



Editor: Steve Busby

Editorial Board: Doug Browning, Caroline Durbin, Nikki Kettles, Liz Nabb, Mike Tomlinson and Olly George



Focus on Education!

A celebration of the graduation of the latest cohort of Biosciences students was held on 21st July: Biosciences staff joined the celebration! Some interesting human science here!



Editorial by Julia Lodge (Biosciences Head of Education)



I still get that nostalgic feeling when I see the “Back to School” signs in the shops; mind you they seem to start that sometime in July now. At least we get a few weeks after schools start before we welcome our new and returning students to the new academic year. As the new term approaches, this seems a good time to have an Education-focussed Mole, covering different aspects of our School’s taught programmes. We are planning for a much more normal academic year with in-person teaching and plenty of opportunity for our students to do practical work. We are not, however, setting the clock back to September 2019, not least because we have learned some new ways of doing things that work better. Group tutorials will remain online for this academic year as feedback shows that the online format was convenient and accessible.

We have a lot of excellent teaching resources that we developed last year, which include pre-recorded lectures, LabCasts and demonstrations; we will be able to use all of this material where appropriate. We’re still uncertain about how many overseas students will be able to come to the UK for the beginning of term, and we expect higher rates of student absence, following advice to students not to attend teaching sessions if they have any form of illness, until the illness has been verified as not being Covid-19. To help support students in these circumstances, the University has told students that all core lecture content will be pre-recorded and made available online as preparation for the in-person lectures, which we can now use for a much richer engagement with students and the material.

One of the clear messages from student surveys is the importance of a sense of belonging to a community that encompasses all of our students and staff. As a small step towards community building, the School Executive are asking staff to invite all students to address them by first names. We would still expect all communications to be professional in tone, but we think that this will signal that university is different from school and help to create a more mature and collegiate relationship between staff and students. We are keen to work closely with BioSoc on building this sense of community, and are thinking of running a series of competitions involving mixed student and staff teams; look out for ways to get involved.

The Editor adds: as its name suggests, the School of Biosciences has a strong focus on education, and we currently offer undergraduate programmes in Biological Sciences, Biochemistry and Human Biology, together with postgraduate programmes in Toxicology, Molecular Biotechnology and Microbiology & Infection. The aim of this education-focussed issue is to inform and interest readers about what is going on and how YOU can help. But Mole favourites such as “News from the themes”, “Latest arrivals” etc. are not forgotten and can be found towards the end of the issue.

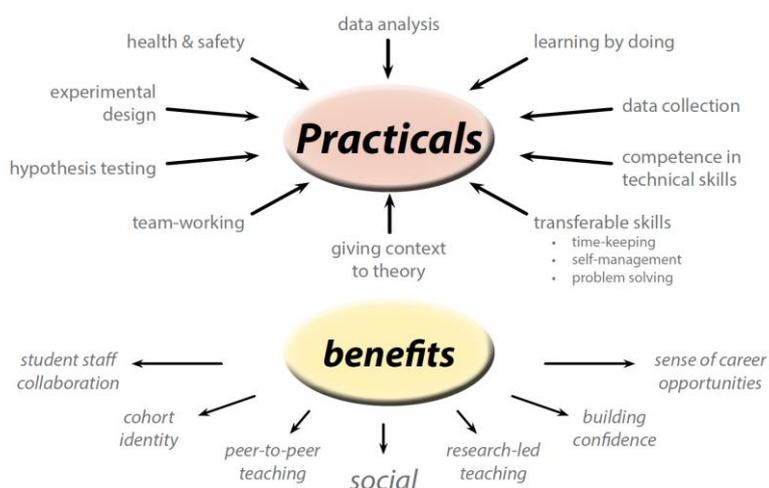
Late breaking news: Professor Nigel Maxted’s inaugural lecture is scheduled for Wednesday, 15th December at 4:30 p.m. Please register via this link:

<https://www.birmingham.ac.uk/university/colleges/les/events/2021/inaugural-lecture-of-professor-nigel-maxted.aspx>

Practical Labs in Biosciences: Scott White (Deputy Head of Education)

Practical classes are frequently the most enjoyable teaching sessions for both students and staff alike. We can't over-emphasise their importance, allowing students to develop skills such as experimental design and technical competency, and to solidify concepts developed in lectures. But as the bottom half of the figure shows there are also, perhaps unintended, but equally important, outcomes from practicals, such as students interacting with one another. Underlining the importance of practicals was the frequency with which they were mentioned by students when asked what they missed most during the COVID restrictions.

When COVID restrictions meant no students were allowed on campus, the School was able to adapt many of the practical sessions to so-called LabCasts – a live presentation from the Teaching Labs with a couple of academic staff demonstrating the experiments, allowing students to ask questions, and staff to test understanding. Perhaps in some part due to the usual banter between the academic colleagues presenting, LabCasts proved very popular with students in terms of engagement and attendance, despite recordings being available afterwards. Now that COVID restrictions are (hopefully) over let's put that experience to good use to enhance our research-led teaching. How often have you thought it would be ideal to show off your research facility to students, but you just can't fit everyone into, e.g., your Cat 3 lab, or take them out into the field? But with a Zoom session and a couple of webcams or even just mobile phones, you can now take students *virtually* to any research facility with a live LabCast. So a challenge to each of the Research Themes: offer a LabCast to inspire the next generation of scientists, and show how practical experiments are done in our world-class research facilities.



Support for staff and students for learning and teaching

Library Services supporting Biosciences: Steve Bull (Library Academic Engagement)

UoB Library Services (<https://intranet.birmingham.ac.uk/as/libraryservices/library/index.aspx>) plays a key role in supporting the School's taught programmes. Almost all of the taught modules delivered by the School now have a Resource List. This not only keeps all of the recommended resources for each module in one place, but also ensures that Library Services is able to provide sufficient access to the texts that are recommended. The Academic Skills Centre provides support to all taught students in a number of ways – through embedded sessions within the School's curricula, workshops delivered throughout the academic year and one-to-one appointments with the team's skills advisors. Library Services keep taught students up-to-date with regular announcements via their Library Services for LES Canvas course – all taught students should be enrolled and are encouraged to check their Canvas notification settings to ensure they receive the regular updates. Finally, Steve Bull (pictured), Library Engagement Advisor for the School, attends both the School's Student-Staff Fora and School Education Committee. Library Services are always keen to hear from you (whether good or bad) and so if you have any thoughts/suggestions on Library Services' support for education, please do get in touch!



The HEFi Digital Education Team in LES is made up of Joe Berry (pictured), Alison Gibson and Rob Jones. We have been



supporting the College for almost five years in all aspects of digital and online teaching and learning. The team can provide bespoke training on Canvas, Panopto, TurningPoint and PebblePad, and are happy to co-design solutions for teaching staff using these platforms. We can also help build online content including educational videos and virtual field trips. As an example, we recently refreshed our immersive educational tour of the BIFoR forest research facility <https://www.thinglink.com/video/1468559255387766787> and we are keen to help other colleagues who wish to develop this type of resource. HEFi supports staff development, for example, in the areas of personal tutoring, assessment and feedback, digital tools, and classroom techniques. Please visit our website to find out more: <https://www.birmingham.ac.uk/university/hefi/index.aspx> (lesdigitaleducation@contacts.bham.ac.uk).

A word from LES Wellbeing: This is an exciting year, as, alongside the launch of the new 24/7 mental health helpline UBHeard, our College Wellbeing service has expanded with two Wellbeing Officers supporting Biosciences UG and PG students. Sneh and Hannah (pictured here) provide guidance and advice on anything that students are worried about, and/or that is impacting on their academic performance. Support is available every day via 1-to-1 appointments and through email, and we also have an array of resources available for students on Canvas. Throughout the year, there are various wellbeing-related events, as well as weekly communications. We recently developed our Canvas resources to have a staff homepage, with information and guidance for staff to help with supporting students, as well as key signposting information. You can find more information about this and more on the LES Wellbeing Canvas page at <https://canvas.bham.ac.uk/courses/44367> .



Career support for Biosciences: *Phill Williams (Careers Consultant, Life & Environmental Sciences)*



Most of us will be familiar with the typical career paths that our Biosciences graduates take in the worlds of scientific research, medicine, pharmaceuticals, academia and teaching. The list of typical job titles and further study options in these fields is extensive and diverse, but equally varied are the career options that our graduates pursue outside of these disciplines.

The rise of scientific communications: we are seeing a rapid growth of interest in our students in the field of scientific and medical communication. No doubt the pandemic has helped this! Interest has grown to such an extent that there is now a specialist student society, SATNAV, who, last year, ran a series of careers webinars featuring professionals across the field. A quick look on LinkedIn finds some of our 2020 graduates in this area in different roles, including a “Graduate Account Executive at AKT Health Communications” and a “Medical Writer at Porterhouse Medical Group”. There are even specialist masters programmes, like the MSc in Science Communications at the University of Manchester. These opportunities give those students, who love science, but don’t love the lab quite as much, an avenue to continue their passion for the subject, but using a different set of skills to those of lab-based research enthusiasts.

What else? Speaking of skills, many graduates successfully transition into opportunities outside of the scientific realm, using the numerical, research and analytical skills acquired during their degree studies. Amongst the most popular routes is that of professional services, where we have seen our graduates move into accounting, banking and capital markets, and data analyst positions, with firms such as KPMG, PwC and Deloitte. Similarly, some graduates go into law, either by moving on to conversion courses, or into Training Contracts with law firms, like Freshfields Bruckhaus Deringer. Couple this with an increasing demand for science graduates in the intellectual property area as patent attorneys, and you have a strong pull to use biosciences degrees in the field of law. In marketing, in the Civil Service, and even in setting up their own businesses, our Biosciences students transition into a plethora of careers, both in and outside of science. This is to be celebrated as, together, we continue to encourage our students to remain curious, and we support them fully to understand the transferability of their skills, and to navigate the maze of options open to them after they graduate.

The editor adds: Phill works for the University of Birmingham Careers Network, which is the Rolls-Royce of UK University Careers Advice Services.

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Focus on MSci programmes: *Damon Huber* explains the difference that an “i” can make!

I was asked to write an introduction to Biosciences undergraduate masters (MSci) programmes. I am taking over from Debbie Cunningham as lead for the MSci programme, and Marco Catoni becomes deputy lead. With this introduction, I hope to clear up a few common (and completely understandable) questions about these programmes.



First, there are some semantic issues that cause confusion. For example, the term “undergraduate masters” almost seems like an oxymoron: how can a student graduate with a postgraduate degree, without having been a postgraduate student? Another confusion comes from the Biosciences-based MSc degrees, which are all true postgraduate programmes (*editor’s note*: see the following piece by Jan Kreft). So, to clear the air: MSci students really are undergraduates: they start year one with peers studying for a BSc and graduate after four years (instead of three) with an MSci degree (instead of a BSc). Another source of confusion is that there are actually two pathways to the MSci degree: the University Pathway and the Professional Placement Pathway. The two pathways have very similar academic requirements: students need to complete the requirements for their respective degree titles, as well as some masters-level modules and a substantial independent research project. However, while students following the University Pathway spend all four years at the University, Professional Placement students spend their third year at an industrial placement and return to the University for the fourth year to complete their studies. Finally, there are a myriad of questions about the independent research projects. Many of these questions do not have straightforward answers, but it’s worth a try! In both pathways, students carry out an independent research project in their fourth year, which spans both semesters. This project is slightly more substantial for University Pathway students (80 credits) than for Professional Placement students (50 credits). For those wondering how much work a credit is worth, a good rule of thumb is that 80 credits is just over, and 50 credits is just under 50% time. Of course, mileage may vary depending on the type of research. The main goal is for the students to write up their research in a project report, which is assessed similarly to a postgraduate thesis with two independent assessors (both internal) and a *viva voce*.

The project is another place where “I” (or rather “you”) can make a difference. Unlike BSc project students, MSci students need to contact supervisors directly in order to arrange their independent research projects (usually in April and May). However, many students are not aware of the huge range of research going on in the School. Moreover, students can feel intimidated by faculty that they have not encountered during their studies. To facilitate interactions between students and potential supervisors, we usually set up a “Project Choice” page on Canvas, where you can advertise your lab (or even a specific project). Many students feel more confident about contacting faculty who have submitted an advert. Finding time to engage with students at the end of the spring semester can be quite challenging, but I think those who have hosted MSci students will agree that this effort is rewarded.

Unfortunately, there is not enough space to cover all possible questions, so, if you do have more questions about the MSci programmes, email me (d.huber@bham.ac.uk) or Marco (m.catoni@bham.ac.uk), and for questions about the placement year, contact Luke Alderwick (l.alderwick@bham.ac.uk).

Focus on MSc programmes: *Jan Kreft* (Biosciences Masters Programmes Coordinator)

Yes, we have postgraduate programmes in Biosciences. Steve Busby asked me to introduce our postgraduate programmes, as he hands over the reins to me with the start of the new session. Since our PGT open days are run only by programme leads, in contrast to UG programme open days involving all academics, you may be less aware of their existence (though I may ask you to become a tutor!). We welcome about 100 students per year, with numbers fluctuating unpredictably, even before COVID, due to the big number of overseas students.



Our PGT programmes consist of two semesters of taught modules, followed by a full-time project over the summer (60 credits) from June to August. The MSc Toxicology programme is our oldest, having run successfully since 1979 with many alumni now in senior positions in industry; it relies heavily on programme and multi-module lead, Nik Hodges. The MSc Molecular Biotechnology programme was created by Pete Lund and started in 2010–11. It has been most popular with students in Asia who see biotech playing a big role in the development of their countries, even before COVID. I have led this programme since 2016, yet Pete still gets questions on admissions, and that won’t change when Eugenio Sanchez-Moran takes over from me as programme lead. The MSc Microbiology & Infection programme was conceived by Julia Lodge in 2013, in conjunction with the IMI, as its flagship

programme to train the next generation of microbiologists (and do a PhD in the IMI). Up to now, this programme sat within Biosciences, and was led by Apoorva Bhatt, but it will now be shared with MDS and co-led by Michelle Buckner. The newest programme is the MSc Bioinformatics, which sits in MDS, led by Jean-Baptiste Cazier, but shared with Biosciences, and led on the Biosciences side by Lindsey Compton. Excitingly, it will also shortly start running in Dubai, at the new UoB campus there.



We encourage students to contact labs directly for potential projects – if you are happy to offer one of these enterprising students a place next summer, please respond to the call for projects, when it is made.

Left: new MSc students at the welcome week Masters Apprentice event in the Undercroft (alas, some time ago!)

A student perspective: MSci student Josh Sandy gives his point of view:

I am a current student at the University about to enter my fourth year of study within the MSci Biochemistry course. As a local to Birmingham, and a first-generation university student, my experience of UoB began by completion of the A2B scheme – a scheme which is designed to help students make the transition from school to university.

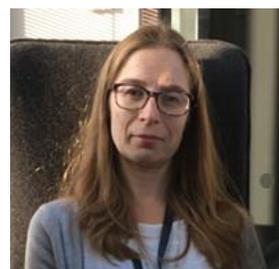


First year was great, I felt very comfortable at the University and enjoyed both the new academic challenges and socialising with my new peers. I also found that I began to develop a specific interest in genetics. Second year began positively, much the same as first year; however, the academic year was cut short due to the beginning of the COVID-19 pandemic. The pandemic ushered in the new challenge of distance-based learning. Whilst effective, I did find that the overall consensus from my peers is that a return to traditional in-person teaching is very much desired when it is safe to do so. Along with distance-based learning, new examination protocols were introduced. I believe that the adoption of these new exam formats may act as a silver-lining of the pandemic. Refinement of the exams at UoB gave students a 24-hour response window and allowed students to complete exams from an environment of their choice instead of traditional formal venues, reducing exam-related stress and instances of multiple exams in one day. I remain optimistic about my final year of study and hope it may blossom into my best year yet.

Mind the gap! Juliet Coates (Biosciences Head of Quality Assurance and Enhancement) points out that there is still a lot to fix:

My School role as head of QAE involves analysing data, so it's just as well it is an activity I enjoy. I am also the School lead for Access, Participation and Progression (APP). Yes, the University loves acronyms!

I analyse datasets of the grades we award students in their assessments. However, these datasets do not make for enjoyable reading because we have a persistent ethnicity awarding gap in degree classifications and in Year 1 & 2 marks. We have made changes over the last couple of years, such as awarding projects randomly (rather than based on previous year marks), and moving to open book exams, but a gap remains. This means that we need to make further changes to our assessments and assessment criteria, our curriculum, our feedback to students, and our support for students. The School is completely committed to making the changes and closing the gaps. Race does not stand alone, but intersects with other factors such as language, socioeconomic security (and resultant digital poverty), disability/neurodiversity and LGBTQ+ status that also impact student performance, so we need to provide consistent and effective support to students across all of these areas.



I have some ideas (some evidence-based, some more instinctive) to move forward. But I need input from the whole Biosciences community. I would love to hear from **everyone** about how we can give better support to our students and further diversify our assessment and our curriculum. I am listening, so please get in touch via email (j.c.coates@bham.ac.uk), Twitter, staff-student forum or in teaching sessions.

The editor adds: you can follow Juliet on Twitter @JulietCcoates

A view on research-led teaching: *blood and tears with Mike Tomlinson*

Research in the School is booming. Just the last few weeks have seen press releases on Andy Plackett's plant evolution, Tim Dafforn's rapid accurate COVID test, Carolina Rezaval's food versus sex, Estrella Luna-Diez and her plans to investigate "memory" in trees, Nick Loman's COVID genome sequencing, TB guru Del Besra as new President of the Microbiology Society, John Colbourne's animal evolution in response to predation, and Aneika Leney's protein "glues". Something for everyone here. And experience tells me our exciting research is what many students are most keen to learn about!

This first struck me while a British Heart Foundation Senior Research Fellow. I took on my first lectures in the School on one of my favourite subjects – platelets and clotting. Unsure how to fill out two lectures, I designed the first lecture and a half to give the basics. Then the last half lecture was a story from my own research, identifying a novel anti-platelet target that offers hope to treat heart attacks. I learned later this is actually good teaching practice. Over ten years on, these remain my most popular lectures. They induce a smattering of emails from enthused students wanting to work in my lab. I use the material in taster lectures on open days. Roisin Madigan has even learned to give the



lectures herself, and taken them on tour to China. I think she gives them better than me! With the advent of pre-recorded lectures, I recently took my research-led lecturing to the next level – outside a BHF shop (see picture). This was highly acclaimed in student feedback. "Dr Tomlinson is mildly amusing", was perhaps the greatest compliment. Next stop, the Edinburgh Fringe.

Left: Mike takes his lectures on location to a BHF shop during the first lockdown, explaining how platelets and clotting prevent excessive blood loss following a typical injury. Like cutting oneself on a Darth Vader mask. You had to be there.

Behind the Scenes – LES Admin Hub Update

Organising and administering the different Biosciences taught programmes is a massive task, masterminded by a dedicated team in the College Hub (based in the Old Gym, shown in the photo). Here, Olly George, one of the Year Administrators (and also a Mole editorial board member) shares some insights. Olly writes:

As the 20/21 academic year comes to an end and we seemingly transition straight into the next, as the Biosciences admin team, we have had only a brief moment to reflect on another year in "uncharted territory". Working from home is very much the norm now and fleeting visits into the office have been a nice change of scene for most of us when the organised rota dictates. Nevertheless, the challenges that NATY (the New Academic Teaching Year) presented came right out the blocks with new module formats and multiple exam periods, all of which we've taken in our stride! Now as we complete the supplementary exam period in early September, already 21/22 is well underway.



As a team, we would find our role much more difficult if it were not for such an excellent group of academic staff to work alongside. Thanks for all your support throughout the 20/21 academic year and here's to a successful 21/22!

As a reminder, here is an updated list of the LES Hub based Biosciences administration team along with the specific year groups we are each responsible for, led by Mollie O'Connor.

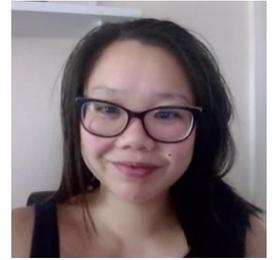
- PGT: bio-pgtadmin@contacts.bham.ac.uk – **Nicola Soar**
- Final Year (Year 3 and 4): bio-yrs3-4-ugadmin@contacts.bham.ac.uk – **Mary Overton/David Ward**
- Year 2: bio-yr2-ugadmin@contacts.bham.ac.uk – **Kirsty Waters**
- Year 1: bio-yr1-ugadmin@contacts.bham.ac.uk – **Olly George**
- Affiliate Students: bio-affiliates-admin@contacts.bham.ac.uk – **Kirsty Waters**

People and Culture in Biosciences: Mary Blanchard and Eleanor Cull tell us all about their new role



Hola, Zdravstvuyte, Nǎn hǎo, Guten Tag, Olá, Asalaam alaikum, Yassas, Dobry dzień, Kon'nichiwa, Namaste, Shalom, God dag, Bonjour!

A huge welcome to the School of Biosciences to both returning and new student cohorts. Mary Blanchard (she/her, pictured left) and Eleanor Cull (she/her, pictured right) are our new co-Leads for People and Culture in the School and they want to hear from you. Who are we?



Mary is a Lecturer and Year 1 Tutor. Students will hear her talking about lemurs and evolution, and she lives in the border area of biology, where it blends with other Schools in the College. She studies cute animals but loves looking at what lies beneath the skin (bones and muscle – we are all unique, but essentially all the same). She came to Birmingham via a long period in Liverpool, and the North-West will always feel like home, even if she originally came from the south coast.

Eleanor is a Lecturer and the Year 3 Tutor for the School. You will see her in teaching sessions throughout your time here so please say 'hi' and have a chat when you see her on campus! Eleanor completed her PhD in molecular parasitology looking at gene regulation in the malaria parasite *Plasmodium falciparum*. After a couple of postdocs, she retrained and became a qualified secondary school teacher, before joining the University of Birmingham as a lecturer. Eleanor's main interests outside of work are traditional fiddle music and hiking.

What does the People and Culture role mean? It means that we want to make the community in our School more inclusive. We would love to hear about your ideas on how this can be achieved. Please volunteer to be one of our community ambassadors to help us to understand the needs of our community. You can do this by filling in the form available on Canvas or sent by email to you. Alternatively, drop us an email to express your interest.

Everyone in the School can contribute to Education

Running so many programmes for so many students is a massive operation, and everyone in the School can contribute, including research-focussed students and research-focussed staff. Here, one of the School's doctoral students and one of the PDRFs explain how they see their role.

Lamin Saidykhon writes: I am a final year PhD research student working under the supervision of Prof. Robin May. Over the past 3 years, I have taken the opportunity of serving the University as a Lab Demonstrator and Postgraduate Student Ambassador. As a Lab Demonstrator, I supervise and facilitate laboratory-based practicals for microbiological courses for undergraduate and masters degree students in the School of Biosciences. I feel privileged and excited to share the knowledge and skills I acquired from university. The job is interactive, and it has enhanced my teaching skills. The students are bright and always ask intriguing questions which trigger my thinking capacity. It is said that one's ability to explain a subject reflects one's own understanding of that subject.



As Postgraduate Student Ambassador, I engage with postgraduate international offer holders by providing them with first-hand information and background of what postgraduate life is all about. This helps them to prepare for pursuing their courses. It has been a pleasure for me to share my experience as an international student and foster zeal and enthusiasm in new students pursuing their studies at UoB.

Dr Mogjan Rabiey writes: I joined the School of Biosciences in September 2020 as a senior postdoctoral fellow. I have been supervising undergraduate and M.Sc students since my postgraduate study and always enjoy a brainstorming science discussion with students. Throughout my study and research career, I worked with fungi, bacteria, viruses, and many different plant and tree species; therefore, to share my knowledge, I have taught on different modules and led practical classes on many subjects. This allowed me to get my 'Associate Fellowship' and then 'Fellowship of the Higher Education Academy'. Supporting teaching in the School not only has helped me to gain more experience in disseminating knowledge and widen my network of colleagues, but also given me a unique sense of purpose. Nothing is more rewarding than knowing that I inspired some of the next generation of students to pursue a career in science.



News from the School and the College

Specially for Postgraduate students: check out the LES PGR pages on Canvas and at this link:
<https://intranet.birmingham.ac.uk/student/graduateschool/pgr/index.aspx>



25-year long-service awards were recently made to Karen Staples, Scott White and Georgina Lloyd, pictured here (left) at the Awards Ceremony in Winterbourne Gardens.



The Biosciences staff picnic at lunchtime on Thursday 9th September turned out to be a great occasion, despite gloomy forecasts (right)



December Graduation Ceremonies will be held on 6th–10th December. Watch out for the announcement of the Biosciences slot.



A new publication – Addressing the Climate Challenge – a collection of articles by Birmingham academics on topics relating to the Glasgow COP26 conference just appeared. Find it here – <https://blog.bham.ac.uk/publicaffairs/wp-content/uploads/sites/89/2021/09/Addressing-the-climate-challenge-comp.pdf> – Graham Kettles and colleagues have contributed a piece on trees: [Tree susceptibility and resilience to pests and disease by Rob Jackson, Estrella Luna-Diez and Graeme Kettles](#)

CEDARS

Calling all Researchers, PIs and Research Leaders

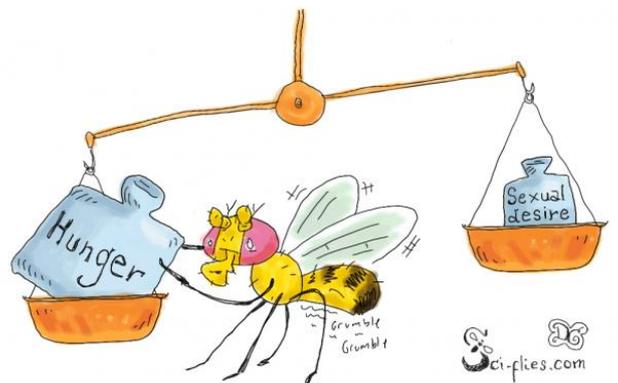
Please complete the **2021 Culture, Employment and Development in Academic Research Survey (CEDARS)**. This is an important national survey which gathers views and experiences of researchers from across the UK. Record your experience as a researcher and/or manager of researchers.....*to access the survey, click* <https://bham.onlinesurveys.ac.uk/uob-cedars-2021>

BREAKING NEWS: the Cells and Molecules research theme is now re-branded as Structural and Molecular Cell Biology, with Dr Yun Fan taking over as theme coordinator. This is to reflect growing expertise in structural biology. More about this in the future, but here are two publication highlights from this theme:

Sex or Food: Decision-Making on the Fly (Rezaval Lab)

Cheriyamkunnel SJ, Rose S, Jacob PF, Blackburn LA, Glasgow S, Moorse J, Winstanley M, Moynihan PJ, Waddell S & Rezaval C (2021) A neuronal mechanism controlling the choice between feeding and sexual behaviours in *Drosophila*. *Current Biology* S0960-9822(21)00984-2. doi: 10.1016/j.cub.2021.07.029

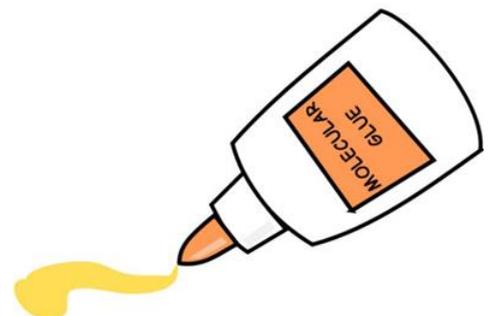
Life demands that we make decisions on a daily basis. This is particularly challenging in conflicting situations where we must prioritise one goal over others. To understand how an animal chooses between conflicting options, Dr Carolina Rezaval's group take advantage of the *Drosophila* fruit fly, a model organism with sophisticated genetic tools, to study how the fly brain responds when there are conflicting options available, and how it chooses amongst them. Their work, published recently in *Current Biology*, examined how fruit flies choose between feeding and mating. Apparently, such a choice between food or sex is a fundamental decision to make as all living species have to eat to live whilst they have to reproduce to survive. Intriguingly, Dr Rezaval's group discovered that if a male fly is very hungry and sexually aroused, he will choose to eat over courting a female. However, the choice also depends on other factors like the quality of the food on offer, and on how hungry and sex deprived the animal is. After eating, the male flies move on to sex, often within a few seconds. But how do flies make these choices? And what does it reveal about the way the brain functions? They further showed that the neurons that tell the fly to go and eat, or to go and mate are essentially competing with each other. If the need to eat is most urgent, the feeding neurons will take over, if the threat of starvation is less, then the urge to reproduce will win. This finding provides insight into the neural circuit mechanisms underlying decision-making and the rules governing brains including much more complex ones like our own. This work was widely covered by the media including BBC news.



“Glue” Proteins Together (Leney Lab)

Bellamy-Carter J, Mohata M, Falcicchio M, Basran J, Higuchi Y, Doveston R & Leney A (2021) Discovering protein-protein interaction stabilisers by native mass spectrometry. *Chemical Science* 12:10724-10731 doi: 10.1039/d1sc01450a.

Protein-protein interactions are essential for all cells to function but these are often disrupted in diseases such as cancer and neurodegenerative disorders. We need to find ways to stick these proteins back together but it is not an easy task. Molecular glues, however, are starting to be found but finding good new glues is tricky since they are difficult to detect. The Leney lab has been developing new methods to measure how well molecular “glues” stick proteins together. By separating and simultaneously measuring the mass of proteins, the protein-protein complexes they form, and protein complexes bound to the glues from within a mixture, their approach can distinguish good new glues. Their work, published recently in *Chemical Science*, also showed how mass spectrometry was able to pick out the best glues from within a mixture of compounds. The work was started by Manjari Mohata, a second-year undergraduate at the time, who has recently graduated. Her enthusiasm accelerated the project forward, which was subsequently led to completion by Jeddiah Bellamy-Carter along with funding through the EPSRC. Their work was highlighted as “Pick of the week” in *Chemical Science* and “Paper of the month” by the protein-protein interaction community.



Theme coordinator, Jason Mercer writes: There has been plenty of celebration over the past few months in the micro theme, with vivas, papers and appointments. Hannah Walters-Morgan from the Lovering lab had her viva, as did Tom Guest from the Grainger lab. Hannah worked on the role of chemotaxis in prey hunting by *Bdellovibrio bacteriovorus*, before joining the Higgins lab at the University of Oxford. Tom (pictured celebrating) passed with minor corrections and has now started a post-doc in Felipe Cava's lab (Umeå University, Sweden). Tom worked on cyclic-di-GMP signalling in *V. cholerae*, a topic he will continue to study during his post-doc.



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Tim Dafforn, Jake Carter and Jim Tucker in Chemistry have successfully developed an RNA-based SARS-CoV-2 test that takes only 6 minutes. Clinical validation studies showed that the test performs as well as conventional RT-PCR or LAMP-based tests. They published their work in PNAS (*Ultraprapid detection of SARS-CoV-2 RNA using a reverse transcription-free exponential amplification reaction, RTF-EXPAR*. Carter JG, Orueta Iturbe L, Duprey JHA, Carter IR, Southern CD, Rana M,

Whalley CM, Bosworth A, Beggs AD, Hicks MR, Tucker JHR, Dafforn TR. *Proc Natl Acad Sci U S A*. 2021) and are currently in discussions to find a commercial partner. This work was also featured on BBC WM news.

We have learned of promotions for Patrick Moynihan to Senior Research Fellow, Saverio Brogna and Timothy Knowles to Reader, Andrew Lovering to Professor and a Professorial banding increase for David Grainger. Excitingly, The Microbiology Society announced that its new President will be Professor Gurdial (Del) Besra FMedSci FRS, starting on the 1st January 2022. Del said of his appointment: "I am surprised, delighted and honoured to be elected as the next President of the Microbiology Society. I'm looking forward to the task ahead, working within the Society and with colleagues from our discipline to champion areas where I feel the Society will have a far-reaching impact in terms of science and medicine, along with the key societal issues we face today."

On a very sad note, last month we learned of the passing of Prof David E. Minnikin who was an exceptional researcher, and a great friend and wonderful mentor to many in the School of Biosciences and the IMI. David joined the University of Birmingham in 2002, together with Del Besra, with whom he shared a joint research group. The Microbiology Society's July issue of *Microbial Musings* (written by Gavin Thomas, a former member of our School) featured three papers on mycobacterial research, to honour David and the incoming new Microbiology Society President, Del Besra: <https://www.microbiologyresearch.org/content/journal/micro/10.1099/mic.0.001090>

Spotlight on a new arrival, Sabine Dhaouadi writes: I am a plant pathologist. I earned my undergraduate degree in Agricultural Engineering and Horticulture. After working summers at the Division of Protection and Quality Control of Farm Products and the Department of Agricultural Extension and Promotion of Crop Production,



I developed an interest in quarantine programmes, the dissemination of plant pathogens and pests, and the detection and identification of plant diseases and soil-borne plant pathogens. I learned the basis of phytosanitary control and decided to continue my education at the National Institute of Agronomy of Tunisia, INAT. I completed my MS in Organic and Integrated Pest Management in Agriculture and completed my PhD in Plant Pathology at INAT, with a major in plant pathology. While working on my PhD in plant pathology, I had the opportunity, as a visiting scientist, to work with UCCE, California, focussing on emerging diseases of nut crops especially pistachio, almond and walnut. In this capacity, I got to work with southern San Joaquin Valley growers to conduct field and laboratory research studies addressing industry needs. A few weeks ago, I made the move to Birmingham as a Postdoctoral Fellow to work with Professor Rob Jackson in the Birmingham Institute of Forest Research (BIFoR)/Institute of Microbiology & Infection (IMI), aiming to study how bacteria cause disease in trees. Our project includes several approaches to be employed for the establishment of robust pathosystem models that underpin a detailed examination of infection and disease progression. This research will be applied to the main tree diseases in the UK: acute oak decline, bacterial canker of cherry and ash, bleeding canker of horse chestnut, diseases that had emerged in both UK and Europe within the last 20 years.

It's a bird... it's a plane... no, it's a drone! Theme coordinator, **Jim Reynolds** writes: As for many in the School, the pandemic has posed big challenges to conducting fieldwork, preventing me from continuing my long-term study of seabirds on Ascension Island in the South Atlantic (that remains COVID-free thanks to severe travel restrictions). So, instead of working on a remote tropical island, I have been busy working with colleagues in Geography, Earth & Environmental Sciences (GEES) and Engineering on an EPSRC-funded project called "MEFA: Managing and Enabling Future Airspace" (see <https://www.youtube.com/watch?v=MZwT8DduDsY> for a video with further details).



By 2030 it is estimated that air traffic will quadruple which will result in a further congested airspace, especially over urban areas. Thus, it will become ever more important to identify and regulate unmanned aerial vehicles (UAVs). The MEFA project uses a recently installed L-Band staring radar on the roof of the School of Engineering to attempt to distinguish between feathered (i.e. birds) and unfeathered (i.e. drones) flying "targets" in the hope of not only policing drone traffic but also in monitoring bird activity. This project will enable tighter control of air traffic which will help to create safer skies in the future and increase our understanding of what is in airspace 24/7.



A Saker Falcon x Gyrfalcon hybrid used for flight trials in the field. (Photo: G. Atkinson).

Jim and colleagues have been working with the International Centre for Birds of Prey (ICBP) at Newent in Gloucestershire to fly raptors (pictured) carrying GPS tags through airspace monitored by the high-resolution radar. Before installation of the staring radar on campus, flight trials were conducted at Deenethorpe Airfield in Northamptonshire and Cranfield Airport in Bedfordshire, where tagged raptors and drones were studied from Aveillant staring radar returns. Work is ongoing to develop machine learning algorithms to process radar data so that we can monitor skies over Birmingham to quantify with confidence airspace use by drones, birds, bats etc., simply from characteristics of the radar returns. This opens up the possibility

of "seeing" activities in skies at night in great detail and generating empirical data related to flying biomass over different timeframes.

Jahangir M, Atkinson GM, Antoniou M, Baker CJ, Sadler JP & Reynolds SJ (2021) Measurements of birds and drones with L-Band staring radar. International Radar Symposium 2021. doi: 10.23919/IRS51887.2021.9466224

<https://ieeexplore.ieee.org/abstract/document/9466224>

The mini-Safe Mole

Prof Andy Lovering and Dr Emma Monaghan write:

As we look toward Welcome week and the return of students, several of you might be curious as to how the university will respond to the changes in guidance that the government announced. Official messaging on this is forthcoming (and will have to be responsive to any changes made between now and the end of the year), but it's a good time here to restate where we currently stand. Mask wearing is encouraged, and it is down to individuals to find the solution that they are comfortable with (e.g. individuals who would like others to wear masks if entering their office). You will notice that restrictions on one-way travel, lift occupancy, and other communal areas have now been removed or altered. The current individual lab risk assessments remain in place, but occupancy changes can be justified and altered via approval of an updated assessment (send to biosci.hs.contacts.bham.ac.uk). We wish you all a safe return to the new academic year. Many thanks to everyone for keeping Biosciences (and the University) a safe place to work during the past few months – your compliance has been both noted and appreciated. **Remember ... stay safe and well!**



Autumn Caption Competition + Something to Make You Smile



Both photos are from the somewhat-delayed September celebrations for 2020 graduates. Please send in your caption suggestions for the photo on the left to the editor. Enjoy the photo below of 2020 biochemistry graduates, Rachel Holyfield and Adam Colyer modelling their outfits (note that this confirms Phill Williams' remarks).



Result of the July Caption Competition:



A keenly contested Olympian competition this time! The pandemic-inspired suggestions "Once upon a time we used to give lectures in places like this" and "Reminiscing good old lecture days pre-pandemic – look no masks or social distancing" earned bronze and silver for Chris Thomas and Mahesh Chauhan respectively, but the gold was clinched by the acerbic wit of Laura Green with "Thank goodness Steve's the new Editor of the Mole, and so he can't win the caption competition this month".

Got a story for us? Want us to 'hold the front page'?

Contact Steve Busby: s.j.w.busby@bham.ac.uk

Future issues of the Mole:

- *mid-December: end-of-year issue*
- *March 2022: focus on Microbiology (joint production with the IMI Newsletter)*
- *June 2022: focus on the Structural and Molecular Cell Biology research theme*

