

AuPS News – March 2020

Member Profile:

Dr Adam Trewin, Deakin University

Adam was awarded the AuPS prize for best post-doctoral publication at the 2019 AuPS Scientific Meeting.

The prize is awarded for the best original paper published by an AuPS member during their first 4 postdoctoral years and is sponsored by SDR Scientific.

Congratulations on the prize. Can you tell us about your award winning publication?

I recently had the honour of winning the AuPS Postdoctoral publication prize at the Canberra 2019 meeting. The paper (Trewin et al., 2019 Mitochondrial Reactive Oxygen Species Generated at the Complex-II Matrix or Intermembrane Space Microdomain Have Distinct Effects on Redox Signaling and Stress Sensitivity in *Caenorhabditis elegans*) was published in the journal *Antioxidants and Redox Signaling*, and represents the majority of the work I performed during an amazing 2 year postdoctoral appointment in the laboratory of A/Prof. Andrew Wojtovich at the University of Rochester, N.Y., U.S.A.



Understanding the role(s) that reactive oxygen species (ROS) play in both in health and disease has been a major technical challenge to date in the redox biology field due to the limited ability to precisely control ROS generation in vivo. To address this, we used a novel optogenetic approach that utilised CRISPR-Cas9 to fuse a light-sensitive ROS-



THE AUSTRALIAN PHYSIOLOGICAL SOCIETY

60TH DIAMOND JUBILEE CONFERENCE

Hosted by Griffith University
Gold Coast, Qld

22nd – 25th November 2020

Images: Destination Gold Coast

The AuPS annual meeting and COVID-19.

AuPS Council is monitoring the COVID-19 situation very closely regarding the potential implications for our 60th anniversary meeting on the Gold Coast, scheduled for November 2020. In the interim, we ask that members and their families stay safe during these uncertain times and we will notify you of any updates in due course via email and newsletter.

generating protein called SuperNova to mitochondrial complex-II in the model organism *C. elegans*. This essentially allowed us to generate ROS in these worms at the flick of a switch. Moreover, by targeting the ROS-generating protein to specific complex-II subunits, we were able to localise SuperNova to either the mitochondrial matrix compartment or the intermembrane space with equal expression levels. This innovative approach allowed us to identify spatial- and temporal-dependent adaptive cell signalling responses to acute mitochondrial ROS generation. Importantly, we showed that this led to enhanced stress resistance in a model of ischemia reperfusion pathophysiology.

What is your current position/role?

I currently hold a Faculty of Health Dean's Postdoctoral Research Fellowship at the Institute for Physical Activity and Nutrition (IPAN), Deakin University. I am working with A/Prof. Glenn Wadley and Dr. Severine Lamon to investigate the role that non-coding RNAs play in regulating mitochondrial function. I believe that non-coding RNA are an exciting new frontier of mitochondrial biology and I hope to continue to make this the focus of my research in the coming years.

What made you want to follow a career in research?

I began my career in research with an honours research year before undertaking and completing my PhD in 2016 at Victoria University under the supervision of the late Prof. Nigel Stepto. Nigel inspired me to study the important role(s) of mitochondrial function and ROS in muscle

metabolism. His guidance, support and friendship were instrumental in kick starting my career in research, and for this I will be forever grateful.

Of note, one of the many great suggestions that Nigel gave me was to join AuPS. Every meeting that I have attended since then in 2010 has been fantastic and I always look forward to meeting new members and catching up with all the regulars. I am sure this year's 60th anniversary meeting on the Gold Coast will be no exception.

How do you relax when not working?

Outside of research, my partner and I answer to a Greyhound who rules the house. I also like to (try to) keep fit by (occasionally) riding my bike. Although the days of bike racing have now been left in the dust, it seems that the need for speed is still there as I have just started to get into go kart racing.

In conclusion, I would once again like to thank AuPS for awarding me the postdoctoral publication prize in 2019, and I am eager to see who will win the this prize at this year's upcoming meeting.

Adam was awarded the postdoctoral publication prize for the paper:

[Trewin AJ, Bahr LL, Almast A, Berry BJ, Wei AY, Foster TH, Wojtovich. Mitochondrial Reactive Oxygen Species Generated at the Complex-II Matrix or Intermembrane Space Microdomain Have Distinct Effects on Redox Signaling and Stress Sensitivity in *Caenorhabditis elegans*. *Antiox Redox Signal*, 2019, 31\(9\):594-607.](#)

Vale Professor Nigel Stepto (12 September, 1971 – 4 February, 2020)

It is with much sadness that we acknowledge the death of Professor Nigel Stepto from cancer on Tuesday 4th February, 2020.

Nigel studied at the University of Cape Town in South Africa where he completed a Science degree with Honours in Marine Biology, a Masters in Zoology, before a second Honours degree in Exercise Science. He then travelled to Australia and completed his PhD in 2002 under the supervision of Prof John Hawley at RMIT, with whom he continued to collaborate for the next 18 years.

Nigel commenced his academic career at Monash University in 2002, working as a postdoctoral research fellow and lecturer in Exercise Physiology. He then joined Victoria University in 2007 as a Lecturer in Exercise Physiology, in the School (later College) of Sport and Exercise Science, where after several promotions, he was awarded Professor of Clinical Exercise Science in 2018. In addition to being a significant contributor to teaching in Exercise Physiology in the College, he was also highly active in numerous leadership roles that focused on supporting postgraduate research students.

Nigel's great passion was research and his research career was outstanding, with global impact. Nigel was a great contributor, a vibrant and committed researcher and passionate in whatever he committed himself to. He sought the highest standards in himself and others. His research traversed exercise physiology, muscle metabolism, insulin sensitivity, epigenetics and increasingly, his highly prominent



work focused on women with polycystic ovary syndrome (PCOS). He worked closely with Prof Helena Teede from Monash for over two decades in this PCOS research, where he was recognized as an international leader in PCOS, physical activity in womens health and unravelling mechanisms of disease. Nigel was an active member of their NH&MRC Centre for Research Excellence, as well as their National and International network, where he made key contributions in advancing science and developing and disseminating international guidelines - now used in 126 countries. He made key contributions in developing recommendations for exercise interventions in PCOS. He published over 84 journal articles, half of these during the past 5 years and his work has attracted strong citations. Nigel was recently awarded almost \$1M in NH&MRC funding

as first chief investigator. Nigel was an invited speaker at numerous Australian and international conferences.

Nigel's research has been career-building and indeed, career-defining for many people, including 3 postdoctoral research fellows, 12 PhD graduates (6 as Principal Supervisor) and 16 Honours students as Principal supervisor. He has 2 current PhD students and 1 postdoctoral fellow. All have received exceptionally high quality training under Nigel's guidance and as a result, many are now excellent early career scientists. His outstanding contribution to facilitating so many people's careers was recognized in 2017 when Nigel was awarded the Victoria University Vice-Chancellor's Citation for Excellence in Research and Research Training (Supervision).

In recent years Nigel provided outstanding research leadership at Victoria University. He led the Womens Health research group, and was a vital member of the Leadership Team of Victoria University's new Institute for Health and Sport, where as Co-Deputy Director – Research Training he was heavily involved in managing over 200 research students. He was also a highly active member of Victoria University's Research Executive Group. Nigel was also a strong contributor to the national body, Exercise and Sport Science Australia (ESSA), including most recently, as Chair of the ESSA Research Committee. This was recognized through his recent posthumous award of an ESSA Fellowship.

Nigel was also a Project Director of the Australian Institute for Musculoskeletal Science (AIMSS), a joint medical research Institute between Victoria University, Western Health and the University of Melbourne.

Nigel was an active member of AuPS since 2007. He made numerous contributions to the society through many presentations at annual meetings and he organised a symposium on High Intensity Intermittent Exercise and Training at the 2013 meeting in Geelong. Many of his former PhD students and postdoctoral fellows continue this work as current AuPS members, including two as Council members.

Just 7 days before his death, over 50 staff and PhD students from Victoria University were privileged to visit Nigel and pay our respects to him and his family. There we announced the Nigel Stepto Travel Award to support research student international conference travel, a Nigel Stepto PhD Student Scholarship, and finally, an Outstanding Service Award from the Institute for Health and Sport. Nigel left us too soon and he will be greatly missed by his many colleagues and friends in AuPS and around the world. He is survived by his wife Fiona Dempster and his daughters Matilda (14 years) and Harriet (11 years).

Professor Mike McKenna

Executive Director, Institute for Health & Sport,
Victoria University

The thanks of a grateful President to Dave Davey and David Allen on behalf of the Australian Physiological Society

Prof. Gordon Lynch
University of Melbourne

One of the most important roles of my presidency has been to oversee the Society's transition to a new generation of leadership; one entrusted to serve us well into the future.

As a long-term member of the AuPS (having attended my first meeting in 1987), I have been fortunate to see and benefit from the extraordinary contributions of others before me who shaped and managed the Society over many years. It has been my privilege to keep the Society aligned to its strong foundations while trying to embrace the contributions and energy of our growing membership, especially the emerging leaders among our early- and mid-career scientists. This quiet transition has been made possible because of the dedicated efforts of Council and the ongoing contributions from two of the Society's most senior (Honorary) members and long-term Councillors; **Associate Professor Dave Davey** and **Professor David Allen, FAA**.

Dave Davey has been an AuPS member since 1974 and served as Local Secretary for the Sydney meeting in 1976. He was first elected to



Council in 1976 and again in 1988, serving in various roles, including Editor, Production Editor and IT Manager, continuously since 2002. Dave has made extraordinary contributions to the AuPS through establishing and managing the platforms for membership, meeting registrations, and abstract submissions, ensuring a maintenance of editorial standards over the decades. He has been the 'go to' person for all matters concerning the Society's administration and constitution, ensuring it adheres to the principles established over its 60-year history. His contributions are too numerous to list, but every President, National Secretary, Treasurer, Councillor, or long-term member of the AuPS, knows and respects Dave Davey for his legendary contributions to our Society.

Dave has continued to assist Council during the move to new platforms/databases and helped make this change as smooth as possible, despite the obvious challenges. I learned a lot from Dave about the inner workings of the Society when I first served on Council (some years ago now) but also more recently, with his corporate memory helping me respectfully navigate the transition of leadership to our new Council that comprises so many enthusiastic and talented scientists.

David Allen has been a member of the AuPS since 1992, serving as the Treasurer (1999-2002) and as President (2009-2013). He received the AuPS Medal as the Invited Lecturer in 2003. David also served as Editor from 2013 until 2019, encouraging and facilitating journal publication of many symposia proceedings in Clinical and Experimental Pharmacology and Physiology.



David has served the Society with distinction in all these important leadership roles and I have been

especially grateful for his wise counsel on different issues arising over the last three years.

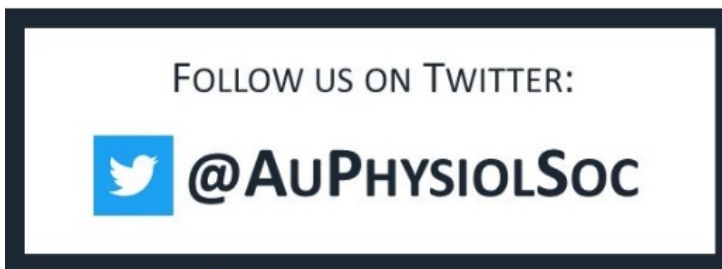
David has continued to contribute his time and wisdom to Council over many years and during the recent phase of transition to new platforms for abstract handling and meeting registration, he provided a steady hand over proceedings with much encouragement to the Council leadership.

On behalf of the entire membership, I extend my sincere thanks to Dave Davey and David Allen for their significant and long-lasting contributions to the success of the Australian Physiological Society and hope they will continue their close association with us for many years to come.

Gordon

Professor Gordon Lynch
President, Australian Physiological Society

Are you following AuPS yet??



We are increasing our ways of communicating our achievements to the wider world with our AuPS Twitter account.

Don't forget to follow us and use our twitter handle when you want to communicate the achievements of our members [@AuPhysiolSoc](https://twitter.com/AuPhysiolSoc)

Physiological Society Teaching Awards for AuPS Members

Congratulations to AuPS members Kathy Tangalakis (Victoria University) and Christian Moro (Bond University) for winning the [2019 David Jordan Teaching Awards from the Physiological Society](#). These annual awards enable educators to carry out a piece of educational research or to develop an educational resource that is relevant to physiology.

Kathy Tangalakis was awarded funding for the project entitled: ‘Assessing the core concepts of physiology within an assessment framework’.

Christian Moro was received funding for the project: ‘Physiology with Christian – Continued development of free, interactive and engaging physiological content’.

Congratulations to Kathy and Christian!



A/Prof Christian Moro and A/Prof Kathy Tangalakis, winners of the David Jordan Teaching Awards from the Physiological Society.

Memories of Physiology and the Australian Physiological Society

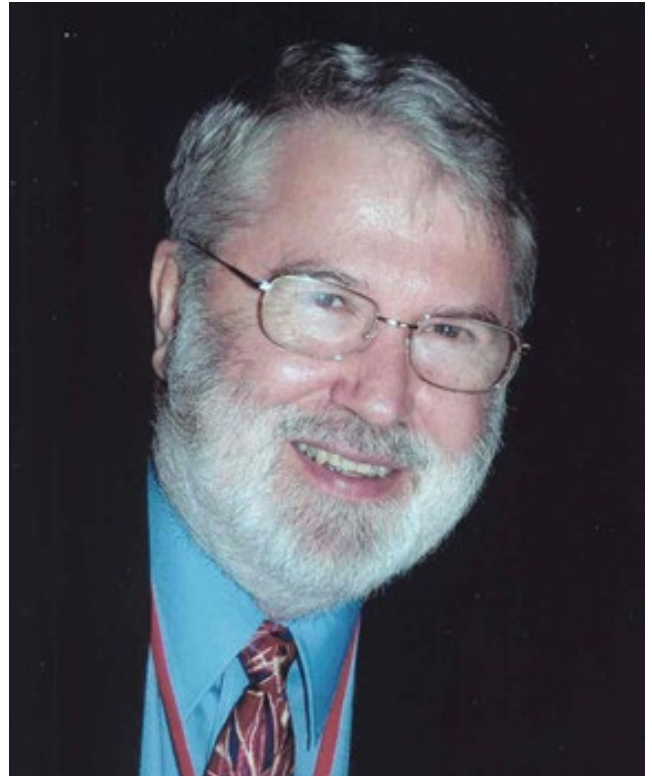
Allan H Bretag

School of Pharmacy and Medical Sciences, University of South Australia

My first real contact with Physiology came in 1962 as a second-year subject at the University of Adelaide. In the next year's Physiology practical class, I was introduced to glass micropipette electrodes (prepared for us by one of our lecturers, John McNally), where we were to measure membrane potentials in toad muscle fibres. While other students were breaking their electrodes during micromanipulation, I became proud of my success with them. Here began a career-long interest in these devices and their use.¹

With my BSc completed, David Kerr, the Reader in Physiology, invited me to do Honours and then sent me off for summer holidays with a copy of the American Physiological Society's Handbook of Physiology, Section 1: Neurophysiology, Vol. 1, suggesting that I read Chapter 1, "The historical development of neurophysiology", by Mary A. Brazier. This had a powerful influence on me, not least Brazier's account of how Alexander von Humboldt had repeated, modified and reinterpreted the experiments of Volta and Galvani, who were in serious disagreement about nerves, muscles and electrical stimulation. For my Honours year, my major project was to determine sarcolemmal capacitance and resistance in toad muscle using external electrodes, after Otto Hutter and S.M. Padsha, at University College London, UK, who had just published equivalent experiments showing the effects of nitrate substitution for chloride in the Ringer solution bathing frog muscle. My task was to extend these experiments to impermeant anions.

At the end of first term it was suggested that I attend the Monash Meeting of APS, on the 20-22 May,



1964. I travelled overnight second-class return (sitting up) from Adelaide to Melbourne by train with Michael Roberts (after whom the AuPS Excellence in Physiology Education Award is named). During the meeting, most out-of-town visitors stayed in the Monash University College student accommodation on campus. One evening, John McNally suggested that we join the New Zealanders, John Hubbard and Peter Gage, in one of the rooms where they were holding a large and noisy party. Gage at the time was doing his PhD supervised by Hubbard at ANU. Sticking in my mind particularly among presentations at the conference were those by Hubbard and Gage on aspects of neuromuscular transmission, by Ian Pugsley on measurement of tip diameter in "Ling-

Gerard type micro-electrodes” and by Mollie Holman, Archie McIntyre and John Veale who reported that one impulse in a single afferent nerve fibre was sufficient to evoke a cortical response even in a deeply anaesthetised animal – a story that I recounted to my neurophysiology students throughout my lecturing career.

Back in Adelaide, I completed my Honours year research projects, seminar presentations and examinations well enough to earn a First Class. After a year out teaching high school, I was offered a Tutor/Demonstrator position in the Physiology Department and the possibility of undertaking a PhD. My project, supervised by Kerr, was to discover the importance of chloride to the electrical characteristics of muscle using glass micropipette electrodes in the isolated rat diaphragm. When I started to get results, I noticed differences between my electrical measurements and those published by others, who used a variety of different tissue bathing solutions. This led me to question the whole foundation of Krebs’s, Tyrode’s and Ringer’s solutions, all based on empirical concoctions or erroneous, obsolete interpretations of what might bathe living tissues *in situ*. Encouraged by Sandford (Sandy) Skinner and Lawrie Mashford, I made measurements of rat blood plasma sodium and potassium ion concentrations and gathered the best available evidence of its free concentrations of other ions, and of its glucose and protein levels. Then, using trans-capillary Donnan equilibrium values, I estimated the composition of mammalian interstitial fluid and prepared a synthetic version for my experiments.²

One of the features of APS meetings were afternoon demonstrations showing off experimental techniques, new and innovative equipment, and practical class teaching methodologies. At the 1967 Adelaide meeting, I demonstrated a calcium specific, liquid ion exchange, electrode, the first of its kind in Australia. This was to prove invaluable in my chloride and impermeant anion bathing fluid validations. My rat diaphragm studies then showed that chloride absence

(at constant calcium ion activity) initiated a state in muscle equivalent to that in the naturally occurring human muscle disease, myotonia, in which contraction and action potential activity continued long after nerve or electrical stimulation ceased. At this time, most membrane physiologists/biophysicists were obsessed with sodium, potassium and calcium ions, and their involvement in cellular excitation, contraction and secretion. My “lone-voice” research on chloride was considered somewhat eccentric at APS meetings.

During the mid-1960s the Physiology Department tea-room was always a site of philosophical-physiological discussion led by some extraordinary people including that grand old researcher, Hugh (Lemmy) Le Messurier, who ran the aero-medical lab, my supervisor, Kerr, who was knowledgeable on almost every topic from computing and electronics, through neuro-anatomy and neuro-physiology to music, and Peter Dellow, who continually provoked me to broaden my mind by leaving pointed, intellectual quotations in my mailbox.

The Adelaide Department of Physiology and Pharmacology in 1968. Mentioned in the text are: In the front row, John McNally, 1st on left; Hugh Le Messurier, 3rd from left and David Kerr, 7th from left. In the 3rd row: Michael Roberts, 4th from left. In the 4th row: Allan Bretag, 3rd from left. Others of note in regard to APS/APPS/AuPS include, in the front row, Robert Whelan (Head of Department), 5th from left, and Derek Frewin, 9th from left; in the 2nd row, Eugenie Lumbers, 2nd from left and Barbara Dennis, 8th from left; in the 3rd row, Richard Head, 9th from left. Of these, Barbara Dennis, David Kerr and Hugh Le Messurier attended the Inaugural APS Meeting in Sydney in 1960. Inset top right is a photograph of Peter Dellow.

At the APS/APPS meetings we attended, a question time of five minutes typically succeeded oral presentations, when the “elders” in the congregation



The Adelaide Department of Physiology and Pharmacology in 1968. Mentioned in the text are: In the front row, John McNally, 1st on left; Hugh Le Messurier, 3rd from left and David Kerr, 7th from left. In the 3rd row: Michael Roberts, 4th from left. In the 4th row: Allan Bretag, 3rd from left. Others of note in regard to APS/APPS/AuPS include, in the front row, Robert Whelan (Head of Department), 5th from left, and Derek Frewin, 9th from left; in the 2nd row, Eugenie Lumbers, 2nd from left and Barbara Dennis, 8th from left; in the 3rd row, Richard Head, 9th from left. Of these, Barbara Dennis, David Kerr and Hugh Le Messurier attended the Inaugural APS Meeting in Sydney in 1960. Inset top right is a photograph of Peter Dellow.

would pose difficult questions causing younger presenters to answer softly to cover their uncertainty. Whenever this happened, Melbourne's Physiology Professor, R.D. (Pansy) Wright, in his deep, gravelly voice, would shout out from the audience something that sounded like "Konntyeeer!" (Can't Hear!). Wright gave the after-dinner address at the 1982 APPS Conference Dinner which I wish had been recorded as it was the most pertinent, entertaining and amusing that I've ever heard. As noted in his biography, Wright "was more brilliant than other academics.....and more passionate. Above all, he was funnier."³

In 1970 I had been offered a lectureship in the School of Pharmacy at the South Australian Institute of Technology (SAIT), and, after two years, took up a Postdoctoral Fellowship of the Alexander von Humboldt Foundation to undertake research with Robert Stämpfli in Homburg/Saar, Germany. My lecturing commitments on return to SAIT meant that I could only manage intermittent lab research but, by taking on vacation scholars and co-supervising a few graduate students from The University of Adelaide, I managed to publish some papers on muscle, chloride and myotonia. This culminated in being invited by *Physiological Reviews* to write a review on Muscle Chloride Channels.⁴ In 1990, SAIT became the

University of South Australia (UniSA) after which I had access to my own graduate students, post-doctoral fellows and ARC research grants, and developed long-distance collaborations with overseas colleagues.

I was the local organiser of the Annual Scientific Meeting of APPS in Adelaide in 1997. The following year, I organised the IXth International Congress on Neuromuscular Diseases, also held in Adelaide, attended by ~850, mainly international, delegates. Over the years, my students and colleagues and I have collaborated on some 40 joint research presentations at meetings of APS/APPS/AuPS. In 2014, I was privileged to be awarded Honorary Membership of AuPS, having attended my first meeting of the Society 50 years earlier. In 2017, I received the Distinguished Fellow Award of the Australian Association of von Humboldt Fellows.

1. Bretag, A.H. The glass micropipette electrode: a history of its inventors and users to 1950, *J. Gen. Physiol.* 149, 417-430 (2017) [published by

invitation as a “Milestone in Physiology” and already “read” well over 400 times on ResearchGate]

2. Bretag, A.H. Synthetic Interstitial Fluid for Isolated Mammalian Tissue. *Life Sc.*, 8, 319-329 (1969). [~250 SCI citations to March 2020]

3. McFee, P. Wright, Sir Roy Douglas (Pansy) (1907-1990). *Australian Dictionary of Biography*, vol. 18 (2012)

4. Bretag, A.H. Muscle Chloride Channels. *Physiol. Rev.* 67, 618-724 (1987) [~240 SCI citations to March 2020]

Allan H Bretag
University of South Australia

You can read an extended version of Allan’s memories of physiology on the AuPS website.

[‘Some Enduring Memories of Physiology’](#)

Celebrating the 60th Anniversary of AuPS – A Call for Member Contributions

In the lead up to the 60th anniversary celebrations of AuPS taking place at the Gold Coast meeting later this year, we will be including personal reflections from our members and delving into the AuPS archives. Therefore, we are asking our members to share their stories and memories of the society for inclusion in the newsletter over the course of this year.

So whether you are a long-standing, or more recent, member of AuPS, we would love to hear about your personal perspective on the society, what it means to you and how it has helped in your professional or personal lives.

Please send your memories, stories and pictures to newsletter@auaps.org.au

From the Archives: AuPS 1960-2020

ORIGINS OF THE AUSTRALIAN PHYSIOLOGICAL SOCIETY

*W. V. Macfarlane
 Department of Animal Physiology
 Waite Research Institute
 The University of Adelaide,
 Glen Osmond, S.A. 5064*

In the 1950's there were six schools of Physiology in Australia, one each in Sydney, Brisbane, Hobart, Melbourne, Adelaide and Perth. The benches were dark, pitted and stained. The essential tool of trade and symbol of the art was the 1847 kymograph of Karl Ludwig updated with an electric motor by Palmers of London. We introduced the first teaching cathode ray oscilloscope and electronic stimulator during 1950 in the Brisbane laboratory. Those small yellow boxes were made by Kemp Fowler, who now presides over mass spectrographs in Sydney. The sophisticated acquisition of the early '50's was a black Beckman spectrophotometer with flame attachment to open up electrolyte physiology. The jets of the burners seemed to burn out automatically. There was also an Edison Swan 8-channel electroencephalograph to record heart and brain activity, and it helped detect epilepsy or brain damage in the community. Overall there were large classes, small staffs and minuscule budgets, as universities hobbled out of the war period. In 1957 there were several events which changed the picture. I was in Canberra on a clear night when Sputnik I passed over. While this happened every 90 minutes, the Menzies government was considering the Murray Report on universities. Since a Briton had been (sensibly) chosen for this task, a British model of university development inevitably followed. It was adopted and the Universities Commission emerged as a Federal instrument from the limbo of state university financing. Science in the west was visibly lagging behind the activities of the Sputnik men. A strange astrological conjunction of Sputnik with Canberra set in motion funds for updating the old and for building new universities.

At that time the Biochemical Society had been having meetings for over a year. Biochemistry was historically an outgrowth of Physiology and it seemed proper that a Physiological Society should be formed promptly. I undertook a sort of missionary enterprise on the way to a CSIRO meeting in Melbourne in May 1957. This involved calling on Peter Bishop in Sydney, Jack Eccles in Canberra, and Roy Wright and Frank Shaw in Melbourne. We discussed the need for a Society. All agreed that it would be valuable in providing an organization for discussing physiological research, the teaching of Physiology, as well as for exchanging news. The dismal economics of getting people to attend meetings was, however, a dominant theme of the talks and was very discouraging. The size of the continent and the cost of travel inhibited Wilf Simmonds in Perth, and Bob Whelan in Adelaide, although they knew that this Society was needed. It was pointed out that ANZAAS meetings had a physiological section which met many of the requirements and strained resources sufficiently, without there being another Society.

After the Federal Government's acceptance of the Murray Report and the setting up of the Universities Commission, the universities began to feel less financially inadequate. Not only was there a set of plans for expansion of universities in all states, but also a little more money emerged in the budget. This came to represent help for travel to meetings. At the beginning of 1958 J.C. Eccles was the Academy of Science representative for Physiology in contact with the International Union of Physiological Sciences (IUPS). The IUPS looks after Physiology on the international scene and organizes Congresses which take place each three years. The subscription from Australia was provided by the Academy, but there was no Australian body with which IUPS might sustain liaison.

In the more optimistic financial climate of 1958, J.C. Eccles wrote to the Heads of Departments in the various universities teaching Physiology and proposed that a Physiological Society be discussed at the ANZAAS meeting in Adelaide. The ANZAAS section meeting allowed the reporting of some brisk physiology. J.C. Eccles talked about the plastic aspects of neurones, mainly in terms of post-synaptic slow events at the synapse, and the long-term changes in neurones produced by dorsal root and ventral root section. David Curtis was using multi-barrel electrodes on neurones and decided that GABA was a non-specific blocker of both excitatory and inhibitory cells. Peter Bishop and Liam Burke were busy with binocular interactions in the geniculate, and they reported on single unit activity in the optic tract and

radiation. Ian Darian-Smith used indium-filled microelectrodes, picking up cortical evoked potentials, crossing the corpus callosum. Mollie Holman talked about inserting megohm electrodes in guinea pig caecum smooth muscle cells. Clearly, many patterns of behaviour were laid down and set for a long haul before the Physiological Society was initiated.

At the end of the ANZAAS sessions, a meeting chaired by J.C. Eccles was held to discuss the structure and function of a possible Australian Physiological Society; several decisions were taken. New Zealand was not to be included in the title, although New Zealand members might be invited to join. It was decided to stick to the English Physiological Society's form with Secretary, Treasurer and Council, rather than going the presidential way of the Australian Biochemical Society. It was also decided that membership would be limited to those engaged in Physiology or Pharmacology, not merely to those interested in those topics.

The initial suggestion of a subscription of 10s was raised to £1. A constitution that had been sketched closely on the English model, was discussed. A tentative list of members had been prepared. There was basic agreement to go ahead with forming a Society.

From each state, two lists of possible members were to be drawn up. The first would comprise people who had permanent posts in teaching or research closely linked with Physiology. The second list would comprise those who had less obvious physiological interests and had not yet ripened into publishing in the field and were of more junior status. These lists began to arrive in September 1958, after the ANZAAS meeting in Adelaide. The first contained not only active physiologists and pharmacologists but also anatomists, biochemists, physicians, surgeons, pathologists, entomologists and zoologists. Lists of different degrees of exclusiveness came from Departments of Physiology and Pharmacology from September 1958 on through 1959 into 1960. Revisions of revisions occurred in these lists. As time went on they became less exclusive in a hierarchical sense, but more closely focused on people whose central interest was Physiology or Pharmacology, rather than on more peripheral fields like Anatomy and Pathology.

At the beginning of 1959 when I returned from study leave in Mexico, New York and Oxford, the embryonic Society consisted of those lists of names. J.C. Eccles suggested that I be Acting Secretary and I agreed saying that since I had made the first move towards a Society I had better try to organize the first meeting. Ross Hawker had suggested that since the first Department of Physiology to operate in Australia was in the University of Sydney, that should be the scene of the first meeting.

Peter Bishop who had come to the Chair of Physiology in Sydney in 1957 agreed readily with this suggestion and we decided that the May vacation of 1960 was a suitable time for the meeting. Local arrangements were left to the Head of the Sydney Physiology School and his colleagues. The arrangements about timetables, chairmen, abstracts, constitution and the inaugural meeting were made by the Acting Secretary. Peter Bishop and his people did a handsome job of guiding potential members to the University of Sydney. They sent out a map of Sydney, another of the University, and plans of the floors of the Physiology School. Bennelong Point at that time was free of any trace of Opera House. The plan of the University looked very much the same as it had in 1920, without the efflorescence of new structures which was about to occur. The plans of the old Anderson Stuart Building, which had its origins in 1864, showed in architectural detail where the laboratories were, where each staffroom was and it guided the physiologists from across the country to the Anderson Stuart or Listerian theatres. There was also a list of the associated laboratories of the Sydney area, giving the names of the main workers and their interests. These included the Veterinary Physiology, Pharmacology and Animal Husbandry departments of the University, the Blood Transfusion Service, the Queen Elizabeth II Research Institute, the Kanematsu and Prospect CSIRO. There was not a unit at the Kensington Technical Institute that was about to metamorphose into the University of New South Wales and there was not even the thought of Macquarie University.

People came from Melbourne, Canberra, Armidale and Brisbane in cars, carrying four or five participants. There were £10 given to cover cost of transport and lodging for those who went from the John Curtin School of Medical Research to the meeting. Similar fundings were provided by other universities to their participants. Wilf Simmonds and Ivan Kaldor managed to get across from Perth, while Bob Whelan, Ivan de la Lande, David Kerr and Barbara Dennis came over with others from Adelaide. While papers were distributed and lodgings sorted out in the morning (there was no Registration fee), a meeting of the interim organizers was held to arrange an agenda for the inaugural meeting. Then at 2 p.m. on May 26, 1960, Professor Sir John Eccles took the Chair for the first session of the Society, on the central nervous system.

Peter Bishop led off by talking of single units in the lateral geniculate. There was a 12-minute talking time, followed by 5 minutes of discussion. There was no mechanical timing device. After sensory neurones had been pursued further by Ian Darian-Smith, David Kerr, Barbara Dennis, Liam Burke and Bill Hayhow, there was afternoon tea. Not coffee. The tea was provided by the Physiology Department, University of Sydney and this tradition was carried on for the next four years. There was a pleasant hospitality about this arrangement and in the end every department had its share of the pleasure of giving and receiving.

There was a second neurological session after tea. That evening at 7.30 the Inaugural Business Meeting took place. It was chaired by Peter Bishop and I was Acting Secretary. The 49 present agreed to a tentative Constitution in which the Secretary became the sustaining organizing executive of the Society and the Treasurer collected subscriptions from members and recorded expenditures. The name agreed to was the Australian Physiological Society. The preliminary membership lists were looked over and it was clear that there were two divergent opinions. Some wished to accept all who were interested in the subject while others wished for a rather closed shop. I argued that though I was a member of the Physiological Society of London, there seemed to be no need to export its pattern to the colony, since the Biochemical Society of Australia was functioning very well on a broad membership basis. For the next four years this type of division of policy cropped up, but the open door policy was maintained, allowing people from somewhat different disciplines, or beginners and part-time workers in physiological science, to become members.

In the elections I became Secretary and Peter Bishop, Treasurer. A subscription of £1 a year was agreed to. No one thought that it would be possible to run or fund any satisfactory publication so that matter was dropped. And the possibility of some liaison or federation with other biological societies was looked on as a good thing, but found to be impractical. It was agreed, however, that some sort of coordination should be planned, so that each Society would know where the other was meeting and could try to make arrangements so that there was little clashing and some possibility of using a journey to attend several meetings.

The participants then dispersed, males to St Paul's College and women to the Women's College. Segregation was absolute in those days. Next day's business covered ruminant physiology and pharmacology in one session, while the other dealt concurrently with functions of rabbits and with circulation. Notable papers were those of Geoff Waites on the blood supply of the testis of the ram, George Alexander on summit metabolism of lambs and Peter Bentley on transfer of water across the bladder of toads.

That evening in the Union there was an excellent dinner. A splendid menu-programme had been prepared by the Sydney group. In it was a facsimile of the title page of the first issue of the Journal of Physiology, published in 1873, together with a facsimile of a note from Burdon-Sanderson, proposing a meeting to initiate formation of the Physiological Society in London. There was an élan about it all, which made it clear that this Australian Society was something which people wanted, and which would thrive. The gloomy prognosis (which Roy Wright had written earlier in 1959) that the Society would not easily survive, was being transformed to one of rapid growth and quick maturation.

On the Saturday morning, during recovery, sessions on lipids, the freezing of semen, the functions of nerve, muscle, and heart, as well as on respiration, were held. Geoff Burnstock and Mollie Holman reported on smooth muscle action potentials. In all, 56 papers were given during six sessions – much as today. Then there was lunch in the Physiology laboratory and demonstrations in the afternoon.

So some parts of the transfer of the British idiom to this colony had taken place. Some of the structure and functions of the Society in England had come through, but broader-based membership was still accepted as functional and agreeable to this climate.

I took the proto-constitution back to Canberra and had it reworked by Geoffrey Sawer, Professor of Constitutional Law in the Institute of Advanced Studies, ANU. He was very patient and amiably precise in putting the general feeling of the meeting at Sydney into a legal shape. There were three drafts considered over the course of the next two years and in each of them Geoffrey Sawer had his skilled hand at work, with legal phrasing for the adjustments. These were mainly technical points about elections, duration of office, the casting votes of Chairmen, and the timing of meetings.

No formal domestic rules were written out, so that evolution of the form of meeting and communication could take place. The design was that all interested, regardless of status should be able to join and take part in the activities of the Society. The subscription remained at £1 for five years, for the same reason.

By 1966 the subscription was \$10. In 1970 there was a list of 20 domestic rules and the subscription reached \$20.

From 1960 on the process of getting ready for a meeting involved persuading people to send in abstracts. When they were late I accepted them, edited them to the format we had agreed on, had them typed, duplicated and sent out to the members. I arranged the papers in groups and cajoled Chairmen into the job of looking after sessions. It was, I suppose, more work for the Secretary to deal with and adjust the non-conformities of prose, spelling, abbreviations and layout of the papers on the spot, than to send them back. But it seemed an amiable way of keeping the machine running.

Abstracts of the first meeting were printed as a report in the Australian Journal of Science (the publication issued monthly by ANZAAS). They also printed abstracts of the second meeting, but then wished to be paid at a rate of £10 a page or £1 an abstract. This became expensive in terms of the Society's funds. The third meeting was reported in the AJS and paid for. The abstracts, however, were replicated by photo-offset lithography in Canberra. These abstracts were widely distributed to Libraries throughout Australia, and were sent to 160 physiological societies and laboratories around the world. This was done at a lower cost than was involved in paying for offprints from AJS.

The First Five Years

Year	1960	1961	1962	1963	1963	1964
Month	May	May	May	Feb	Aug	May
University	Sydney	Queensland	Melbourne	ANU	NSW	Monash
Papers	56	78	76	86	42	89

After five years the initial officers were changed in accordance with the Constitution. Membership had grown to 239. Experiments with publishing the abstracts, and with visiting lecturers then began.

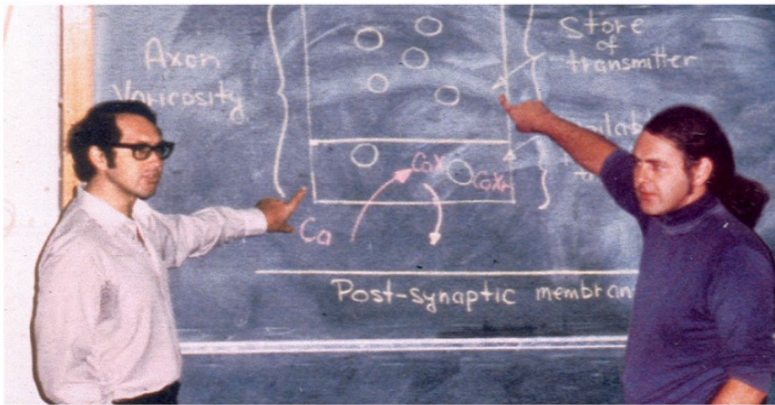
From the beginning the Society kept to a straightforward course of providing a system for exchanging ideas and information on physiology. Anyone with research to report could easily do so, whether a member or not. And although status was not important for participation, the aim was to keep the level of discourse professional and at international levels.

The AuPS Archives

This article entitled 'Origins of the Australian Physiological Society' was written by Victor Macfarlane, the first AuPS (then APS) National Secretary. The articles was originally published in the 1978 Proceedings of the Australian Physiological and Pharmacological Society and was taken from the AuPS archives.

A special thanks to Prof Roger Dampney, honorary archivist for the AuPS for arranging access to these pieces of our history.

The Early Years of the Australian Physiological Society



Max Bennett and Graham Campbell, 1963



Ann Sefton and Judith Neal, Monash Meeting, 1964



Mark Rowe, Barry Sessle and John Young, 1969



Lindsay Aitken, Bill Webster and Jack Pettigrew, 1968



Jack Eccles, Martha Vogt and Jack Coombs, Canberra 1968



Victor Macfarlane, 1960



Paul Korner and Bob Whelan, 1969



Ann Donovan, unknown (?), Sandra Rees, unknown (?), Monash Meeting, 1964.

Free distance learning alternative to lab-based teaching



In response to the COVID-19 outbreak, ADInstruments will be providing **free access to Lt, our online learning platform**, so that educators can continue to teach lab-based courses remotely.

How can I get access to Lt?

To get access to Lt now, or to find out how you could use Lt as remote learning solution at your university, please reply to this email or contact your nearest ADInstruments representative at:

How can Lt help me teach remotely?

- Lt has over 360 interactive and fully-customizable lessons and labs for teaching physiology, anatomy, biology, nursing, and medicine remotely.
- Students can access the content online anytime, anywhere.
- Lt's labs come with pre-loaded example data to simulate recording data from scientific instruments.
- Students can analyze example data to answer questions and complete tutorials.
- In Lt, you can also upload or link to your existing teaching materials for students to access online.

How long will Lt be free?

We will be providing Lt for free until the 30th June 2020. Existing Lt customers are able to invite an unlimited number of students and will be able to access all of our content collections during this time.

What content comes in Lt?

ADInstruments Content Collection includes Human Physiology, Animal Physiology, pre-clinical Medicine, Nursing, Exercise Physiology, Pharmacology, Biology, and Anatomy

For more information about how Lt can help with responding COVID-19 at your institution please visit our <https://www.adinstruments.com/lc/covid19>

AuPS Council

President

Prof Gordon Lynch
The University of Melbourne
president@aups.org.au

National Secretary

A/Prof Glenn Wadley
Deakin University
secretary@aups.org.au

Treasurer

Dr Séverine Lamon
Deakin University
treasurer@aups.org.au

Editor

Prof. David Allen
The University of Sydney
editor@aups.org.au

IT Manager & Production Editor

A/Prof Nir Eynon and Dr Danielle Hiam
Victoria University
ITmanager@aups.org.au

Webmaster

Dr Renee Ross
University of Tasmania
webmaster@aups.org.au

Associate Editor

Dr Chris Shaw
Deakin University
newsletter@aups.org.au

Membership Officer

Dr James Cuffe
University of Queensland
membershipofficer@aups.org.au

Education Officer

Dr Julia Choate
Monash University
educationofficer@aups.org.au

Student Representative

Macsue Jacques
Victoria University

Councillors

Dr Richard Mills
University of Queensland

Dr Nicole Beard
The University of Canberra

Dr Natalie Trevaskis
Monash University

This issue of AuPS News was compiled by Chris Shaw with many thanks to the generous contributors.

The next issue of AuPS News will be distributed to members in June 2020.

All contributions for AuPS News should be sent to: newsletter@aups.org.au before the end of May.

Thank you to the supporters of AuPS:

