



Chief Editors: Philippa Borrill and Doug Browning

Editorial Board: Michael Baker, Francesca Benson, John Colbourne, Neil Hotchin, Aneika Leney, Molly Magarotto, Patrick Moynihan, Mike Tomlinson

Head of School Editorial (by Prof Tim Dafforn, top right)

It is amazing how time flies. My time as Head of School is nearly at an end, it has been an exceptionally busy time, mixed with great moments and significant challenges. But I am now ready to hand over and I think you will all agree it was great news that Dr Neil Hotchin (bottom right) was successful in his bid to become Head of School. Having Neil step into the breach from Deputy Head of School means that the transition should be seamless, which is particularly important given the run up to REF (Research Excellence Framework). It is going to be another busy year (when are they not!) so my one leaving comment is, if Neil (or a member of the School Executive Committee) asks you for help, it will be for the good of the School and hence all of us, so please say "yes"!



Biosciences Academics Leading the Fight Against Drug Resistant Tuberculosis



From left to right: Prof John Fossey, Alice Lanne (PhD student Biosciences), Prof Sir David Eastwood, Yixin Cui (PhD student Chemistry), and Dr Luke Alderwick.

Dr Luke Alderwick in the Drug Discovery Facility in Biosciences (right).

Dr Luke Alderwick (Biosciences) and Prof John Fossey (Chemistry) have joined forces with their counterparts at the Guangzhou Institutes of Biomedicine and Health (GIBH) to develop promising drug candidates for anti-Tuberculosis therapy. Intercontinental academic research between Birmingham and Guangzhou has designed and synthesised novel molecules to target the bacterium *Mycobacterium tuberculosis*. These discoveries have laid the foundation for the formation of a spinout company in China called Legion Pharma (Guangzhou).



Upcoming Events

Rick Dunn Inaugural Lecture on Thursday December 5th at 4:30pm in Aston Webb WG12

BioSoc have a Christmas Quiz on December 12th at 8pm, Indie Lounge, Selly Oak. Their events are a great chance to get to know the committee and the people on your course. Fundraising for Macmillan Cancer Support (entry £1).

IMI Christmas party on Tuesday 17th December at 6.30pm. Tickets cost £15 from office G2. Hog roast (or veggie), drinks and silent disco! PhD students and staff welcome.

Biosciences staff Xmas party in the Undercroft Tuesday 10th Dec from 3pm.



Teaching Spotlight: The Teaching Administration Team

In this edition of The Mole we wanted to welcome in the new members of the Teaching Administration Team and highlight the important work they do in supporting staff and students. From dealing with student requests to processing marking and exam papers, the team are an invaluable part of teaching in the School. The team comprises of Olly George (First Year), Mary Overton (Second Year), Kirsty Griffiths (Final Year), Jaspal Shambi (Postgraduate Taught), Gemma Routledge (Postgraduate Research) and Mollie O'Connor who has taken over from Jan Simmonds as Administration Manager. We wish the new team all the best over the academic year.



From left to right: Mollie O'Connor, Olly George, Mary Overton and Kirsty Griffiths.

Get in contact using the appropriate administrator email address through the Undergraduate or Postgraduate Handbooks on Canvas or drop in to the LES Student Hub on the first floor of the Old Gym.

An Undergraduate Year Abroad in Berlin (by Katie Jones)

Setting off on a year abroad was a terrifying experience. Before I left, my friends informed me that I should pack all the essentials to survive for three months in case "you're in the wilderness, alone, with no one to understand you". Despite my concern for their assumption that Berlin was apparently part of an isolated, developing country, I still took plenty of English breakfast tea bags with me- just in case! Looking back at my apprehension for the start of that year, I find it hard not to kick myself for not realising how great an opportunity I had been given. Berlin learnt itself to being explored and exploited by the curious-minded. The people I met were so interesting and different from the people I'd left at home, and my perspective of the global community changed so much (which was why joining the Student Exchange Society this year seemed like a no-brainer). Studying biology in another country challenged me to think and study differently from how I'd previously been taught, showing me new ways to tackle problems. Thinking back to all the trials and tribulations I experienced over that year, the hardest challenge I faced- which I never expected to happen- was saying goodbye.



The Safe Mole (by Dr Pete Lund)

Here's a true story: in my very first science job (as a lab technician in a long-vanished pharmaceutical company) I managed to set fire to a waste bin, accidentally, I hasten to add. I was about to use the fire extinguisher on it when the lab head rushed up and stopped me. "The safety committee are meeting next door" he whispered "and if they hear the extinguisher go off, they'll know we've had an accident". Fast forward a number of years, as chair of the School Health and Safety Committee I find myself in the position of wanting to encourage exactly the opposite attitude. I don't want our committee to be seen as representatives of the Dark Side from whom everything must be hidden. Rather, I want everyone to regard thinking about how to work safely as being an integral and shared part of what we do and see the members of our committee as helping this to happen as smoothly as possible.



I am Dr Pete Lund the chair of the Health and Safety Committee (pictured left). You can find me in room S117 or lab T101, call me on 45583, or email on p.a.lund@bham.ac.uk. Our deputy chair is Dr Emma Monaghan, who is also health and safety co-ordinator for the School. She is the first point of contact for all H&S issues within the School via biosci.hs@contacts.bham.ac.uk. **Remember ... stay safe!!!**

Join Our Hedgehog Friendly Campus.

The number of hedgehogs in the countryside has plummeted by around 50% and in urban gardens by 30% since the year 2000. If we all work together, we can make the University of Birmingham a hedgehog friendly campus and help us bring these prickly mammals back from the brink. What does a 'Hedgehog Friendly Campus' look like?

- Campus is litter free
- Plenty of joined up habitats for hedgehogs to roam
- Opportunity for hedgehogs to eat and drink
- Hedgehog houses are available to keep them safe and dry

If you would like to get involved please visit the green impact webpage to register: www.hedgehogfriendlycampus.co.uk Twitter: @HogFriendly_UoB



The Postdoc Pages

[PERCAT LES & EPS Career Development Competition for 2019-20](https://www.birmingham.ac.uk/university/colleges/les/percat/fellowships-and-funding.aspx)

Funding to support and enhance career development opportunities for the postdoctoral and early career researcher community is available. **Deadline: Wednesday 18th December 2019.**

<https://www.birmingham.ac.uk/university/colleges/les/percat/fellowships-and-funding.aspx>

[PERCAT Information Session: Associate Fellowship of Advance HE](https://www.birmingham.ac.uk/university/colleges/les/percat/events/events.aspx)

Date: 23/01/2020 11am-12pm **Location:** Nuffield G17.

Are you a postdoc or ECR involved in teaching / demonstrating / tutoring / supervising students? Learn more about this internationally recognised award for all those involved in teaching and supervision, and the support available at UoB to achieve it. **Deadline: Thurs 16th January 2020.**

<https://www.birmingham.ac.uk/university/colleges/les/percat/events/events.aspx>

Recent News from the Research Themes

Biosystems & Environmental Change

The trip to 'Eden' (by Dr Luisa Orsini and Prof Iseult Lynch)

On the 31st of October a LES delegation led by Prof David Hannah, LES Director of Research, and including Prof Iseult Lynch, Prof Gregor Leckebusch, Dr Luisa Orsini, Dr Kirsty Edgar, Dr Leah Fitzsimmons and Dr Jennifer Jennings was invited to visit the Eden Project (Cornwall).

We were offered an amazing tour of the facilities and shown the breadth of projects that the Eden leads nationally and internationally. We met the provocative Sir Tim Smit, co-founder of the Eden Project, as well as some of the curators, artists, narrators and storytellers who bring the science of the environment to life.

The LES team were impressed with the water cycle exhibit, which includes a rain-maker, and the "lab", which had an installation allowing visitors to send a message into space communicating the best thing about planet earth.

We learned a huge amount about their activities and identified a long-list of potential research areas and educational and public engagement opportunities for future collaborations. More importantly, we identified a shared ethos, and a genuine desire on both sides for a substantial and inclusive long-term partnership to make a difference locally and globally. We will organise a return visit in early 2020, when the Eden project team will visit UoB giving the opportunity to showcase our facilities, our people and our research and public engagement excellence. Stay tuned for more in due course...



Recent News from the Research Themes

Plant Science & Food Security

Translating Knowledge from Model Plants to Crops

Dr Marco Catoni and Dr Philippa Borrill were both successful in applications to the National Institute for Agricultural Botany to generate transgenic wheat plants. Dr Marco Catoni will use his wheat lines to study epigenetic silencing in wheat and Dr Philippa Borrill will study the function of transcription factors in abiotic stress tolerance and micronutrient remobilisation.



Xulyu Cao Trip to USA

As part of my PhD supervised by Dr Juliet Coates and Dr Dan Gibbs, I visited Dr Siobhan Brady's lab in University of California, Davis. My research investigates the roles of MYB-family transcription factors during lateral root development (root branching) in tomato. During this visit, I learnt Tomato Hairy Root Transformation, a rapid method to generate transgenic tomato root tissues. By using this method, transgenic tissues can be generated within 5 weeks, which is much faster than using the traditional tissue culture method (~6 months). Many thanks to the Universitas 21 PhD scholarship for sponsoring my research trip in America.



Cells & Molecules

New Roles

Congratulations to Dr Neil Hotchin for becoming the new Head of School and to Prof Rick Dunn who is warming up for his inaugural lecture on December 5th to celebrate his promotion to Professor of Analytical and Clinical Metabolomics. As fans of Tottenham Hotspur and Sheffield United, respectively, Neil and Rick could easily have faced each other in the Premier League, as the photo suggests – if only they had been born with different metabolisms!



Recent News

Dr Matthias Soller has secured a BBSRC grant on RNA splicing using Drosophila Down Syndrome Cell Adhesion Molecule as a model membrane protein. Dr Pawel Grzechnik (right) and postdoctoral researcher Dr Kinga Winczura (left) have received funds from the RNA Society to organise the Midlands RNA Salon from December 5th in Biosciences. Prof Alicia Hidalgo was invited to speak at the Society for Neuroscience Conference in Chicago, USA and Lizzie Connolly, postgraduate student, gave a talk at the Cold Spring Harbor meeting on Neurobiology of Drosophila.

Microbiology (μ M)

Globe Trotting Microbes: Invited Presentations All Around the World



In addition to the exciting work of Luke Alderwick in China, in the Microbiology theme we've also had several researchers invited to speak at international conferences. This included Dr Manuel Banzhaf and Dr Patrick Moynihan who spoke at the Great Wall meeting at the Institute Pasteur Paris, a major international meeting focused on the bacterial cell wall. Prof Steve Busby spoke at the Lambda Lunch Seminar Series at the National Institutes for Health, Bethesda, Maryland, a well established seminar series that started in the 70's. Dr Doug Browning was invited to speak at PEGS Europe 2019 in Lisbon, Portugal, a leading meeting on recombinant protein production and antibody engineering. Dr Andy Lovering (right) organized the annual EMBO YIP Microbiology meeting in Heidelberg Germany, and had a paper out in Nature Chemical Biology that was tweeted by the Health Secretary, Matt Hancock.



Brilliant. Another huge breakthrough in the fight against MRSA.

This is what happens when you back British life sciences 🙌

Recent Publications

Biosciences students and staff in bold.

Alam, F, Catlow, D, Di Maio, A, Blair, J & Hall, R (2019), '*Candida albicans* enhances meropenem tolerance of *Pseudomonas aeruginosa* in a dual-species biofilm: *Candida* enhances *Pseudomonas* antibiotic tolerance', ***Journal of Antimicrobial Chemotherapy***, *in press*

Benoit, M, Drost, HG, **Catoni, M**, Gouil, Q, Lopez-Gomollon, S, Baulcombe, DC and Paszkowski, J. (2019). Environmental and epigenetic regulation of Rider retrotransposons in tomato. ***PLOS Genetics*** 15(9): e1008370

Borrill P. (2019). Blurring the boundaries between cereal crops and model plants. ***New Phytologist In Press***, DOI: 10.1111/nph.16229

Cottier, F, Sherrington, S, Cockerill, S, del Olmo Toledo, V, **Kissane, S**, Tournu, H, **Orsini, L**, Palmer, G, Perez, JC, **Hall, R.** (2019), 'Remasking of *Candida albicans* b-glucan in response to environmental pH is regulated by quorum sensing', ***mBio***.

Davies, SP, Reynolds, GM, Wilkinson, AL, Li, X, Rose, R, Leekha, M, Liu, YS, Gandhi, R, Buckroyd, E, Grove, J, **Barnes, NM, May, RC, Hubscher, SG, Adams, DH, Huang, Y**, Qureshi, O & **Stamatakis, Z** (2019), 'Hepatocytes delete regulatory T cells by enclysis, a CD4+ T cell engulfment process', ***Cell Reports***, vol. 29, no. 6, pp. 1610-1620.e4. <https://doi.org/10.1016/j.celrep.2019.09.068>

Fernandez-Pozo N, Haas F, Meyberg R, Ullrich K, Hiss M, Perroud P; Hanke S, Kratz V, Powell A, **Vesty E**, Daum C, Zane M, Lipzen A, Sreedasyam A, Grimwood J, **Coates JC**, Barry K, Schmutz J, Mueller L, Rensing SA (2019) PEATmoss (*Physcomitrella* Expression Atlas Tool): a unified gene expression atlas for the model plant *Physcomitrella patens*. ***Plant Journal***, *in press*

Ghaderiardakani F, Califano G, Mohr JF, Abreu MH, Coates JC, Wichard T (2019) Analysis of algal growth- and morphogenesis-promoting bacterial factors (AGPFs) in an integrated multi-trophic aquaculture system for farming the green seaweed *Ulva*. ***Aquaculture Environment Interactions*** 11 p. 375-391

Gonzalez-Delgado, L. S., **Walters-Morgan, H.**, Salamaga, B., Robertson, A. J., Hounslow, A. M., Jagielska, E., Sabala, I., Williamson, M. P.*, **Lovering, A. L.***, and Mesnage, S*. (2019) Two-site recognition of *Staphylococcus aureus* peptidoglycan by lysostaphin SH3b. ***Nat Chem Biol.*** **51**, 1–7

***co-corresponding authors**

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Kandiah, E, Carriel, D, Garcia, PS, Felix, J, **Banzhaf, M, Kritikos, G**, Bacia-Verloop, M, Brochier-Armanet, C, Elsen, S & Gutsche, I (2019), 'Structure, function, and evolution of the *Pseudomonas aeruginosa* lysine decarboxylase LdcA', ***Structure.*** <https://doi.org/10.1016/j.str.2019.10.003>

Kettles, R. A., Tschowri, N., **Lyons, K. J.**, **Sharma, P.**, Hengge, R., Webber, M. A., and **Grainger, D. C.** (2019) The *Escherichia coli* MarA protein regulates the *ycgZ-ymgABC* operon to inhibit biofilm formation. ***Mol Microbiol.*** **112**, 1609–1625

Kreft, J.U., Griffin, B.M., Gonzalez-Cabaleiro, R. (2019) Evolutionary causes and consequences of metabolic division of labour: why anaerobes do and aerobes don't. ***Curr Op Biotech.*** **62**, 80-87

Miozzi, L., Vaira, A.M., **Catoni, M.**, Fiorilli, V., Accotto, G.P., and Lanfranco, L. (2019). Arbuscular Mycorrhizal Symbiosis: Plant Friend or Foe in the Fight Against Viruses? ***Front. Microbiol.*** 10.

Noris, E. and **Catoni, M.** (2019). Role of methylation during geminivirus infection, in Poltronieri, P. and Hong, Y. (ed.) ***Applied Plant Biotechnology for Improving Resistance to Biotic Stress (1st Edition)***. Cambridge, Massachusetts: Academic Press, pp. 291-305.

Recent Publications

Prosser, N., Purdy, K. J. **Green, L.** (2019) Increase in the flock prevalence of lameness in ewes is associated with a reduction in farmers using evidence-based management of prompt treatment: a longitudinal observational study of 154 English sheep flocks 2013–2015. *Prev. Vet. Med.* **173**, 104801.

Quraishi, MN, Yalchin, M, Blackwell, C, Segal, JP, **Sharma, N**, **Hawkey, P**, **McCune, V**, Hart, A, Gaya, DR, **Ives, N**, **Magill, L**, **Loi, S**, **Hewitt, C**, Gerasimidis, K, **Loman, N**, Hansen, R, **McMullan, C**, **Mathers, J**, Quince, C, Crees, N & Iqbal, T (2019), 'STOP-Colitis pilot trial protocol: a prospective, open-label, randomised pilot study to assess two possible routes of faecal microbiota transplant delivery in patients with ulcerative colitis', *BMJ open*, vol. 9, no. 11, e030659. <https://doi.org/10.1136/bmjopen-2019-030659>