:** Identification of novel inhibitors of the amino acid transporter B9AT1 (SLC6A19), a potential target to induce protein restriction and to treat type 2 diabetes
- 14 118P **J.V. Janssens:** The cardiac troponin complex is modified by advanced glycation end-products *in vivo* and *in vitro*
- 15 119P **R.H. Choi:** Integral role of Mg²⁺ in observing the inhibitory effect of dantrolene
- 16 120P **S. Al Rawi:** Effects of novel urea analogues of NS1643 on potassium and calcium fluxes in cardiac muscle cells
- 17 121P **J.E. Church:** Thymosin beta 4 and its bioactive fragments as preconditioning agents for skeletal myoblasts
- 18 122P **P.H. Barry:** Mobilities of methanesulfonate, needed for liquid junction potential corrections, and of two related anions, and a mystery solved
- 19 123P **F.H. Zhou:** The role of TRPM2 channels in the liver ischemia-reperfusion injury
- 20 124P **G. Morales-Schoiz:** Autophagy modulation in the liver and skeletal muscle of high-fat fed mice
- 21 125P **L.J. Keightley:** Cyclic neural motor patterns in the full isolated intact intestines of the mouse
- 22 127P **M.K. Adams:** Ca²⁺ release-activated Ca²⁺ channels are regulated by Calpain
- 24 128P **P. Ridone:** Human Piezo1 membrane localization and gating kinetics are modulated by cholesterol levels
- 25 129P **R. Mond Rosli:** Assessment of gas and liquid bolus movement using impedance manometry in rabbit colon
- 26 130P **T. Berry:** A study of the effects of tethering chemistry on the properties of tethered membranes
- 27 131P **H.K. Smith:** Molecular, architectural and functional adaptations of skeletal muscle to power resistance exercise
- 28 132P **A.J. Moorhouse:** Overexpression of KCQ2 reduces neuronal hyperexcitability
- 29 133P **C.J. Taylor:** Hypoxic preconditioning of myoblasts implanted in a tissue engineering chamber significantly increases local angiogenesis via regulation of angiogenic growth factors and miRNA
- 30 134P **C.J. Taylor:** Serum miRNAs are unsuitable for use as biomarkers for assessing skeletal muscle regeneration in a commonly used mouse model of myotoxic injury
- 31 135P **M.A. Fuller:** A breath of fresh air for cystic fibrosis- using nanotechnology to increase efficacy of gene therapy
- 32 136P **A.J. Bakker:** High frequency doublet stimulation enhances the rate of force development in fast-twitch skeletal muscle by increasing early binding of Ca²⁺ to the second binding site of troponin C
- 33 137P **S.M. Lee:** (+)-naloxone and (+)-naloxone limits nuclear factor K β translocation in LPS stimulated H9C2
- 34 138P **L.G. Forgan:** Inhibition of the extracellular matrix protease ADAMTSS improves strength in fast-twitch hindlimb muscles from young, dystrophic *mdx* mice
- 35 139P **N.L. McRae:** The consequences of the genetic reduction of the extracellular protein versican on hindlimb muscle function and structure depend on muscle fibre type and age in dystrophic *mdx* mice

Tuesday 6th December		Tuesday 6th December	
HH3-08	Allan Scott Auditorium	HH3-09	BH2-09
3rd floor, Sir Hans Heysen Bldg	Ground Floor, Hawke Building	3rd floor, Sir Hans Heysen Bldg	2nd floor, Barbara Hanrahan Bldg
15:30	<p>Symposium: New paradigms in myocardial metabolism and pathogenesis Chairs: Kimberley Mellor & Livra Hool</p> <p>F. del Monte: Cofilin: a cardiac amyloid precursor implicated in dilated cardiomyopathy 141P</p>	<p>Symposium: A placenta for life Chair: Deanne Hyocw</p> <p>C. T. Roberts: Crosstalk between the mother, placenta and fetus in health and disease 144P</p>	<p>Free Communications - Channel biophysics Chair: Glenn King</p> <p>L. Ma: Novel human EAG1 channel antagonists from spider venoms 148P</p> <p>A.J. Agwa: Spider peptide toxin HwTx-IV engineered to bind to lipid membranes has an increased inhibitory potency at human voltage-gated sodium channel Nav1.7 149P</p>
16:00	<p>S.L. McGee: Adipose-derived amyloid protein exerts cardiometabolic effect 141P</p>	<p>N.J. Hannan: Hypoxic inducible miRNAs in placental pathologies 145P</p>	<p>B.A. Cromer: Role of GABA_A receptor N-terminal regions in assembly, trafficking and function 150P</p> <p>N. Bawi: Perturbation of bilayer surface tension differentially modulates mechanosensitive ion channels 151P</p>
16:30	<p>J.R. Bell: Cardiac adipose, aromatase and arrhythmia vulnerability 142P</p>	<p>J.S.M. Curffe: Maternal glucocorticoids impair placental development, induce cellular stress and program fetal outcomes in a sex specific manner 146P</p>	<p>Y.A. Nikolaev: Force sensitivity of TRPC6 ion channel 152P</p> <p>S.A. Holt: Fundamentals of the interaction between BNSAID chemopreventive agents and cell membrane mimics 153P</p>
17:00	<p>K.L. Weeks: HDAC signalling through post-translational modification exerts hypertrophic action 143P</p>	<p>V.L. Clifton: The placenta for life: detecting childhood susceptibility to allergy 147P</p>	<p>A.D. Hines: Pharmacological activation of defective hERG potassium channels in the treatment of long QT type 2 syndrome 154P</p> <p>M.J. Bellby: Fireworks of salt stress: The role of H⁺/OH⁻ channels in saline pathology of <i>Chitra australis</i> 155P</p>
17:30			
18:30	<p>Conference Dinner - pre-dinner drinks on the terrace Location: Ian McLachlan Room, Adelaide Oval</p>		

Wednesday 7th December

HH3-08

3rd floor, Sir Hans Heysen Bldg

Allan Scott Auditorium

Ground Floor, Hawke Building

HH3-09

3rd floor, Sir Hans Heysen Bldg

09:00

Symposium: Transporters and channels as drug targets in cancer

Chair: Stefan Bröer

S. Broer: A systems biology approach to predict amino acid homeostasis in cancer cells 156P

J. Holst: Targeting glutamine transport in triple-negative breast cancer 157P

G.R. Monteith: Calcium permeable ion channel remodelling in breast cancer 158P

A.J. Yool: Blocking cancer cell migration with novel drugs for aquaporin water and ion channels 159P

Free Communications - Fetal Physiology

Chairs: Jessica Briffa & Kathy Gairford

M.E. Wlodiek: Maternal stress during pregnancy alters placental development and glucose transporter expression 160P

J. Soo: Sex specific effect of preterm birth on mRNA expression of drug transporters in guinea pig liver 161P

D. Mahzizir: Metabolic and cardiorenal adaptations to pregnancy in females born small on a high fat diet and the benefits of endurance exercise training 162P

J.R. Darity: Sex dependant cardiac effects of a postnatal Western diet: exacerbated by low birth weight? 163P

Y.T.M. Mangwiro: The impact of exercise and high-fat feeding in growth restricted females on the placental IGF-system and nephron number in male fetuses 164P

M. Lock: Cardiac miRNA expression in the fetus and six month old sheep in response to myocardial infarction 165P

J.F. Briffa: Males rats born small have elevated resting metabolic rate despite being less active and do not have exacerbated insulin resistance on a high fat diet 166P

D.R. Sekali: Sustained expression of $K_{v}7$ channels during labour is associated with a highly negative uterine muscle resting membrane potential and dysfunctional labour in women 167P

Symposium: Cardiomyocyte mechano- and myofilament dysfunction in heart failure progression

Chairs: David Saint & Lea Delbridge

K.M. Mellor: Role of hexose-sugar-induced post-translational modifications in contractile myofilament dysregulation 168P

H. Viola: Myofilament mutations alter calcium channel and mitochondrial functional communication 169P

E. White: Creatine kinase, myofilament stiffness and cardiomyocyte mechanics 170P

D. Fatkin: Role of truncating titin mutations in dilated cardiomyopathy 183P

11:00 Morning Tea

Wednesday 7th December

HH3-08 3rd floor, Sir Hans Heysen Bldg	HH3-09 3rd floor, Sir Hans Heysen Bldg
Allan Scott Auditorium Ground Floor, Hawke Building	

11:30	Free Communications - Exercise physiology Chair: Mike McKenna	Symposium: Imaging cardiovascular disease and ASB Award Lectures Chair: Pierre Moens	
11:30	D.J. Morrison: Using a triple glucose tracer technique to quantify postprandial glucose flux after acute exercise and exercise training <u>171P</u>	J.B. Selvanayagam: Imaging in the clinic: Advances in tissue characterisation and oxygenation assessment <u>177P</u>	11:30 ASB Bob Robertson Lecture
11:45	H. Xu: Effects of chronic inactivity on physiological and biochemical characteristics of rat skeletal muscle <u>172P</u>	<u>178P</u>	
12:00	C.D. Wingate: The contractile characteristics of a novel dystrophin-negative mouse strain with enhanced voluntary exercise capability <u>173P</u>	J.L. Morrison: Imaging cardiac function and response to infarct in the rat <u>179P</u>	<u>180P</u>
12:15	A.J. Genders: Physiological changes in pH alter markers of mitochondrial biogenesis after a single bout of high-intensity exercise in rats <u>174P</u>		
12:30	C.S. Shaw: A single bout of high intensity interval training reduces the autophagosome content in type I and type II muscle fibres <u>175P</u>	L.J. Parry: Fighting cardiovascular disease with knowledge gained from pregnancy <u>176P</u>	12:30 ASB McAuley-Hope Lecture
12:45	N. Eynon: ACTN3 R577X genotype is associated with bone formation markers in humans <u>176P</u>		
13:00		C.S. Bonder: Desmoglein-2: getting to the heart of adhesion <u>177P</u>	13:00 Announcement of the ASB Young Biophysicist Award for 2016
13:30	Lunch		
14:00			

Student Prizes / AuPS AGM

Notes

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The logo for ADINSTRUMENTS features a stylized white 'A' with three diagonal lines above it, set against a dark blue background. Below this, the word 'ADINSTRUMENTS' is written in a bold, white, sans-serif font.

ADINSTRUMENTS

The logo for SDR SCIENTIFIC consists of the letters 'SDR' in a large, bold, blue font. Below it, the word 'SCIENTIFIC' is written in a smaller, blue, sans-serif font. Underneath that, the tagline 'EQUIPMENT • SUPPORT • RESULTS' and the website 'WWW.SDR.COM.AU' are displayed in a smaller blue font.

SDR
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WWW.SDR.COM.AU



GeneWorks

The MAWA logo features the letters 'MAWA' in a white, serif font, centered within a black rectangular box. A red, curved ribbon-like shape passes behind the box, extending from the left and curving upwards to the right. Below the box, the tagline 'MEDICAL ADVANCES WITHOUT ANIMALS' is written in a small, black, sans-serif font.

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