

COMPARE

CENTRE OF MEMBRANE PROTEINS AND RECEPTORS

Newsletter

Edition 16 June 2019

Welcome

In July 2019, **Katja Gehmlich** will join The University of Birmingham as Senior Lecturer. Katja received a PhD in Cell Biology in Germany and trained as a postdoc in three groups in the UK (Manchester, University College London and Oxford.) In 2012, Katja was awarded a British Heart Foundation Intermediate Basic Science Research Fellow and started her independent group in Oxford. She has a long standing interest in inherited cardiac conditions (called cardiomyopathies) and biomechanical stress signalling in the heart. Among other things, Katja is interested in the intercalated discs of cardiomyocytes, a membranous cell-cell contact structure which provides an important signalling hub for the heart.



Katja uses in vivo models and induced pluripotent stem cell derived cardiomyocytes to model disease and applies a wide range of microscopy techniques in collaborative projects: confocal microscopy, high-resolution microscopy, FRET and FRAP, and more recently has started to use video microscopy to assess the contractility of induced pluripotent stem cell derived cardiomyocytes in 2D and 3D.

Key Dates

Team Science Seminar

5th July 2019 14:00-15:00

IBR Seminar Room, Birmingham
"Using footprint-free CRISPR/Cas9-edited human lipotent stem cells to study GRK4-L41 mediated cardioprotection during catecholamine stress"

Kate Ngoc Vo Thi

Annual Research Symposium

26th September 2019

Jubilee Conference Centre
Nottingham

External Conferences

ELRIG Drug Discovery 2019

5th-6th November, Liverpool

<https://elrig.org/portfolio/2019-drug-discovery/>

Grants



The EU has granted €4m for **Oncornet2.0**. This will bring together the leading GPCR research groups in Europe and will educate the next generation of



young researchers (15 PhD students) by a multi-disciplinary training. This programme integrates both research (e.g. drug discovery, proteomics, imaging) and transferable (e.g. entrepreneurship, academic writing, media training) skill sets through blended learning. This will ensure that the ECRs can effectively operate in today's drug discovery programs and will increase European competitiveness in the field of drug discovery. COMPARE contacts are Steve Hill, Meri Canals and Steve Briddon.

David Hodson has been awarded a **MRC Project Grant** of £675k to study the development and function of immature beta cells.



Dr Alex Brill, has been awarded a £206,323 grant from the **British Heart Foundation (BHF)** to research mechanisms that would efficiently protect against thrombosis but leave intact normal anti-bleeding mechanisms.

<https://www.birmingham.ac.uk/research/activity/cardiovascular-sciences/news/2018/10/Birmingham-researcher-awarded-three-year-British-Heart-Foundation-grant.aspx>

birmingham-nottingham.ac.uk/compare

Annual Research Symposium

Registration is open for the COMPARE Annual Research Symposium on Thursday 26th September. This year the symposium will be held at the Jubilee Conference Centre at the University of Nottingham, click [here](#) for full details and the registration link.

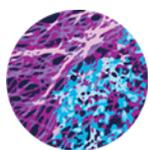


If you have any items for the next newsletter please send to:

compare@birmingham-nottingham.ac.uk

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Team Science Away Day 2019

The COMPARE Team Science Away Day 2019 was held on Thursday 13th June at the St. James Hotel, Nottingham. Having circulated a survey, this year's away day was based on leadership and management. We partnered with the European Laboratory Research and Innovation Group (ELRIG), an organisation which excels at bringing academia and industry together. There was attendance from ECRs, PIs and technical staff from a variety of research groups that were distributed evenly between UoB and UoN. The ~50 attendees were designated into small groups from the outset to spread expertise and encourage networking with new colleagues.

Following an introduction by Mark Soave and Jeanette Woolard, the day was kicked off by a presentation from Rachael Grimes about using FCS on SMALPs - a prime example of how ECRs can successfully collaborate on a single project across institutions. This was followed by the first activity: building the tallest spaghetti-based structure capable of holding a marshmallow, requiring effective teamwork and communication. Having built initial relationships in these groups, the subsequent grant writing activity challenged each group member to champion their scientific expertise to create a collaborative grant proposal in 20 minutes. Groups then pitched their proposal in 2 minutes to the esteemed judging panel, with presentations featuring some suspiciously vague preliminary data and particularly entertaining performances. Building on the success of last year's grant writing activity, awards were given to commend 'Blue Sky' thinking and project acronyms. This part of the day strengthened bonds in an informal setting while providing opportunities to discuss scientific interests with peers.

Following an impressive lunch, we handed over to Del Tresize (Sartorius BioAnalytics) on behalf of ELRIG to provide insight into management and leadership from an industry perspective. The afternoon was kicked off by an outstanding talk from Steve Rees, the Vice President of Discovery Biology at AstraZeneca. This interactive presentation emphasised the need for self-leadership and explored characteristics essential for being an effective leader. Our speakers were then joined by a panel of industry professionals: Kevin Moore (Tecan, Switzerland), Kathy Dodgson (Aurelia Bioscience, BioCity Nottingham) and David Loczenski (RenaSci, BioCity Nottingham). Prior to the panel discussion, we went back into our groups with an industry professional to discuss how leaders could tackle typical student/supervisor problems faced in academia. The panel discussion then gave us insight into their different experiences with examples from industry, ranging from Big Pharma to Contract Research Organisations.

The day was closed off with the prize giving and closing remarks by the Team Science Committee. As the venue was ideally located above the Crafty Crow pub, everybody found time to chat to colleagues over a drink. Those from Nottingham then attended the ELRIG Networking event at BioCity, while the Birmingham attendees returned home by coach. The cross-institution friendships between all individuals that have developed from each COMPARE event is palpable - more people now know one another on a first name basis than those who don't, regardless of 'hierarchy'. It was a successful day that delivered on the clear focus of professional development, while establishing and solidifying relationships in a positive and friendly environment encouraging collaboration between every group within COMPARE.



Steve Rees @SteveRees16 · Jun 13

Great afternoon @COMPARE_UoBUoN Team Science Away Day engaging with a talented group of Early Career Professionals. Keep on delivering Team Science - this will help UK retain its leadership position in Life Science Research. Thanks to @ELRIG_UK for supporting the event



Tweeted by the keynote speaker, positive feedback about our Team Science Away Day 2019 on leadership and management.



"Use your noodle" – teamwork and communication were paramount throughout the day.

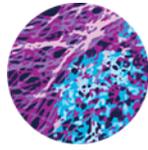
We would like to thank Del Tresize and all those from ELRIG for their partnership and insight, Chris McGrath and Sharmaine Afferton for their integral help with organisation, as well as all attendees for their fantastic participation throughout the day.

Team Science Committee 2018-19

Amanda Dalby, Connie Koo, Desislava Nesheva, Chloe Peach, Mark Soave, Leigh Stoddart and Jack Yule

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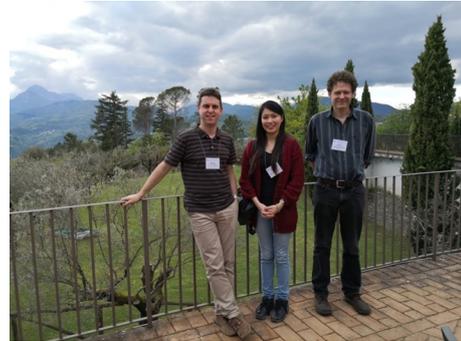


Conference Report

Connie Koo wins Best Poster Prize at the 2019 Metalloproteases Gordon Research Conference

I was fortunate to have secured a £500 conference travel award from the 2017/18 Team Science funding. This has allowed me to participate in the 2019 Metalloproteases Gordon Research Conference, and the related Gordon Research Seminar for early career researchers that took place in May in Tuscany, Italy towards the end of my first year in my PhD journey. The conference topic is very closely aligned to one of our lab's research interests, which is in understanding how the transmembrane metalloprotease ADAM10 is regulated. I presented our lab's most recent work, which was part-funded by two COMPARE pump-priming grants, in a short talk and on poster. It was a highly productive conference, as we gathered useful feedback for the manuscript that we are currently preparing for submission. It was also a good opportunity to meet up with our existing collaborators, and at the end of the conference we have also generated two new collaborations. The highlight of the conference was meeting and getting to know my favourite authors in the field, and after one week of learning about the exciting new advances in the metalloprotease field, my list of favourite authors had grown.

Receiving a \$500 Best Poster prize at the end of the conference was an icing on the cake, as I can now make use of the prize money for the next conference in September – this time on another one of my favourite class of membrane proteins, the tetraspanins!



Mike Tomlinson (left), Connie Koo (middle) and the legendary tetraspanin researcher, Eric Rubinstein (right) at the 2019 Metalloproteases Gordon Research Conference in Tuscany, Italy.

Publications

Bailey S, Harris M, Barkan K, Winfield I, Harper MT, Simms J, Ladds G, Wheatley M, Poyner D, (2019). Interactions between RAMP2 and CRF receptors: The effect of receptor subtypes, splice variants and cell context. *Biochim Biophys Acta Biomembr*. 1861 : 997-1003

Bosma R1, Stoddart LA, Georgi V, Bouzo-Lorenzo M, Bushby N, Inkoom L, Waring MJ, Briddon SJ, Vischer HF, Sheppard RJ, Fernández-Montalván A, Hill SJ, Leurs R, 2019. Probe dependency in the determination of ligand binding kinetics at a prototypical G protein-coupled receptor. *Sci Rep*. 9 : 7906.

Cooper SL, Carter JJ, March J, Woolard J, (2019). Long-term cardiovascular effects of vandetanib and pazopanib in normotensive rats. *Pharmacol Res Perspect*. 7(3): doi: 10.1002/prp2.477.

DiCello JJ, Rajasekhar P, Eriksson EM, Saito A, Gondin AB, Veldhuis NA, Canals M, Carbone SE, Poole DP, (2019). Clathrin and GRK2/3 inhibitors block delta opioid receptor internalization in myenteric neurons and inhibit neuromuscular transmission in the mouse colon. *Am J Physiol Gastrointest Liver Physiol*. doi: 10.1152/ajpgi.00085.2019. [Epub ahead of print]

Gondin AB, Halls ML, Canals M, Briddon SJ, 2019. GRK Mediates μ -Opioid Receptor Plasma Membrane Reorganization. *Front Mol Neurosci*. doi: 10.3389/fnmol.2019.00104.

Heuninck J, Perpina Viciano C, İşbilir A, Caspar B, Capoferri D, Briddon SJ, Durroux T, Hill SJ, Lohse MJ, Milligan G, Pin JP, Hoffmann C, (2019). Context-dependent signalling of CXC chemokine receptor 4 (CXCR4) and atypical chemokine receptor 3 (ACKR3). *Mol Pharmacol*. doi: 10.1124/mol.118.115477. [Epub ahead of print]

Kavanagh DPJ, Lokman A, Neag G, Colley A, Kalia N, (2019). Imaging the injured beating heart intravitaly and the vasculoprotection afforded by haematopoietic stem cells. *Cardiovasc Res*. doi: 10.1093/cvr/cvz118. [Epub ahead of print]

Khan AO, Maclachlan A, Lowe GC, Nicolson PLR, Al Ghaithi R, Thomas SG, Watson SP, Pike JA, Morgan NV; UK GAPP Study Group, (2019). High-throughput platelet spreading analysis: a tool for the diagnosis of platelet-based bleeding disorders. *Haematologica*. 2019 Jun 20. pii: haematol.2019.225912. doi: 10.3324/haematol.2019.225912. [Epub ahead of print]

Lupino L, Perry T, Margielewska S, Hollows R, Ibrahim M, Care M, Allegood J, Tooze R, Sabbadini R, Reynolds G, Bicknell R, Rudzki Z, Lin Hock Y, Zanetto U, Wei W, Simmons W, Spiegel S, Woodman CBJ, Rowe M, Vrzalikova K, Murray PG, (2019). Sphingosine-1-phosphate signalling drives an angiogenic transcriptional programme in diffuse large B cell lymphoma. *Leukemia*. doi: 10.1038/s41375-019-0478-9. [Epub ahead of print]

Pathak M, Manna R, Li C, Kaira BG, Hamad BK, Belviso BD, Bonturi CR, Dreveny I, Fischer PM, Dekker LV, Oliva MLV, Emsley J, (2019). Crystal structures of the recombinant β -factor XIIa protease with bound Thr-Arg and Pro-Arg substrate mimetics. *Acta Crystallogr D Struct Biol*. 2019 Jun 1;75(Pt 6):578-591. doi: 10.1107/S2059798319006910. Epub 2019 Jun 4.

Peach CJ, Kilpatrick LE, Woolard J, Hill SJ, (2019). Comparison of the ligand binding properties of fluorescent VEGF-A isoforms to VEGFR2 in living cells and membrane preparations using NanoBRET. *Br J Pharmacol*. doi: 10.1111/bph.14755. [Epub ahead of print]

Sanchez J, Lane JR, Canals M, Stone MJ, (2019). Influence of Chemokine N-Terminal Modification on Biased Agonism at the Chemokine Receptor CCR1. *Int J Mol Sci*. doi: 10.3390/ijms20102417.

Shrine N, Guyatt AL, Erzurumluoglu AM, Jackson VE Hall IP et al, (2019). New genetic signals for lung function highlight pathways and chronic obstructive pulmonary disease associations across multiple ancestries. *Nat Genet*. doi: 10.1038/s41588-019-0438-3. [Epub ahead of print]