This impact report cannot capture all the amazing things that happened in 2019, but it gives an excellent overview of the highlights from the year. Examples given illustrate how The Society shares world-class physiological research and promotes the importance and understanding of physiology to everyday life through the work of our Members.

The highlight of 2019 was indisputably our Main Conference, Physiology 2019, which took place in July in the welcoming city of Aberdeen. It brought together leading academics and researchers to share first-class, inspiring science, which appealed to the broadest physiology community. Another notable event in our 2019 calendar was our President’s Lecture, given this year at the Royal Institution by NASA astronaut and physiologist, James Anthony Pawelczyk. This public engagement event included a range of outreach activities that showcased space physiology to enthuse the next generation of physiologists.

With Members at the heart of The Society in 2019 we sought to shine a spotlight on the importance of the individual communities within our broad discipline. We re-launched our Themes to provide a focal point for these communities and encourage support and interactions.

Supporting diversity and inclusion continues to be a focus for The Society. The Diversity Special Issue of *Physiology News*, published in July 2019, was a particular success and generated a lot of positive discussion.

We continue to ensure our journals remain flagships for physiology, where any researcher is proud to publish. And with over seven million downloads of our journal articles combined, we are seeing them go from strength to strength.

This year we also pressed ahead with significant changes to our governance structure, decision-making processes, legislative documentation, cultures and behaviours to ensure The Society was suitably equipped for the delivery of our strategy.

We would like to thank The Society’s Trustees, staff and Members for their support in 2019, who make The Society such a successful and vibrant community.

**Bridget Lumb**
President

**Dariel Burdass**
Chief Executive

“We would like to thank The Society’s Trustees, staff and Members, who make The Society such a successful and vibrant community.”
2019 IN REVIEW

>7 million
downloads of our journal articles

24%
increase in Twitter
followers

92,171
website users
1 Jul - 31 Dec 2019

Relaunch of Society Themes

>1,000
conference attendees

25
small outreach grants
awarded

34 events
organised as part of Physiology Friday

2
policy report launches in Parliament

16 Rob Clarke Award winners

3
successful conferences

1
President’s Lecture
**Our strategy:** Making our journals flagships for physiology, where any researcher is proud to publish. Our three journals lead the discipline, promoting best practice and pushing the boundaries of scientific endeavour.

Both *The Journal of Physiology* and *Experimental Physiology* are keen to support and develop our Early Career Researchers and have released an invaluable ‘Publishing for Beginners’ talk, which is available on The Society’s YouTube channel. We also hosted publishing webinars for authors in Chinese and Portuguese.

"The Publishing for Beginners webinar presented by Professor Barrett [and Weifang Rong] was very informative and educational. I learnt a lot and I will hopefully be able to put a lot of the advice into practice."  
Antony R. Warden, Shanghai Jiao Tong University, China

**THE JOURNAL OF PHYSIOLOGY’S NEW STATISTICAL REPORTING POLICY**

This is an exciting time for the physiological sciences; we are participating in a revolution of biological knowledge. However, it is important that scientific integrity and reproducibility are never compromised for speed or the pressure to publish. Therefore, in 2019 we implemented new policies for statistical reporting and data presentation for research papers published in *The Journal of Physiology*.

A key feature of the new standards is a Statistical Summary Document, which highlights the key conclusions of the paper and the basis upon which they are drawn. This critical element will help reviewers, editors and readers, gain a firmer understanding of the authors’ experimental design and conclusions. This will enhance the understanding of research at a time when data are of increasing complexity. We believe that the new policy will foster best practice and further contribute to raising standards across physiology. The policy will be rolled out to *Experimental Physiology* in 2020.

The Information for Authors details these new policies, and there is an accompanying editorial ‘Reproducibility and data presentation’ by Ian D. Forsythe, Sally Howells and Kim E. Barrett (doi:10.1113/JP277519).

"Given the accelerating pressure to publish, I am hopeful that the new guidelines will generate an enduring improvement in the quality and reproducibly of research published in *The Journal*."

Simon Gandevia, Neuroscience Research Australia
REFLECTIONS FROM OUR EDITORS-IN-CHIEF

The Journal of Physiology

The most-cited journal in the discipline

“...It has been another strong year with a 3.3% increase in submissions. We also welcomed our second cohort of Editorial Board Fellows who, like their predecessors, have brought new energy and ideas to our Board meetings and the overall editorial process. We continue to target authors in countries where the physiological research enterprise is growing rapidly. For example, we held a well-attended webinar for prospective authors in China, which garnered some lively questions and interactions. Finally, we have stepped up efforts to promote our content, including via social media and our popular Physiology Shorts video series, with 18 new videos in 2019.”

Experimental Physiology

Advancing our knowledge of health and disease mechanisms

“...Experimental Physiology has seen another busy year, reflected in over a 20% increase in submissions; we have exceeded 600 submissions for the first time. The profile of Experimental Physiology continues to be raised by the quality and variety of our publications, and our presence at, and sponsorship of, strategically important meetings. We are approaching 10,000 followers on Twitter and have nearly 3,500 followers on Facebook. Looking to 2020, we will be introducing a new statistics policy and a new article type, Registered Reports, which will provide authors with registration of their ideas and in-principle acceptance of their protocols before they begin a study and gather data.”

Physiological Reports

International, open access journal

“...Physiological Reports is an open access journal supported by The Physiological Society and the American Physiological Society. This year saw two new Associate Editors, Anne McCardle (University of Liverpool, UK) and Mark Dallas (University of Reading, UK) join our team. Authors of 1,614 manuscripts received an invitation to submit to Physiological Reports. Of these, 312 were transferred to Physiological Reports. Direct submissions have remained stable, with 146 submissions in 2019 and ~480,000 manuscript downloads. Over 2,500 people now follow us on Facebook, and over 1,800 on Twitter.”

Editor-in-Chief:
Kim E. Barrett,
University of California
San Diego, USA

Editor-in-Chief:
Mike Tipton,
University of Portsmouth, UK

Editor-in-Chief:
Thomas Kleyman,
University of Pittsburgh, USA
OUR NEW ONLINE HOME

In June 2019 we launched our new and improved website, following discussions with Members, Society Trustees, staff and other stakeholders. Our new website is an online home for The Society, with news, events and publications, as well as a wealth of resources for supporting physiologists, no matter what their career stage.

The redevelopment of the website has been a huge success. It is now much easier to navigate and access information about upcoming events and to keep up to date with news from The Society.

Raheela Khan
University of Nottingham, UK
Society Trustee

Physiology News has had its most successful year yet. The Diversity Special Issue, which had an overwhelmingly positive reception, was a particular highlight. Following on from feedback, we are now looking to commission content related to the theme of EDI (equality, diversity, and inclusion) on an ongoing basis to keep the conversation going. We are proud of how the issue covered both the science behind various aspects of EDI (for example colour blindness or specific learning difficulties) and also showcased the experiences of physiologists with protected characteristics, such as those involved in movements like MeToo STEM.

Jessica Piasecki
Nottingham Trent University, UK

Between 1 July and 31 December 2019 we saw...

- 92,171 website users
- 29% increase in users compared with 2018
- 69% increase in users from mobile

Physiology News

Diversity Special Issue

6
RAISING AWARENESS OF PHYSIOLOGY

ANIMATIONS

In 2019 we launched two new animations. The first, titled ‘What happens to your body in space? Mission to Mars’, covered topics related to how our bodies respond to low gravity environments. The second, titled ‘What is Sport and Exercise Science?’ showed how sport and exercise scientists are integral to improving general health and wellbeing through exercise and how their research is helping to select, prepare and protect individuals to work and compete in stressful environments. Together, they’ve received over 10,000 views on YouTube.

These animations, along with our previous animations are available to our Members to use in their teaching and outreach activities.

SOCIAL MEDIA ROUND-UP

In 2019, The Society’s social media channels saw:

- 24% increase in followers
- 38% increase in reactions
- 333% increase in website click-throughs
- 23% increase in subscribers

2019 saw the launch of The Society’s very first podcast, ‘Let’s Get Physiological’. It aims to showcase the latest in physiology research, with interviews with our Members and explores the quirks of the science of life.
CONFERENCES

Our strategy: Advancing physiology through our conferences: excellent science, wide and active participation, lasting impact.

Our international conferences, high-profile lectures and cutting-edge research symposia provide an environment in which physiology can thrive.

PHYSIOLOGY 2019
JULY 2019, ABERDEEN

“Over 700 delegates from all over the world came to Physiology 2019, eager for the ‘Scottish experience’ along with their guaranteed three days of world-class science. A highlight for us was the strong involvement from the local universities and colleagues keen to showcase the strength of physiology research and teaching in Aberdeen. Another highlight was the number and variety of Satellite Symposia, many over-subscribed, adding diversity and vitality to the meeting build-up.”

Guy Bewick and Derek Scott
University of Aberdeen (Members of local organising committee)

Physiology 2019 in numbers

4 out of 5 delegates rated the meeting as ‘excellent’
99% would recommend the meeting
91% said the quality of the science at the meeting was good or excellent

Number of attendees:
1. Europe – 590
2. North America – 50
3. Asia – 44
4. Africa – 36
5. Australia – 9
6. South America – 5
This year, Physiology 2019 in Aberdeen showcased many high standard and amazing research talks.

I thoroughly enjoyed the data analysis and grant proposal workshops. Considering these feed directly into skills I will be utilising in my final year, they were extremely useful.

It was a pleasure to organise the Satellite Symposium ‘Cellular mechanisms of anti-cancer induced cardiotoxicity’ as part of Physiology 2019. As a result of this symposium, we intend to keep the momentum going and aim to build a European network in the area of anti-cancer cardiotoxicity.

We are proud to ensure that our conferences are as inclusive as possible. For our Members who are parents, we strive to provide necessary facilities, including childcare and breastfeeding rooms. Furthermore, to help with the monetary side of caring responsibilities, we have established a Carer’s Fund. This is for those with caring responsibilities, as well as those who need carers themselves.

I was selected to give an oral presentation at The Physiological Society Meeting 2019, which was scheduled just after the end of my maternity leave. I knew I couldn’t go to the meeting without my infant daughter but wasn’t sure how to organise childcare. Fortunately, I applied for and was awarded travel and carer grants from The Physiological Society. As a result, I could bring my mother to the meeting to look after my daughter while I presented my talk. Afterwards, we enjoyed having a rest and a snack in the dedicated quiet rooms. It was a lovely experience!
Extreme Environmental Physiology: Life at the Limits
2 – 4 September 2019, University of Portsmouth, UK

This 3-day meeting brought together a rich mix of leading physiologists, pathophysiologists, psychophysiologists and comparative physiologists from all over the world specialising in extreme environmental physiology. The conference was a huge success with over 200 delegates specialising in all areas of extreme physiology including hyperbaric physiology, altitude, microgravity and extreme heat and cold. The mix of topics and specialities resulted in a fascinating few days and looks like resulting in the most popular special issue Experimental Physiology has published (watch out for this in 2020). The conference was also a great opportunity for networking and collaboration between physiologists across career stages and across different specialisms.

Mike Tipton
University of Portsmouth, UK
(conference organiser)

The conference was a fantastic opportunity to present my research and receive feedback from experts in the field. At the end of the conference, I was delighted to find out that I had won the Michael J Rennie award for best oral communication by an early career researcher! Furthermore, the poster sessions and social events were a great chance to make new connections and chat to people researching similar topics.

Lydia Simpson
Bangor University, UK

The conference was unique in the spectra it covered; there was everything from heat to cold, from depth to altitude, from studies of bedrest to humans living on Mars!

Lucy Hawkes
University of Exeter, UK

YOUNG LIFE SCIENTISTS’ SYMPOSIUM
3 December 2019, The University of Manchester Innovation Centre, UK

This 1-day symposium presented a unique opportunity to bring together early career researchers from all over the UK to present and discuss their research on the neuroscience of energy balance. The success of this meeting was evident in the new collaborations that were formed and in the supportive environment that we created for first-time presenters and more senior academics alike.
Future Physiology: Translating Cellular Mechanisms into Lifelong Health Strategies
17 - 18 December 2019, Liverpool John Moores University, UK

“Future Physiology was a 2-day conference for early career researchers and put together by early career researchers. It was a huge success, bringing together researchers from all over the UK and further afield to discuss the topic of ‘Translating Cellular Mechanisms into Lifelong Health Strategies’. The success of this conference was evident in the number of conversations and connections attendees said they made during the 2 days. Furthermore, the opportunity to organise a conference has been extremely beneficial for our careers, giving us the platform to develop our networks and gain recognition within our department.”
IN 2019, THE SOCIETY RELAUNCHED OUR SEVEN THEMES. THESE THEMES FOCUS ON DIFFERENT AREAS OF PHYSIOLOGY RESEARCH. WITHIN THOSE THEMES ARE 23 OVERLAPPING SPECIALITIES THUS ENABLING SCIENTISTS TO ALIGN THEIR ABSTRACTS OR PRESENTATIONS ACCORDING TO BOTH A THEME AND SPECIALITY.

THEMES AND SPECIALITIES HELP MEMBERS JOIN LIKE-MINDED NETWORKS WHERE THEY CAN DISCUSS THEIR LATEST FINDINGS AND FORGE NEW COLLABORATIONS.

**Neuroscience Theme**
This theme is interested in the study of the nervous system at all levels, from ion channels to single cells and whole brain areas. It spans a wide range of interests including brain development, motor control, and sensory functions.

**Cardiac & Vascular Physiology Theme**
This theme encompasses all aspects of this vast research field from cellular to organ level and the integration of functions to produce appropriate cardiovascular responses.

**Endocrinology Theme**
This theme is for those interested in how the endocrinology system affects the body’s growth and function in health and disease.

**Metabolic Physiology Theme**
This theme investigates all of the chemical reactions that take place within each cell of a living organism and that provide energy for vital processes and for synthesising new organic material.

**Human, Environmental & Exercise Physiology Theme**
This theme is interested in research on the metabolic responses to exercise and nutrition in both health and disease, from molecular mechanisms to whole body studies.

**Education and Teaching Theme**
This theme is for those interested in promoting innovative physiology teaching at the undergraduate and postgraduate levels through the sharing of best practice.

**Epithelia & Membrane Transport Theme**
This theme focuses on how molecules e.g. ions, solutes, nutrients or drugs are transported across the membrane of a single cell or across an epithelium.

**Sign up to your Themes!**
[www.physoc.org/themes](http://www.physoc.org/themes)
ENGGAGEMENT

Our strategy: Engage for success – improving our two-way commitment and communication to increase recognition of the importance of physiology.

Our Members are at the heart of The Society’s activities. Together, we form the largest network of physiologists in Europe. From early career researchers to Nobel Prize winners, our Members are the lifeblood of our science. We are focused on supporting their professional development and enhancing their careers.

SPOTLIGHT ON SOCIETY REPRESENTATIVES

Society Representatives play an invaluable role in promoting our activities to both current and prospective Members. Coordinating the Departmental Seminar Scheme, promoting the Summer Studentship Scheme, and nominating students for the Undergraduate Prize are just some ways they help build the physiology community and encourage the next generation.

Find your Society Rep

"I decided to become a Society Rep because of the opportunities that it would open up. I’m still quite new to the role, but I have already been able to contribute to Rep meetings, to share ideas and learn from others. Furthermore, as an early career researcher, I think being a Society Rep is also a good way to make new connections and network with other Reps who are at different institutions and at different stages of their career."

Philipp Baumert
The Technical University of Munich, Germany

You can find your Society Representatives in universities across the UK and abroad: www.physoc.org/societyreps
EMPOWERING THE NEXT GENERATION

SUMMER STUDENTSHIPS

Summer Studentships offer undergraduates the opportunity to undertake a research project on an area of physiology over their summer break. Working with an academic supervisor, they can complete any kind of research project: traditional lab-based research, data analysis projects, or education/science communication research.

Read the thoughts of a 2019 student and supervisor:

Santralega Lingam
Perdana University, Malaysia (student)

“ I feel lucky to be awarded a studentship award to work in a lab over the summer. At the beginning, I was nervous and everything was new to me, but as time passed by, I enjoyed my time in the lab. I would like to thank my two amazing supervisors for their guidance. The experience from this studentship has made me consider working as a research assistant before I get my hospital placement.”

Jean McBryan
Royal College of Surgeons in Ireland (supervisor)

“ It was a pleasure to have Santralega working in our lab. She was reliable, hard-working and took great ownership of her summer project. She really enjoyed The Physiological Society Training Day and attributed her excellent lab-book writing skills to this day. Santralega was co-supervised by my PhD student, Maria Abancens, who also benefitted from the experience in terms of growing her confidence and teaching experience. We continue to enjoy international exposure as Santralega is presenting research posters at two meetings in Malaysia.”

UNDERGRADUATE PRIZE FOR PHYSIOLOGY

This prize recognises the excellence of final year undergraduate students of physiology

“It felt wonderful to be awarded the ‘Best Undergraduate Physiology Project’. I really enjoyed conducting research into a field that was relatively unexplored. Physiology is such an interesting subject and it was great to know other researchers found my project interesting too.”

Zoe Roberts
University of Wolverhampton, UK

Summer Studentship training day

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Zoe Roberts
University of Wolverhampton, UK

Summer Studentship training day
Our outreach grants are awarded to increase understanding and awareness of physiology.

“My event, entitled ‘Tracing A Mind’, took place at the Imperial College London’s Great Exhibition Road Festival in July 2019. This was a 2-day festival of art and science and was attended by over 50,000 people. Children and adults were invited to explore the drawings of Santiago Ramon y Cajal, as well as some contemporary microscopic images of neurons. They were then invited to create their own images inspired by what they had learnt and seen.”

Pavlos Theodorou
Imperial College London, UK

LARGE 2019 OUTREACH GRANT RECIPIENTS:
Pavlos Theodorou, Drawing Brains, Golgi Stains
Pamela Swiatlowska, Pint of Science
Alex Perkins, Small prints, big picture

The Physiological Society’s 2019 President’s Lecture was delivered by NASA astronaut and physiologist James Pawelczyk at the Royal Institution in London on Saturday 7 September 2019. The event also saw physiologists from around the country conducting public engagement activities and demonstrations for school-aged children.
Every year, we ask physiologists to unite in celebration of Physiology Friday. Our Members showcase the amazing science of human and animal physiology through outreach and public engagement activities by holding open days in their lab, putting on exhibitions or organising public lectures.

In this year’s ‘Physiology Friday’ event, we proposed activities that allowed the students to participate in a simple scientific experiment to assess how exercise can affect skin temperature and the effectiveness of various cooling methods. We had around 210 students who were grouped together into teams to generate hypotheses about which heat dissipation mechanism after exercise-induced increases in body temperature would be most efficient: wind, water or both. From undergraduate students, graduate students, research assistants and post-doctoral fellows, our group worked together to be leaders, providing a fun and educational session for students, hoping to spark curiosity, interest, and a love of physiology and science.

Marc Poulin
University of Calgary, USA

BIOBAKES
There were 124 entries this year for the annual Biobakes competition, which sees members of the public challenged to make a cake celebrating the workings of the body!

Baker’s Choice winner
Emily Raemaekers

Physiologist choice winner
Rachel Tabb

Public’s Choice winner
Annabelle Latham

Physiology Friday at Calgary University, US
DEMONSTRATING THE IMPACT OF SPORT AND EXERCISE SCIENCE

John Saxton
Northumbria University, UK

"Physiology, which focuses on how the human body responds and adapts to physical exercise (in all its guises), is fundamental to our understanding of how the limits of human performance can be extended in conditions of optimal health and disease. The discipline also underpins mechanistic studies of structured exercise and physical activity in the contexts of chronic disease prevention and treatment, and in improving the efficacy of medical treatments. This new report clearly highlights the breadth and impact of Higher Education Sport and Exercise Science (SES) programmes and the core role that physiology plays. It provided a strong platform for a highly engaging series of short presentations and discussion amongst SES professionals as part of a roundtable session at the 2019 BASES Annual Conference. This will help to promote the report’s key take-home messages and raise awareness among the wider public."

Karen Stanton
Solent University, UK
(previously York St John University)

"I was delighted to speak at the launch of this report in Parliament. It was a great collaboration between The Society and GuildHE. As a Vice-Chancellor, this type of analysis is really helpful to institutions across the country to showcase the value of Sport and Exercise Science. It is a rigorous, informed piece of work that carries weight with funding organisations, and helps show potential students why SES is a positive choice. I’ve already seen the real impact this report has had in changing mindsets, and GuildHE was really pleased with the collaboration."

As well as the robust analysis on the impact of sport and exercise science (SES) to the UK economy, the report also highlights 16 case studies. These case studies showcase the contribution of SES courses to local communities and to wider society. For example, students at Abertay University are offered the opportunity to put their learning to use in the local community by facilitating health and exercise programmes to help Dundee residents make healthy choices in an effort to combat Dundee’s lower life expectancies and high rates of premature death."
Growing Older, Better reached out beyond physiology and The Physiological Society’s membership to include funders and policymakers in its analysis and recommendations. As such, it is great to see that the report is already helping The Society impact on the Government’s Ageing Society agenda. I was invited to give evidence to the Lords Science and Technology Committee’s inquiry on healthy ageing, a Committee which is being advised by Janet Lord who also sat on the Growing Older, Better Expert Group. Importantly, the report highlighted amongst a number of things, how physiology can fall through the funding gaps between basic, medical and applied science research. It is pleasing therefore that The Physiological Society has been invited by UKRI and the Research Councils to discuss how this can be remedied to ensure that physiological research receives the attention and funding it merits.

Paul Greenhaff
Expert Group Chair
University of Nottingham, UK

In the last 30 years, life expectancy has risen by 5 hours a day, but I’m not sure we can say that we are living healthier lives for that length of time. That’s why the launch of this report is so important. What I will take back to my constituency, and back to Parliament is that there is a real desire to understand the mechanisms of ageing that lead to disease and physical deterioration. I think physiology has an important role to play in addressing these challenges, and The Physiological Society is offering leadership by publishing this report.

Stephen Metcalfe MP
Chair of the Parliamentary and Scientific Committee

The Physiological Society’s Growing Older, Better report is important because it highlights that effective funding takes an interdisciplinary approach to ageing research. Physiology by its nature is an integrative science, which brings a number of disciplines together. UKRI-BBSRC recognises that if we want to understand the ageing process, we need to understand the whole system.

Sadhana Sharma
Biotechnology and Biological Sciences Research Council
Our total income grew to £4,810,000 (2018: £4,742,000) and expenditure reduced to £4,688,000 (2018: £5,067,000). Our principal funding sources were from publications (£4,094,000), events (£159,000), investments (£397,000) and membership subscriptions (£153,000).

The Society can look back at another good year in financial terms. Our journals continue to provide by far the largest income stream for The Society, and in 2019 we saw our publishing income grow by £134,000. Our membership subscriptions increased by £7,000. Our events income decreased by £195,000.

Income from investments grew by £209,000. Following the refurbishment of Hodgkin Huxley House, completed in June 2018, two new leases were finalised in October 2018 and January 2019, respectively. Consequently, rental income associated with the building increased by £205,000 and is included within investment income. To help safeguard the property asset, £500,000 has been designated to reflect the 10-year building maintenance programme.

The strength of publishing income, together with the full year of rental income and the absence of significant property refurbishment costs were the main reasons for operating surplus on unrestricted funds of £136,000.

In addition to operating income and expenditure, The Society achieved net investment gains of £786,000.
ABOUT US

The Physiological Society brings together over 4,500 scientists from over 60 countries. Since its foundation in 1876, our Members have included over 60 Nobel Prize winners from Ivan Pavlov to John O’Keefe. They have made significant contributions to our knowledge of biological systems and the treatment of disease.

We promote physiology and support those working in the field by organising world-class scientific meetings, offering grants for research, collaboration and international travel, and by publishing the latest developments in our leading scientific journals, *The Journal of Physiology*, *Experimental Physiology* and *Physiological Reports*.

OUR TRUSTEES

Deborah Baines  
Guy Bewick (until 10 July 2019)  
John Cripps (from 11 Dec 2019)  
Sue Deuchars  
Federico Formenti  
Charlotte Haigh  
Sarah Hall  
Raheela Khan  
Bridget Lumb

Graham McGeown  
David Paterson  
Frank Sengpiel  
Elizabeth Sheader  
Holly Shiels (until 10 July 2019)  
Matt Taylor  
Stefan Trapp  
Rachel Tribe (until 10 July 2019)