

DEPARTMENT OF
PHYSIOLOGY,
ANATOMY &
GENETICS



Annual Report 2025–2026



Oxford Anatomy and Physiology ranked #1 in the QS World University Rankings by subject 2017, 2018, 2020, 2021, 2022, 2023, 2024, 2025, 2026



We undertake discovery science where we reassemble physiological processes at the molecular, cellular, tissue and systems level of organisation. In so doing we provide a bridge to translational medicine, and interface between physical and life sciences, as we train the next generation of doctors and biomedical scientists.

A year of progress

Head of Department address



As I complete my 10-year term as Head of Department at the end of this academic year it gives me the opportunity to reflect on the success of my colleagues and the department. There have been many highlights for me from the post covid street parties to celebrating 100 years of women in physiology. It was also pleasing to quietly top the QS World Rankings in Anatomy and Physiology for nine years. But having the opportunity to re-build the infrastructure and consolidate the footprint of the department has provided the foundation to recruit outstanding colleagues into faculty posts. In particular, Ana Domingos (LMH), Neil Herring (EXE), Nicola Smart (CHC), David Dupret (SEH), Robin Klemm (SOM), Vlad Vyazovskiy (HER), Randy Bruno (STP), Armin Lak (STJ), Samira Lakhal-Littleton (BNC), Tammie Bishop (TRI), Megan Carey (PEM), Becky Carlyle (SHI) and Dame Molly Stevens FRS (EXE) to the John Black Professorship. Sadly, we also lost several beloved colleagues during my tenure, Ray Guillery FRS (HER), Peter Matthews FRS (CHC), Piers Nye (BAL), Derek Bergel (MER), Harry Charlton FRS (LIN), Sir Colin Blakemore FRS (MAG), Sir George Radda FRS (MER), and Margaret Matthews (LMH). In piam memoriam.

We have also been fortunate to attract outstanding individuals to deliver prize lectures from astronauts (Dr James Pawelczyk STS-90 and Dr Jessica Meir – Expedition 61/62; currently Space-X Commander Crew 12) to Nobel Laureates (Jennifer Doudna, Sir Peter Ratcliffe, Peter Agre, Tom Sudhof, Richard Axel, James Rothman, Ardem Patapoutian, Rod Mackinnon) and Break-through Prize winners (Jeffrey Friedman, Tony Hyman and Masashi Yanagisawa). Our Public Understanding of Science series attracted well known public figures (BBC's Clive Myrie, Sir Chris Whitty CMO, Sheena Iyengar, Sir Nigel Shadbolt FRS) as we focused on contemporary issues in science and art (Patrick Hughes). We also celebrated our science legacy through The Physiological Society's blue plaque scheme, honouring Sir John Burdon Sanderson and his pivotal role in establishing the Society 150 years ago, and Sir Charles Sherrington, Florence Buchanan, Mabel Fitzgerald, and Sir John Eccles.

However, it has been the success of my immediate colleagues that has given me and the department the most pleasure. We saw the following elected as Fellows of the Royal Society: Andrew King FRS, Anant Parekh FRS, Scott Waddell FRS, Lady Sue Black FRS, our Vice Chancellor and former member Irene Tracey CBE FRS and more recently Paul Riley FRS. Added to this Gero Miesenböck FRS was elected to the National Academy of Sciences alongside several major international prizes, and honorary degrees to Dame Frances Ashcroft FRS and Dame Kay Davies FRS. All have underpinned our world leading position.

Finally, I would like to thank all the PSS staff who have worked tirelessly behind the scenes to provide a strong foundation for our success, often in challenging circumstances. The department's success has been facilitated by the dedication and hard work of my first administrator Tania Boyt and then Sally Vine as we achieved Athena Swan Silver status (renewed) and a Gold Award for Green Impact. Lastly, I am grateful to all my colleagues for their generous support and the unwavering dedication and loyalty of my PA Sue Taylor. I wish my successor Richard Wade-Martins and his team the very best as they take the department to the next stage of its journey and we see the completion of the refurbishment project.

Honours, Fellowships and Prizes



We are delighted to congratulate **Professor Paul Riley** (bottom left) who has been elected to the Fellowship of the Royal Society and **Professor Gero Miesenböck** (top left) to the National Academy of Sciences (USA), **Duncan Sparrow**, **Sarah De Val** and **Robert Wilkins** who were awarded the title of Professor by the University of Oxford. **Liron Bowman**, **Mootaz Salman** and **David Holdsworth** have been conferred the title of Associate Professor. **Professors Steph Cragg** and **Samira Lakhal-Littleton** have been elected as members of the Academia Europea. **Professor Ana Domingos** was awarded a Royal Society Leverhulme Trust Senior Research Fellowship and became part of the InterocANCEption Team doing funded research for Cancer Grand Challenges. **Professor Pawel Swietach** will co-lead a programme aimed at improving treatment for Chronic Mountain Sickness funded by a Discovery Award. He too was awarded a Royal Society Leverhulme Trust Senior Research Fellowship and appointed to a Skou Professorship at Aarhus University and was made an Honorary Professor at Cayetano Heredia University. **Professor Dame Molly Stevens** was made an International Member of the (US) National Academy of Medicine. **Professor Armin Lak** was awarded an ERC Consolidator Grant. **Associate Professor Mootaz Salman** was awarded the Bayliss Starling prize lecture by The Physiological Society. **Dr Cecilia Velasco** received a Wellcome Early Career Award. The Physiological Society's Undergraduate Prize for Physiology for Best Project was awarded to **Thomas Grills**. **Catherine King**, won this year's Gotch Memorial Prize.

Inclusion at DPAG: Athena Swan Silver Renewal

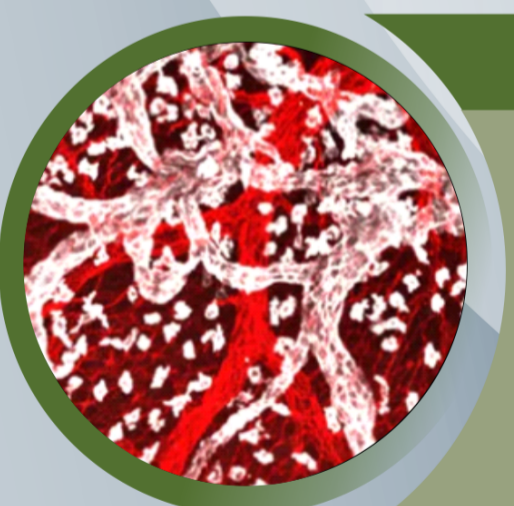
We are proud to have secured renewal of our Athena Swan Silver Award, recognising sustained progress in advancing gender equality and inclusion across all aspects of departmental life. This achievement reflects a strong commitment to Equality, Diversity and Inclusion (EDI) within governance, culture, and decision-making structures. Our Athena Swan submission evidences meaningful progress since 2020, including improvements in representation and career progression, alongside a clear commitment to fostering an inclusive and respectful environment.

DPAG benefits from a diverse group of people contributing to EDI efforts, with our EDI Committee and Working Groups, Researcher Society, Graduate Student representatives, and engaged focus group members, key to our success in advancing our inclusion aims. They give voice to their peers, provide context to data, and promote EDI-related activities. Our EDI Working Groups continue to deliver impactful initiatives including Disability Check-ins, awareness raising activities, annual public engagement events, a mentoring scheme, and our Lunch & Learn programme, supporting career development and inclusive practice. Our 2025–2030 Athena Swan action plan key priorities include supervision, wellbeing, transparency, tackling bullying and harassment, and addressing gender imbalance at senior levels. We remain committed to ensuring DPAG is a place where everyone can thrive and achieve their full potential.



Goodwin Group studies reveal how brain development lays the foundation for both shared and sex-specific circuits

Two studies, published in Cell Genomics, reveal how brain development lays the foundation for both shared and sex-specific circuits, redefining how neural diversity arises. Researchers in the Goodwin Group have created the first high-resolution molecular atlas of the adult *Drosophila melanogaster* brain, uncovering how the neurons that drive behaviour in adults retain a record of their developmental origins. A companion study, shows how these developmental programs are selectively reused and modified by sex to generate male and female behavioural diversity. These papers provide a new framework for understanding how the brain's architecture arises and evolves.



Riley Group study explores how the lymphatic vasculature in the neonatal mouse heart functions to retain tissue-resident macrophages

A study published in Nature Cardiovascular Research investigated how the lymphatic vasculature in the neonatal mouse heart functions to retain tissue-resident macrophages which are essential for heart regeneration and how the lymphatic endothelial cell receptor, Lyve-1 maintains the survival of this pro-regenerative macrophage population following injury. Understanding the key cellular and molecular players during heart regeneration immediately after birth provides insight into how to reprogramme cells to promote regeneration of the adult heart following a heart attack. This study was led by two talented graduate students in the Riley Group, Kostas Klaourakis and Ben Chapman



Stephanie Cragg and colleagues compile and edit a new book, The Handbook of Dopamine

DPAG's Professor of Neuroscience Stephanie Cragg worked alongside Professor of Behavioural Neuroscience Mark Walton (Department of Experimental Psychology) to compile and edit a new book, The Handbook of Dopamine. The book is an extensive volume that captures current understanding of dopamine biology in the brain, including anatomical organisation of dopamine neurons, their molecular and genetic diversity, synaptic and circuit connectivity, receptor function and signalling, through to diverse roles in behaviours and finally, dysfunction in disease. The front cover (pictured) features an image by DPAG DPhil student Lucille Duqueno.

Green Impact initiatives at DPAG

The Green Impact Team has had another exceptionally busy and successful year. The team once again organised and delivered the annual DPAG Green Impact event in March which was a great success.

The Green Impact audit took place on 17 June and we are delighted to report that DPAG has once again achieved a Gold Award.

Since introducing our new bin system last year across labs, offices, and corridors, we now have clearer processes in place to streamline waste disposal. We are delighted to report a significant improvement in recycling rates, increasing from 20% to 30%. In addition, total waste has been reduced by an impressive 27%.

Thank you to our LEAF champions and DPAG colleagues for your continued engagement and support in making this initiative a success.



Butt Group study investigates the role which cortical interneurons play in regulating sensory responses in the developing postnatal brain

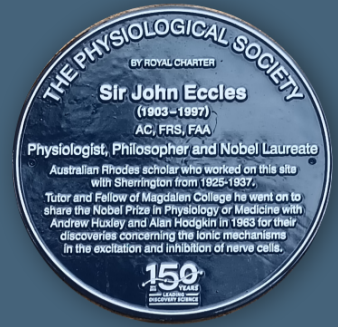
The Butt Group's latest study on the role which cortical interneurons play in regulating sensory responses in the developing postnatal brain has been published in Cell Reports. The team uses optotagging to successfully identify the contribution of neurons to formative activity on the millisecond timescale. The group's findings reveal that the physiological scaffolds that direct and constrain early activity differ across cortical areas. This suggests that genetic/molecular programmes responsible for circuit formation and emergent function also vary; a finding that has significant implications for our understanding of the aetiology of neurodevelopmental psychiatric disorders.

Members of the Heather and Carr Groups develop a model of 'human diabetic cardiomyopathy in a dish'

New work published by the Heather and Carr groups in the journal Diabetes has developed a model of 'human diabetic cardiomyopathy in a dish'. In the paper, using human induced pluripotent stem cell-derived cardiomyocytes (hiPSC-CM) in both 2D and 3D as engineered heart tissue (EHT), researchers have produced a model of diabetic cardiomyopathy in cellulo. This new model enables us to start unpicking disease mechanisms in a human centric manner, something that until now has not been possible as access to human cardiac biopsies early during disease development is not feasible.

Stevens Group develop injectable and photodegradable hydrogel that could enable controlled drug delivery in subcutaneous tissue

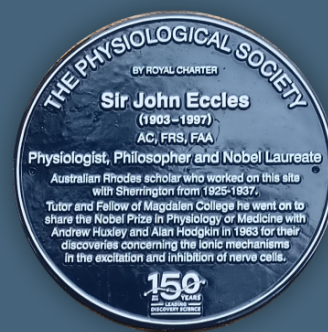
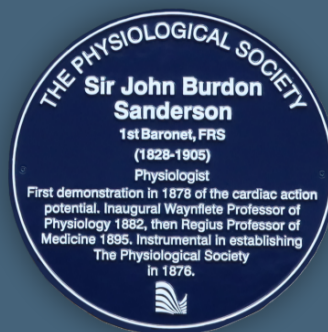
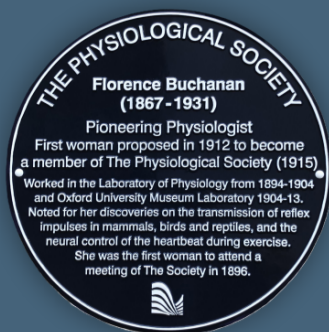
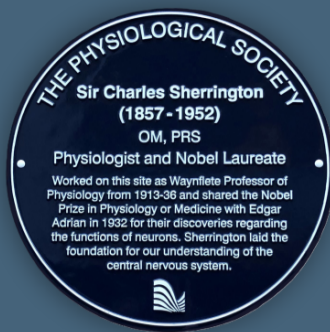
Light-controlled release of therapeutics holds great promise for improving patient compliance with treatment plans against diseases, however, insufficient tissue penetration of light limits the in vivo applications of photoresponsive therapeutics. The Stevens Group has developed an injectable and photodegradable hydrogel that could enable controlled drug delivery in subcutaneous tissue. The hydrogel formulation consists of a 2-arm photocage bearing azide and a BCN-terminated 4-arm PEG. Gelation takes place upon mixing the two components via strain-promoted azide-alkyne cycloaddition. Photocage photocleavage and gel degradation is precisely controlled with green light irradiation. Nanoparticles can be successfully encapsulated into the gel and then photo-released.



In 2026, the Physiological Society celebrates its 150th anniversary, and this year the society was awarded a Royal Charter. The Royal Charter formally recognises the society’s long-standing contribution to science and the public good. On 18-19 June, DPAG was honoured to host a special two-day celebration for the society, highlighting the vital role of physiology and physiologists; past, present, and future. The first day of the event started with a talk by Professor Sir Peter J Hunter FRS, followed by insightful presentations from Professor Denis Noble CBE, FRS and Nobel Laureate Professor Sir Peter Ratcliffe FRS. The day concluded with the unveiling of a blue plaque honouring the outstanding physiologist Sir John Carew Eccles FRS. Eccles (1903–1997) is widely regarded as one of the most influential neurophysiologists of the 20th century. His research transformed scientific understanding of neuronal communication and laid important foundations for modern neuroscience. The plaque was unveiled by Sir Peter Ratcliffe, who was joined by the Vice Chancellor Professor Irene Tracey CBE, FRS and Head of Department Professor David Paterson.



The second day featured a symposium bringing together an interdisciplinary community of internationally leading researchers to explore what lies ahead for the field. The symposium combined cutting-edge science with dedicated networking opportunities to foster collaboration across disciplines.



DPAG Prize Lectures

Within the department we host a prize lecture series each in honour of prominent scientists who have been associated with DPAG. The lectures are an opportunity to celebrate the history of DPAG, the lives of such significant scientists, and to ensure that we preserve the legacy that they have left behind.

Since the lectures were established, we have been honoured to host a wide variety of world-leading scientists, who have enlightened us with their individual expertise.

The collage below shows a selection of Prize Lecturers, past and present.



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