

Summer issue

focus on Equality, Diversity & Inclusion

Wellcome to the Summer issue of the School of Biosciences newsletter, the Mole, which, as well as including the usual news, updates and features, has a special focus this time on equality, diversity and inclusion (EDI). This is something that affects every aspect of what we do, how we are organised, and what our goals are. The University is very clear in its EDI aims that are about:

- Creating an inclusive environment: developing a University community where everyone feels welcome, included, and empowered to succeed.
- Dismantling barriers: addressing the structural barriers faced by groups within the University, in order to create more equitable outcomes.
- Integrating equality, diversity and inclusion: issues and impacts are considered and addressed across our activities.



Sitting on the podium during the graduation ceremony last week, looking at both staff and students, it's quite clear that big progress has been made on all fronts, but there is still a lot to do. The big challenge for our School is to pinpoint the issues and then come up with credible action plans with measureable outcomes. A major hurdle is that EDI permeates so many diverse matters at different levels, ranging from admissions, teaching and assessment through to hiring procedures, workplace ambience, workplace safety, and conditions of service. And this is something that affects everyone in the School, as funders and stakeholders expect us to be pro-active and engaged with the EDI mission. But the upside is that, as each gain is chalked up, everyone benefits from being in a more inclusive, more understanding, and more empathetic environment.

Gender Equality and Athena Swan

The Athena Swan Charter is a framework that is used, across the globe, to support and transform gender equality within higher education and research. The School of Biosciences is applying for Athena Swan Bronze status and many staff are now involved with analysing data, contributing written content towards the application, and developing and implementing initiatives to take ideas forward to create a more inclusive, diverse school. Academic and Professional Services staff, and PG and UG students are involved, with representation from all groups to ensure that our goals reflect the opinions of all members of the Biosciences Community. The aim is to submit the application by 31st May 2024. If you're interested in contributing, or have questions, and would like to discuss this in



greater detail, please email Eleanor Cull e.cull@bham.ac.uk or Claire Cooper c.e.cooper@bham.ac.uk

Note for the curious: the Athena SWAN framework that promotes gender equality was established in 2005 following co-operation between the Athena Project and the Scientific Women's Academic Network, hence the SWAN acronym. The bronze accolade is awarded for planning, the silver for implementing, and the gold for sustaining measures to promote gender equality.



A plea from Mary Blanchard about Athena Swan

When Eleanor Cull and I were interviewed for the People and Culture lead, Athena Swan was central to the discussion. We both, idealistically, thought that going for Silver would be an easy step in the School's EDI mission. However, it soon became apparent that the School was in no place to even renew Bronze. Since Bronze was last awarded in 2017, data had not been collected, actions not followed up, we had all been resting on those metaphorical laurels. This is one of the many reasons that Athena Swan is vitally important, it keeps us accountable. Successfully applying for Athena Swan is hard, often soul destroying and lonely, but this is only the beginning. Athena Swan is not a time point for success, it is an **ongoing commitment to equality** and all the challenging work that this entails.

We are now starting again, drawing together the threads to apply for Athena Swan Bronze, with a commitment to ongoing improvement to allow the School to reach Silver, and even Gold. And the 'we' is all of us, every single person in the School has an important role to play in this. This is about the School being a positive, inclusive place to work and study, to retain the brilliant people already here and encourage others to work and study with us. The hard work of leading the application, and the team of people contributing, is being taken on by Eleanor and Claire Cooper. However, they and the team cannot do everything, there may be times when you are asked for help and all of us should put that work in, regardless of gender or position.

Athena Swan is for all of us, and the commitment needs to be from us all!



Inclusive teaching. Juliet Coates explains what it is and why we need it

Our student community is diverse. Students come from a huge range of backgrounds and countries, and they have infinitely diverse brains and nervous systems. Students from marginalised groups such as those who are disabled or not from the global majority may have had a difficult time at school or college. They may come into the university system already feeling like they don't belong in this huge cohort of students who are different from them in terms of skin colour, language or other privileges and characteristics. This can lead to a sense of isolation and lack of belonging that is sometimes called "impostor syndrome". This can have a profound impact on someone's nervous system and wellbeing, and

may ultimately affect their ability to realise their full potential. How do we know all this? In addition to a good understanding of the biology of the nervous system from the latest neuroscience, we know that we have persistent degree awarding gaps within our cohort linked to race, gender, socio-economic status, and even coming from the West Midlands.

So, what can we do about this? This is where inclusive teaching is needed and here are some ways to begin:

Diversity in assessments. Some students really struggle with essay writing. This could be due to specific learning difficulties such as dyslexia, physical issues such as hypermobility, dyspraxia or other conditions that lead to fatigue, or simply the result of students not studying in their primary language. Therefore, it is important for us to have some assessments, such as making the year 2 group video, that are not dependent on large amounts of writing. We can also encourage communication using posters, podcasts, or narrated PowerPoints of short-form writing such as Post Notes. These can be very authentic and worthwhile assessments, and they also engage student creativity.

Well-scaffolded assessment. Our data so far suggest that assessments that encompass plenty of support and formative feedback, both peer-to-peer and lecturer-led, have reduced awarding gaps. Have a think about how you can use face-to-face sessions interactively. Lecturers actively encouraging and supporting student interaction in comfortable, non-judgemental spaces can increase students' sense of safety, and hence connection and belonging.

A move away from exams. Exams are stressful and exam hall exams can be challenging for minority or neurodivergent students. Open book exams can disadvantage students with complex personal circumstances. Some students will have experienced trauma from school exams: our education systems are forcing kids to do SATS from age 6-7, when their nervous systems are unready for that kind of stress, and

this trauma can be re-triggered in later exam situations. Giving students time to work on an assignment in the way that works best for them in terms of information processing and creativity can be beneficial.

Decolonize the curriculum. I would encourage all of us to think about what we are doing (or could do more of) in our modules to teach not just from a white, patriarchal, western point of view. Can we use examples from across the globe? This is easy for plant science, agriculture, food security and climate change! Do we only highlight scientists from the Global Majority? Can we sometimes be critical about some western medical models? For example, we know that a lot of medical research is performed exclusively on white males. One instance of this might be autism research, another is heart attack symptomology, another is the perception of who feels pain in a particular way. We know that black women are four times more likely to die in childbirth than white women. A lot of ecology and anthropology research is carried out from a very colonial perspective. Be aware of this and encourage students to challenge it.



We welcome feedback from students from all sectors of our community with ideas as to what they see as inclusive teaching. We are listening and we want to make structural and systemic change. **What can we do to make our learning and assessment spaces comfortable and welcoming for you?** Please get in touch: j.c.coates@bham.ac.uk and/or come and have a chat!

Julia Lodge has some suggestions for making assessments accessible

Assessment has two main functions. Perhaps the most obvious is the grade. In the end, as we award classified degrees, we need marks on which to base these awards. Grading has some more positive features as it allows students and teachers to check on progress.

However, my main interest in assessment is as a driver for learning. A good assessment should enable students to apply what they have been taught, encouraging them to spend time consolidating their understanding of material and practicing important skills. In designing assessments, it is important to recognise the diversity of our student population, not just in terms of protected characteristics, but we also need to remember that they don't all aspire to follow academic career paths.



Diversity of assessments is, in my opinion, the key to a fairer assessment strategy. Diversity means that students who, for example, find extended writing or data handling challenging are not always faced with the same form of assessment, and that those who find that these come easily are challenged with other forms of assessment. More importantly, it allows us to use a wide range of authentic assessments that prepare students for their future.

In the second year "Human Structure and Function" module, students are offered a choice of format: Poster, Podcast or Video, and at least one final year module is discussing offering students a choice of doing group work or working independently. These approaches allow students to play to their strengths.

External examiners and the Royal Society of Biology accreditation team have both commented on the diversity of authentic assessments that we offer. Some good examples are POSTnote articles aimed primarily at MPs, News and Views articles aimed at fellow scientists, "Be a Referee", Molecular Animation, and one Masters module even has a viva in place of a written examination.

Archana Sharma-Oates points out the importance of diversity and inclusion on healthcare studies

There is currently much talk of precision medicine delivering transformative treatments tailored to the individual. However, much of the biomedical research data that has enabled ground-breaking discoveries are derived predominantly from European ancestry. There is a big danger that extrapolating research findings, derived predominantly from one ancestry, leads to misinterpretations which have implications for healthcare in non-European ancestries. There are many examples in the literature of misleading interpretations of clinical studies resulting in misclassification of genetic variants. For example, a genetic variant detected in African Americans was initially classified as pathogenic (for hypertrophic cardiomyopathy) because the data used was derived predominantly from European ancestry. The discovery that this variant is prevalent in the African population led to a rethink!



There is now a growing awareness of the differences in disease incidence and prevalence amongst different ethnic/racial populations. My own research has highlighted that South Asian and African Caribbean populations develop several autoimmune diseases at a significantly younger age than their European counterparts. The younger age at onset has been noted in cardiovascular diseases and diabetes, as well as in certain cancers. These are complex diseases, and the pathogenesis is likely multifaceted, intersecting with lifestyle, socioeconomic, and environmental factors, including psychosocial stress.

The burden of diseases and the economic losses are suffered most greatly by deprived communities that overlap underrepresented ethnic/racial populations. My research interest is in detangling the contribution of the environmental and lifestyle/socioeconomic factors versus genetics. Understanding the influences of these differing factors will help develop targeted interventions or preventive strategies to eventually make precision medicine a reality for all populations.

IMI Director, Willem van Schaik, pulls some strands together to make another important point about health inequalities

Infectious diseases have always disproportionately affected the poor and marginalised groups in society, while the rich and privileged could escape the worst of infectious outbreaks. A famous example is Sir Isaac Newton, who in 1665 managed to flee an outbreak of plague in Cambridge and returned to [his parent's sizable farmhouse in Lincolnshire](#) where he continued his studies. Meanwhile, an estimated [13% of the population of Cambridge died](#), with the poor being mostly affected. More than three centuries later, we have seen the same dynamic during the COVID-19 pandemic, where [mortality was higher](#) in socioeconomically disadvantaged areas than in areas that were more affluent. The underlying causes for correlation between higher mortality and deprivation are complex and multifactorial. A troubling example to illustrate how healthcare technologies are mostly developed for patients with a white skin, is the use of pulse oximeters to test for blood oxygenation. Pulse oximetry was known to be less accurate with darker skins, but was used widely to test blood oxygenation, and make decisions on treatment during the COVID-19 pandemic. [A recent study](#) showed that blood oxygenation was systematically overestimated by 1% in patients with a black skin, which was associated with a 3.1% lower probability that COVID-19 patients were admitted to hospital, and a 4.5% lower probability of receiving supplemental oxygen treatment.



I believe that, particularly for those of us that work on infectious diseases, it is important to be aware of biases and systemic racism that lead to poor and marginalised groups in society being at a particular high risk of infection. For this reason, IMI is organising an event for Black History Month, in which we will discuss the shockingly unethical [Tuskegee Syphilis Study](#), where impoverished black men were observed, but not treated, during the course of syphilis. This led to more than a hundred deaths due to syphilis and at least 19 children born with congenital syphilis. We will discuss to what extent 'Tuskegee' is affecting treatment and prevention of infectious diseases in the United Kingdom among non-white ethnicities. This event will be held on Wed 18 October, at 1 pm, and the location will be announced in due course.



Welcome to the CERJ

Archana Sharma-Oates and the founding director, John Colbourne, write: Environmental pollution kills ~9 million people per year worldwide. This is equivalent to 1 in every 6 individuals. In low- and middle-income countries, pollution kills three times more people than malaria, AIDS, and tuberculosis combined. The burden of pollution-related deaths, diseases and the economic losses are most greatly suffered by the communities who have contributed the least to the global environmental crisis. Environmental toxicities play a critical role in the onset and pathogenesis of several diseases particularly in groups with a genetic predisposition.



The Centre for Environmental Research and Justice (CERJ) proposes to facilitate research that will develop targeted intervention and prevention strategies through action research. Environmental and health justice is at the heart of the CERJ mission.

CERJ supports research in under-represented populations to address the imbalance in health outcomes to ultimately benefit the communities most adversely affected by environmental pollution.

Kalpana Manotta writes about the HR POD team who are here to help us!

The People and Organisational Development (POD) Team's vision is to be a 'highly valued team of trusted advisors', supporting staff and, in particular, leaders during unprecedented levels of change in helping to develop individual, team and organisation-wide capabilities and behaviours, to enable the successful delivery of "Birmingham 2030" through 4 core offerings:

- Open Programmes – a dedicated and experienced training team offer a range of online, webinar and classroom-based courses open to all staff.
- Developing Leaders - we offer a range of leadership programmes with multiple cohorts for different grades.
- The Coaching Academy - coaches made up from the entire university supporting staff. We also train coaches at POD and incorporate these skills into many of our courses.
- POD Consulting – a dedicated Consultant team, working with Senior officers and Heads of Colleges/Schools to support projects and awaydays.



I am the CoLES consultant for POD matters and you can contact me on k.manotta@bham.ac.uk. We've a whole range of EDI and wellbeing courses, in the classroom, online and on Linked in Learning, including Equality, Diversity & Inclusion Micro Sessions, Building Inclusive Team Culture and Aditi and Aurora Leadership programmes. Find out more and book by visiting our Sharepoint site and you can refresh your knowledge on University EDI Policies & resources on the HR EDI site using the links below.

<https://bham.sharepoint.com/sites/POD> - General POD Sharepoint site

<https://bham.sharepoint.com/sites/POD/SitePages/Equality-Diversity-Inclusion-and-Wellbeing.aspx> - POD EDI specific courses

<https://bham.sharepoint.com/sites/EDIstaff> - HR EDI site

ROUND and ABOUT: the 2023 Biosciences Graduate Research School Symposium

This year's Symposium was amazingly well-attended and, once again, the standard of both oral and poster presentations was stunningly high. Prizes for talks went to Samuel Benedict, Katie Stevens and Thomas Hancox, whilst the poster prizes went to Max Schwarze, Casey Lett and Anna Parsons (shown right with their certificates).



A highlight of the day was the plenary lecture given by Richard Parsons, who, many years ago, had been both an undergraduate and a PhD student in the School. Now at Kings College London, Richard gave a great talk starting with his time in Birmingham, but moving on to his research on nicotinamide N-methyl transferase and its importance in human disease. Amazingly, Richard's daughter Anna (both pictured left), is currently

a PhD student with Alicia Hidalgo, so it was great to see him concede that *Drosophila* is a handy model for studying neurogenetics! The whole day was impeccably organised, and so big thanks go to the BGRS student organisers (pictured here with current BGRS lead, Dave Grainger).



The 2023 Biosciences Summer Graduation Ceremony



This was held on Thursday 13th July at 5:30 pm. Dozens of our students received their degrees from the Provost, Stephen Jarvis, and, straight afterwards, Rebecca Budden (pictured left) delivered a very inspiring, and quite humorous address, on behalf of all the new graduates. Happily, despite a poor forecast, the showers stayed away and so staff, students and their families were able to congregate beforehand, in the Biosciences Quad, where prizes were handed out by Head of School, Rob Jackson (right). These prizes are an interesting mix, with a variety of origins. They are listed here, together with this year's winner's name:



AJ Menzies Prize: awarded to the student who, having specialised in Animal Biology, obtained the highest merit in the Final Honours examination for a degree in Biological Sciences. *Katie Spencer*

John L Jinks Memorial Prize: awarded annually to the student who, in the final Honours examination for a BSc degree in Biological Sciences, achieved the highest mark in the area of Genetics and/or Molecular Sciences. *Emily Reeves*

Medawar Prize in Human Biology: awarded annually to the student who achieves the most outstanding performance in the final Honours examination for the degree of BSc in Human Biology. *Beth Blake*

Perry Prize: awarded annually to a student who achieves the highest overall performance in the final Honours examination for a BSc in Biochemistry. *Olivia O'Byrne*

Farmer Prize: awarded annually to the student who, in the final Honours examination for a degree of BSc in Biological Sciences, achieved the best result. *Freya Smith*

John Humphreys Memorial Prize in Plant Biology: awarded to the student who, having specialised in Plant Biology, obtained the highest merit in the final Honours examination for the degree of BSc in Biological Sciences. *Freya Smith*

RSB Advanced Accreditation Top Project Award: for the highest project mark in a programme with Royal Society of Biology accreditation. *Emily Doran*

Head of School's Professional Placement Award: for the top student (highest marks) graduating from any MSci (Professional Placement) in Biosciences. *Katie Heighes*

Head of School's University Pathway Award: for the top student (highest marks) graduating from any MSci (University pathway) in Biosciences. *Rebecca Budden*

YET MORE CONGRATULATIONS

As we reach the end of this academic year, a lot of congratulations are due, so welcome to this expanded section!



Robin May (right) has been elected as a Fellow of the Academy of Medical Sciences for his research on understanding how microbial pathogens survive and replicate in their hosts.



Jackie Chappell (left) won the College of Life and Environmental Sciences Excellence in Supervision Award, following nomination from several past and present postgraduate students.

Scott White (right) won the annual HEFi Award for Digital Innovation, for championing the use of new, innovative technologies, including 3D printing, image-creation and photogrammetry to engage students in a range of topics using 3D modelling.



At the University Postgraduate Research Festival, **Hannah Doherty** won the Michael O'Rourke Best Publication Award, and **Katie Jeynes-Cupper** won the poster award for inclusive research design.



At the 2023 Birmingham Professional Awards, **Abigail Layton** (left) was named as 'Technician of the Year' for generating critical resources that supported many successful grant applications. Abigail writes: *"I graduated from UoB with a Biological Sciences degree in 2019 and was lucky enough to go straight into the role of Research Technician in Patrick Moynihan's lab. I never imagined I'd get this award! I have to thank the people who nominated me, and who make our lab such a wonderful place to work. To celebrate I treated myself to some of my favourite things: a big box of chocolates and a long walk in the middle of nowhere 😊."*

Congratulations to **Mary Blanchard** and **Leanne Taylor-Smith** for achieving Senior Fellowships of Advance HE (SFHEA). This recognises their leadership in teaching practice in our School that has helped us to deliver outstanding education to our students.

Finally, a clutch of promotions in the recent round:

Promoted to Professor: **Julia Myatt**

Promoted to Senior Research Fellow: **Josh Quick**

Promoted to Associate Professor: **Florian Busch, Lindsey Compton & Debbie Cunningham**

NEW APPOINTMENTS



Introducing Michael Flynn from the Biosciences Teaching Admin Team

Having grown up in Coventry for 20 years, I decided to move along and see what else was in store. I started to grow an established career in hospitality in my new home of Stoke-On-Trent. After some time, I was offered the chance to work in London, which I did not get to enjoy as much as I would have liked due to the pandemic. So off I left for Leamington Spa and, after a decade in the career, I realised the downsides and the fragility of the job. After speaking to friends and acquaintances, when the opportunity came to join UoB, I knew it was where I wanted to be. So, in July 2023, I joined the Biosciences Team as Senior Education Support Administrator with responsibility for the first year programmes.

Introducing Senior Research Technician, Emma Lawrence

Emma writes: my name is Emma Lawrence and I am joining the University to work as Senior Research Technician in Hansong Ma's Lab**. This is following my previous role as a Research Technician at University College London (UCL), working on a new test for Homologous Recombination Deficiency (HRD) in ovarian cancer patients. The aim of this project was to estimate the efficacy of a new test for HRD, developed by UCL, in fixed tissue from 100 ovarian cancer patients. This was done by comparing the results of UCL's HRD test with the results of a pre-existing effective (but very expensive) HRD test from America, on the fixed tissue from the same 100 patients.

I have also previously worked on projects involving the kinetochore, whilst working as a Laboratory Technician at the University of Warwick. Whilst studying for my Undergraduate Degree at Cardiff University, I spent an invaluable year working for the Italian National Research Council in Sicily in Italy, working on a project to test the efficacy of Quercetin derivatives on human glioma cells.

I am thrilled to be joining Hansong's Lab and cannot wait for the exciting journey ahead!



**you can read all about Hansong Ma on page 7 of the April 2023 edition of the Mole. Past issues can be found on the Intranet at <https://intranet.birmingham.ac.uk/les/biosciences/newsletter/index.aspx>

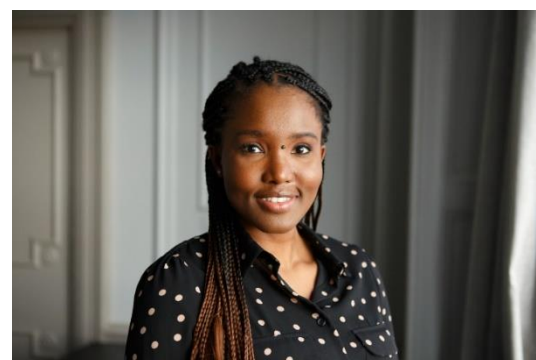
Introducing newly-appointed Assistant Professor Dr Peter Keane

Peter writes: I am a bioinformatician who is interested in understanding how gene regulation works, and how it can go wrong in diseases such as cancer. I began my scientific journey as a biologist, graduating with a degree in biotechnology from the University of Maynooth in Ireland. It was then that I found out that what I was really interested in is combining different types of biological data with ideas from statistics and computer science to learn new things. This led me to train as a bioinformatician, first completing a masters at Dublin City University, and then a PhD in bioinformatics at the University of Galway, where I used transcriptomic data to study how alternative mRNA splicing contributes to the development of T cells in the thymus. I moved to Birmingham in 2017 to do a postdoc with Conny Bonifer and Peter Cockerill in the Institute of Cancer and Genomic Science, where I used different types of high-throughput sequencing data, including both bulk and single-cell techniques, to study how genes are regulated in developing blood stem cells, and how this regulation breaks down in Acute Myeloid Leukaemia. My current work focuses on developing multi-omic methods to construct large gene-regulatory networks, and asking how we can gain new biological insights from them. I look forward to meeting you all when I join the School of Biosciences in September, and I am excited for the opportunity to contribute to the research and education programmes in the School and across the University.



Fresh arrival at the LES Research Support Office to look after Biosciences!

Adesola Bello writes: there have been lots of changes since the last article in the Mole about the College Research Support Team in September 2022! You may have heard about the new Research Strategy and Service Division that we are now part of. The Research Facilitators have also been given new job titles, and are now known as your Research Development Officers (RDOs). As RDOs we will continue to offer tailored support and advice, all through the pre-award process – from developing your ideas and identifying suitable grants and fellowships to preparing your application and facilitating timely and quality submissions to funders. We will write more about both internal and external changes in the Team later in the year.



But of course, perhaps the most obvious change of all is that I am your new RDO for the School of Biosciences. I joined UoB in April this year (2023), having moved from London where I was a postdoctoral researcher at Imperial College London. I specialised in using metabolomics-based approaches to investigate the interplay between host metabolism, nutrition, and the gut microbiota. It has been an exciting season of newness for me: moving to a new city, new job, new colleagues, new friends - *insert A Whole New World from Aladdin* - but the supportive culture here at UoB has been very helpful in making me feel very welcome.

Hope you have a great summer – by the way, I am accepting recommendations on what fun things to do in Birmingham/West Midlands. Please feel free to email/Teams me - and looking forward to working with you over the coming months. *Dr Adesola Bello*



Early Career matters: transformation of PERCAT into ECDN

For many years, the PERCAT programme, within the Colleges of Engineering & Physical Sciences and Life & Environmental Sciences, was the gateway to resources and support for career development and training for postdoctoral and early career researchers. This has now been replaced and updated by the new Early Career Development Network (ECDN) that will give access to a bigger range of courses, opportunities, and other events. ECDN aims to provide stepping-stones for personal career development

Richard Jones, Interim Early Career Development Network Officer, writes: ECDN endorses the Vitae Concordat to support the Career Development of Researchers. Hence, all Postdocs and early career researchers can take an average of 2 hrs per week of work time for activities that will enhance their careers, which is equivalent to roughly 12 days per year.

The ECDN committee meetings include reps from each School, and the two Biosciences reps are Santosh Kumar (s.k.cm@bham.ac.uk) and Sam Lara Reyna (S.J.LaraReyna@bham.ac.uk): they can tell you more, and answer any questions about ECDN. Also, please get in touch with me, Richard Jones, Interim Early Career Development Network Officer r.jones.12@bham.ac.uk for more information and to share ideas.

Mojgan Rabiey: leaving us shortly

Mojgan writes: Some of you might have already heard that I will be moving to the University of Warwick as Assistant Professor to set up my own group working on plant-host interactions. As an early career researcher, signing the contract stating “permanent position” is a dream come true. Taking you through my career journey, when I wanted to do my PhD at the University of Reading, I was told it was impossible to find my own research grant to support my tuition fees and consumables. Being young and ambitious, I wrote my own research proposal and sent it to different charities that I found on the internet. I was invited to an interview by a small trust, and although I had only been in the U.K. for less than a year, I convinced them that I was ‘the one’ going to save the world through my research. I was the first PhD student supported by them. So, nothing is impossible when you believe in yourself. After my PhD, I did two postdocs at Reading, during which I started helping the School with teaching and leading practicals. To begin with, I wasn’t sure if I liked teaching, but then realised that I actually loved it. I supervised many UG and MSc students, and I have come to believe that supervision and mentoring is a two-way learning process - I benefited from interacting with students and learning along the way as much as my students did. Proud moments were when students told me they really enjoyed the research and that they wanted to continue their journey.



When I moved to Birmingham during the lockdown, I was asked to set up a lab from scratch, something that I really enjoyed and gained a lot of experience. I worked on my research, writing papers and also helped the group members with their research. I also started helping with teaching, leading practicals, helping with different activities within the Schools and BIFoR, and supervising students. These allowed me to get my ‘Fellowship of the Higher Education Academy’, having already completed my ‘Associate Fellowship’ at Reading. I expanded my networks of collaboration, became the British Society for Plant Pathology education officer, and *Plant Pathology* journal editor. Along the way I also started applying for grants. I was shortlisted for the BBSRC Discovery Fellowship and went through a very intense interview process. Although I didn’t get it, it made me stronger and more experienced. Then, I applied for the position at Warwick. The interview process was 3 days, and I had to give a research talk, teaching ‘chalk and talk’, met with many members of staff and then was interviewed. I reached out to many of you for help and advice (thank you) and I am super excited that soon I will be setting up my own group, something that I have always dreamt of. I will always remember that we have such fantastic and experienced members of staff here in the School who were always happy to help - so do reach out to them for advice.

I have really enjoyed my time here at Birmingham, so thank you for making me feel very welcomed and, for sure, I will be in touch.

FEATURE: where are they now?

Scores of staff and hundreds of students have passed through the School and gone on to do great things. Here, Professor Sheena Radford and Dr Kerry Tyson tell their stories.

Sheena writes: I came to Birmingham in 1981 as an undergraduate to read Biochemistry. I had no idea what I wanted to do as a career, but chose Biochemistry because I couldn’t decide between studying Chemistry and Biology. I had a great time in Birmingham, with supportive and inspirational academic staff. I left with a First Class degree and a lifelong love of protein biochemistry, especially structural biology. I was hooked! I progressed via a PhD in Biochemistry, supervised by Richard Perham, at Cambridge, and then a Royal Society University Research Fellowship in Oxford, moving to Leeds to establish my own laboratory in 1994. I have been there ever since. I now hold the Astbury Chair in Biophysics and a Royal Society Professorial Research Fellowship.



Throughout my career, I have been fascinated by protein structure and function. How do cells build the complex protein assemblies that perform all of life’s functions from polypeptide chains of just 20 amino acid types? This is the question of ‘protein folding,’ biochemistry’s molecular origami. It turns out that the folding code is good, but not perfect. Proteins do misfold and, if left unchecked, can lead to disorders from cystic

fibrosis to dementia. From an academic curiosity about how proteins fold has led me into the fields of neurodegeneration and dementia, and also bacteriology and antimicrobial resistance, as folding proteins into the outer membrane is vital for gram-negative pathogen growth and virulence. Our discoveries, I hope, will have impact in medicine, as well as on our fundamental understanding of protein behaviour.

So far, I have produced over 300 papers, given hundreds of lectures across the globe, and been awarded Fellowships of the Royal Society, the Academy of Medical Sciences, EMBO, the Royal Society of Biology, the Royal Society of Chemistry, as well as an OBE for 'Services to Molecular Biology.' But most of all, I am proud to have worked with 80 PhD students and 70 postdocs, who make it a joy to be in the lab every day.



Kerry Tyson writes: after completing my undergraduate degree in Biochemistry and Genetics at the University of Nottingham, I joined Birmingham in 1990 to study for a PhD with Steve Busby and Jeff Cole, working on the regulation of transcription at the *Escherichia coli* nitrite reductase promoter. This is where my scientific career began, in the first floor lab at the end of the Biochemistry tower, overlooking Staff House, and although it's been many years since I worked on transcription factors, the molecular biology skills that I picked up under Steve and Jeff's tuition have under-pinned my career in the decades (!) since. I spent six enjoyable years at UoB, following my PhD with a post-doc with Steve and Jeff, before moving to the University of Cambridge for a second post-doc position in the Department of Medicine. There, I used my molecular biology expertise to study gene expression in human atherosclerotic plaques, which started my interest in the biology of human disease and the desire to follow a career in the Biotech and Pharma industry. By 1999, I was looking to relocate to the

South East with my husband, and I took up a team-leader position at Oxford Glycosciences, a proteomics company based in Abingdon, where I helped to establish gene expression profiling and cloning of oncology therapeutic antibody targets identified by cancer cell membrane proteomics – those molecular biology skills were still proving handy! Five years later, following two company takeovers, I found myself working in Slough for UCB Biopharma, and using my expertise to start a career as an antibody engineer..... a career that I am still following today. Over the last nineteen years, I have picked up additional knowledge and expertise that I apply to my role as head of Antibody Humanisation and Engineering at UCB Biopharma, but those core skills I learnt as a new PhD student are still relevant and used. I have been lucky to work on several therapeutic antibodies that have progressed to clinical trials and knowing that the work I do is making a difference to the lives of patients is very satisfying.

BIOCUP



UPDATE on the BIOCUP from Mike Tomlinson

This year's BioCup community-building competition ended with a lively Sports Day in the Quad on June 9th. A confident Team Biochemistry went into the day with a 20 point lead, but Team Biology/Human Biology/Human Sciences excelled in winning every event: tug of war, egg and spoon, sack race and various relays. The final BioCup score was Biology, 129 points: Biochemistry, 99 points. So Biochemistry have now lost both BioCups, but go into next year determined to do better, looking forward to various planned sporting events, quizzes, karaoke and bake-off. Follow all the action on Instagram @uob_bio.



Big thanks to Leah Thompson and Ellie Roper for their organisation of the Sports Day and other BioCup events earlier in the year, BioSoc President Kati Hulme and her team, and the College Community-Building Fund!

Explanation for the confused: the BioCup is an initiative, in collaboration with BioSoc, and funded by the College, to encourage interactions between members of the School, especially students and academic staff. A range of non-too-serious competitive events are planned throughout the year. The two teams are Biochemistry and Biology and points are awarded at each event – think *Hogwart's House Cup*!

NEWS FROM THE RESEARCH THEMES

Scott Hayward writes about Biosystems and Environmental Change (BEC):

This has been a busy period for our theme. First of all - congratulations go to Dr Jackie Chappell, who received the LES Award for Excellence in Doctoral Research Supervision at the University-wide postgraduate research festival on June 28th. In research, impact and outreach.....

John Colbourne *et al.* hosted 100 people for the Annual PrecisionTox Consortium meeting at the Birmingham Exchange in April. Then in June, John delivered the Keynote lecture at the Annual Meeting of the Dutch Society of Toxicology (NVT). Later that month, the Centre for Environmental Research and Justice (CERJ) successfully hosted its first annual Networking Day, where Dr Albert Zhou and Professor Bob Lee outlined the developing Master of Arts and Science course in Environmental Toxicology with Law. This event also introduced the new Daphnia lab/CERJ/PrecisionTox mascot (artfully modelled by Katie Reilly in the photo!).



Luisa Orsini and Albert Zhou have written an article for “Sustainable Growth news” explaining how the use of artificial intelligence can help us to prioritise the conservation of biodiversity: <https://www.sgvoice.net/strategy/research/35506/biodiversity-management-solutions/>

This conservation theme continues with work from the Susannah Thorpe/Jackie Chappell groups, and their postdoc, Nadine Sugianto, that has provided a summary of ongoing work on orangutan conservation in Indonesia: the orangutan Enclosure Design Tool (EDT) project aims to increase welfare and better prepare rehabilitant orangutans for release. For the past 1.5 years, the project has been running an on-site training program for and trained over 30 (mostly female) staff at the Bornean Orangutan Survival Foundation (BOSF) rehabilitation centre at Nyaru Menteng, Central Kalimantan, Indonesia. (see photos below). The group will also be presenting their work to an international conservation community at the next annual Orangutan Veterinary Advisory Group meeting in July 2023.



Scott Hayward (along with members of the Plant Science Theme) will be appearing at this year's Timber Festival: <https://timberfestival.org.uk/>. This is one of many outreach activities developed within the grant “Understanding Memory of UK Treescapes for Better Resilience and Adaptation” (MEMBRA: <https://www.uktreescapes.org/projects/membra/>). A team of researchers, artists, lawyers *et al.* have written a short play/mock judicial review, holding a future UK government to account regarding CO₂ emission targets and conserving UK woodland.

Finally, given that this is an EDI-focused issue of the Mole, we want to express big thanks to those in the BEC theme who have stepped up to be on the School's EDI panel (Mary Blanchard and Scott Hayward) and the Athena Swan panel (Mary and Tim Williams). Both panels play an important role in improving the School community, so we'd welcome more members signing up (across all themes!!).

Dan Gibbs writes about Plant Science and Food Security

Trees in Time: Deanne Brettell, Sam Dobbie, Andy Plackett, Sabine Dhaouadi, Bruno Cintra, and Jason Hilton organised the 2023 annual meeting of the BIFoR community (4-5th July), which was attended by 115 in-person delegates (with 235 others registered for online attendance) over the two days. This year's theme - Trees in Time - aimed to bridge the huge span of timescales in forest research. The presentations from invited speakers ranged from the first trees to evolve (Paul Kenrick, Natural History Museum) and what we can learn from past climate change (Prof Jason Hilton, GEES), through the population genetics of



current British oaks (Louise Gathercole, RBG Kew and Forest Research) and the flammability of modern forests (a session which metaphorically caught fire!), to the effects of future CO₂ on today's trees (Prof Sami Ullah, GEES) and how to plan better 'green infrastructure' in Biophilic Birmingham (Dr Emma Ferranti, School of Engineering). We enjoyed two brilliant keynote talks, with Prof Jenny McElwain (Trinity College Dublin) outlining her multidisciplinary research unravelling dramatic changes between Jurassic and Triassic forests in Greenland and Prof Jo Bradwell presenting the success-story at Norbury Park in capturing carbon through mixed planting. In the poster session, delegates voted prizes to Emily Grace, Dr Rosa Sanchez-Lucas and Dr Diana Vinchira-Villarraga (all from the Biosciences Plant Theme). The recorded sessions and posters will soon be available to view online at <https://www.birmingham.ac.uk/research/bifor/about/annual-meetings/2023-annual-meeting/2023-bifor-annual-meeting.aspx>. We're already looking forward to next year's meeting!



Outreach in Secondary Schools: On the 14th June, Lindsey Compton (right) talked about "Using plant genetics to feed the world", in three different schools, with a total audience of over 1,400 students! This was part of a fantastic programme of events organized by Sam McKee, director at Aylesbury Vale YFC, a small charity working with learned societies including the Genetics Society and the Mars Society to provide educational outreach programmes in science and the humanities on a large scale. AVYFC currently works with 9 schools and reaches more than 15,000 students in Aylesbury, Buckinghamshire every year. Lindsey's talk, as part of the regional after school science club, was particularly popular, enabling students to think about the relevance of genetics to everyday lives, to appreciate the vital role that plants play in the future of our world, and to start considering career avenues they may not have otherwise thought about. Sam will be looking to organize a similar programme of events for next year, so if you are interested, Lindsey will happily put you in touch!



The story behind the paper.

Etherington RD, Bailey M, Baptiste JB, Armbruster L, Cao X, Coates JC, Meinel T, Wirtz M, Giglione C & Gibbs DJ (2023) Nt-acetylation-independent turnover of SQUALENE EPOXIDASE 1 by Arabidopsis DOA10-like E3 ligases. *Plant Physiology* doi: 10.1093/plphys/kiad406

The N-terminus (Nt) is the first part of a protein to emerge from the ribosome exit tunnel during mRNA translation, and can undergo a wide range of co- and post-translational modifications – did you know that >60% of all nascent proteins in eukaryotes have their Nt-methionine cleaved off during protein synthesis, for example? One of the most prevalent Nt-modifications is Nt-acetylation (NTA), which is deposited on ~80% of all proteins in animals and plants. For many years, the purpose of this modification remained elusive, but recent work in yeast and mammals has shown that NTA can promote protein degradation via the so-called acetylation-dependent N-degron pathway, which involves recognition and ubiquitination by the Endoplasmic Reticulum (ER) resident DOA10 E3 ligase. In this paper, we explored whether this system also occurs in plants. We identified two broadly expressed and ER-localised DOA10-like proteins in Arabidopsis and showed that one of them can complement the yeast *doa10* mutant. Transcriptome and Nt-acetylome profiling of an *Atdoa10* double mutant revealed no obvious differences in the global NTA profile compared to wildtype, suggesting that *AtDOA10*s do not regulate the bulk turnover of NTA substrates. Using protein steady-state and degradation assays in both yeast and Arabidopsis, we identified ER-localised SQUALENE EPOXIDASE 1 (*AtSQE1*), a critical sterol biosynthesis enzyme, as a degradation target of *AtDOA10*s. Interestingly, degradation of *AtSQE1* *in planta* did not depend on NTA, but NTA *indirectly* impacted its turnover in yeast, indicating kingdom-specific differences in NTA and cellular proteostasis. Our work suggests that targeting of Nt-acetylated proteins is not a major function of DOA10-like E3 ligases in Arabidopsis and provides further insight into plant ER-associated degradation (ERAD) and the conservation of regulatory mechanisms controlling sterol biosynthesis in eukaryotes. This work is the main output of Ross Etherington, a UoB PhD student who graduated in 2022, and was carried out in collaboration with partners in both France and Germany.

James McDonald writes about Microbiology

The microbiology theme in Biosciences comprises a vibrant community of microbiologists, with over 20 research teams addressing global challenges in infectious disease, health and sustainability through both basic and applied research. Since joining the School last September, I have been incredibly impressed with the diversity and quality of its research. Research strengths in the theme include molecular microbiology (addressing fundamental properties of cell function), genomics, microbial cell surfaces, host-pathogen interactions and microbiome research. We have excellent opportunities to work across disciplines with colleagues in the plant biology, biosystems and environmental change, and structural and molecular cell biology themes, and of course several researchers in the microbiology theme are also affiliated with other themes in the school. Combined with opportunities for collaborations with other Schools, the cross-college Institute of Microbiology and Infection and BiFor, we are in a unique position to build ground-breaking trans-disciplinary collaborations to address global challenges in health and disease.

This ambition for interdisciplinary approaches to research is exemplified in recent grant successes across the theme, including a BBSRC pioneer award for Megan McDonald and Hung-Ji Tsai, a Royal Society University Research Fellowship award to Masha Makarova, and a recent BBSRC ALERT equipment grant, led by myself with colleagues in Biosciences, MDS and Chemical Engineering, to establish a microfluidic platform for single cell isolation, sorting and selection that will be available as a facility for all. The recent REF reading process also highlighted to me the strength and quality of research within our School, and we already have a selection of outstanding outputs for REF2028 (!?). There are exciting times ahead for the microbiology theme, and I'm excited to see how the early adoption of new technology and interdisciplinary thinking and approaches to research can elevate our research plans moving forward.

I also want to take this opportunity to wish Manuel Banzhaf the very best of luck in his new position at Newcastle University. Manuel has been a member of the school for six years, generating a highly novel and collaborative research programme focusing on high-throughput bacterial phenotyping. His 'systems biology approach' enables analysis of the bacterial cell envelope for drug discovery, but has also been instrumental in analysing how DNA sequence differences impact the phenotype of cells. We will miss Manuel as a member of our theme, but wish him the very best in his new post, and I'm glad that his links with us will continue!



BIOSCIENCES HEAD OF EDUCATION: *Julia Myatt is stepping down from this role to become Academic Director of Sustainability Education for the University, and Leanne Taylor-Smith will be taking over as new Education Head.*

Introducing
the School of
Biosciences' **NEW**
mascot!



**BREAKING
NEWS**

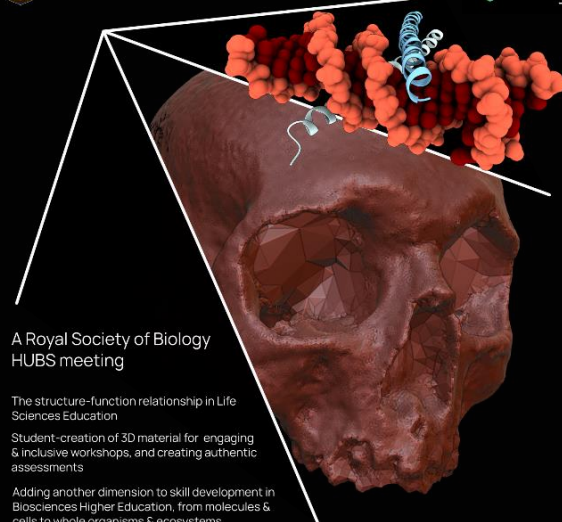
another introduction....

*please meet our new
mascot for Biosciences
events and social media:
Milo the Mole!*

*The name was chosen and
voted for by our Instagram
followers.*

UNIVERSITY OF
BIRMINGHAM

Royal Society of
Biology



A Royal Society of Biology
HUBS meeting

The structure-function relationship in Life
Sciences Education

Student-creation of 3D material for engaging
& inclusive workshops, and creating authentic
assessments

Adding another dimension to skill development in
Biosciences Higher Education, from molecules &
cells to whole organisms & ecosystems

**Teaching the Life Sciences
in Three Dimensions**

The School of Biosciences &
The Collaborative Teaching Laboratory

September 15th, 2023
The University of Birmingham

Organisers
s.a.white@bham.ac.uk
j.m.lodge@bham.ac.uk
to register or for more information
<https://tinyurl.com/LifeSci3D>

The Back Page

Keep in touch at regular Biosciences events:

Morning coffee & cake in the Undercroft: monthly from 10:30-11:30 am. Next sessions: Thursday 3rd August, Tuesday 5th September, Thursday 5th October & Tuesday 7th November, 2023

Biosciences Research Club: held on the last Friday of each month at 2 pm.

IMI Lunchtime seminars: Tuesdays at 1 pm

Biosciences Lunchtime seminars: many Thursdays at 1 pm



A big **THANKYOU** to the School's brilliant admin team who, this year, have 'made it happen' time and time again.

Thanks Ellie, Leah, Jess and Claire!



forthcoming issues of the Mole

Autumn 2023: joint issue with the IMI newsletter

to follow: focus on the College of Life and Environmental Sciences
focus on Structural & Molecular Cell Biology

The Mini-Safe Mole



Andy Lovering writes: I'd be hopeful that you have all heard about the fire on the ground floor recently and the need to monitor our working environment for hazards – this incident was caused by placing flammable material too close to a Bunsen burner area. Please can I ask you all to monitor your own space (and that of others) for anything that may represent a potential danger and then act upon these issues before there are any negative consequences?

For those of you that are active PDRAs, a word from Georgina Lloyd, who sits on the Biosciences Health and Safety committee on your behalf: "I am currently the postdoctoral representative and I attend the committee meetings that take place every 6 weeks or so, acting as a spokesperson for all research staff in Biosciences. I am also able to raise any issues that I am made aware of from within the research community so please contact me if there is anything you would like to discuss or let me know about - I can usually be found in either lab S101 or office S112 on the South First Floor of the Quad and my email address is g.s.lloyd@bham.ac.uk." This is also an excellent route for raising awareness of any issues that you feel may potentially be in conflict if you raised them with PIs etc., as is the more general H&S inbox at biosci.hs@contacts.bham.ac.uk. **HAVE A GREAT SUMMER!**



THE PICTURE QUIZ

answers to the editor please



- what is the sinister object in the basement?
- who are these people assembled in the quad?
- what links these new graduates?