

The brewut sessions

Pen Holland, Jillian Barlow and Emma Rand



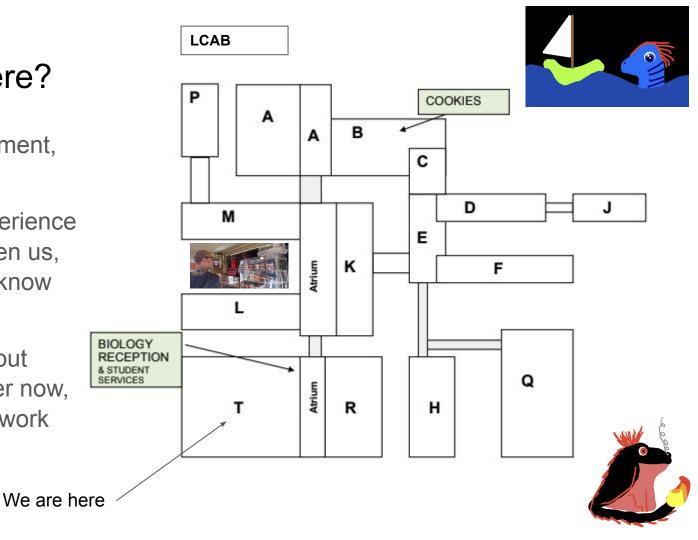
Pen Holland

Why are we here?

We're a large department, with broad interests.

We have a lot of experience and expertise between us, but we don't always know where it is.

We'd like to think about how we work together now, and how we want to work together in future.



Session themes

A. How can all staff work together to improve the UG/PGT **student research experience and outcomes**? (e.g. co-supervision, sharing labs/data, bringing research fellows & T&S together)

B. How can all staff work together to improve **professional training programmes**? (e.g. PGR students, DTPs, mentoring, skills development for staff)

C. Strategically, how do we create **more (better) interactions between staff** groups? (e.g. bringing research staff, T&S/ART academics, technicians and PGR together to achieve whatever it is that people want to do)







Integrating at York as a teaching and scholarship academic

INNATE Type 2 ILC IL-5 IL-6 IL-9 IL-13 ROR GATA3 Non-specific (no TCR) No immunological memory

How is type 2 immunity initiated and how does this drive immune responses in allergic asthma and infection?

Barlow JL et al (2011) CEA Barlow JL et al (2012) JACI Walker JA; Barlow JL (2013) Nature Reviews Barlow JL et al (2013) JACI Barlow JL et al (2013) J Exp. Med. Hardman CS et al (2017) Science Immunol Kerscher B et al (2019) Front. Immunol Walker JA et al (2019) Immunity Panova V et al (2021) Mucosal Immunol. Ferreira ACF. et al (2021) Nature Immunol. Hardman CS. Et al (2021) Science Immunol.





- Research-orientated teaching: 2nd Bioscience Techniques (immunobiology), 3rd and 4th year IM research projects
- Novel research on iNKT cell biology (Cull A. et al in preparation)
- **Summer studentship programme:** Attracting external (Zeiss, STEMCELLTechnologies, Jacobs, BBSRC) and internal funding (Biology, HYMS, York Unlimited) to fund 10 week research placements
- **New research collaborations:** Co-supervisor to Masters by Research student with Dr. Dave Boucher to explore the inflammasome in lymphoid cells
- **Grant writing:** Co-investigator and collaborator across Wellcome (McKenzie, Cambridge, Ian Hitchcock), MRC (David Kent, James Hewitson) grants, and edited and advised on many others for early career fellows

Integrated Masters (IM) degree programs in the Biology Department

- 2nd year undergraduate York Biology students are allowed to progress into our IM program with a transcript average of 55%. Each year we take 90 120 students.
- 3rd year IM students undertake a group research project, in order to better understand the research process, prior to an independent 4th year research project.

BIO00082H Group IM Project: Investigating the differentiation of stem cells in healthy bone marrow using RNA Sequencing data **AUTUMN TERM AUTUMN TERM** SPRING/SUMMER TERM SPRING TERM Student-led research time: ntroductory workshops: Oral presentation and report writing: WEEK 6 - 10: Students are divided into WEEK 3: 'Introduction and talk by Dr. Student-led research time: **WEEK 8:** Report writing workshop collaborative groups, with each student WEEK 1: Primer design and qPCR WEEK 8 - 10: Oral presentation (20% mark) identifying a candidate gene(s) of interest WEEK 4: 'Introduction to haematopoiesis' workshop **DRAFT SUBMISSION: Supervisor can** WEEK 5: 'Introduction to Nestorowa et al supported by drop-in sessions and VLE WEEK 1 - 7: Independent student-led provide comments on a draft report WEEK 6: 'Bioinformatics and data analysis WEEK 10: Workshop for groups to present research to investigate gene(s) of FINAL SUBMISSION: Normally 1st week research and students to highlight their In week 4 – 5 student groups will present interest Summer Term (80% mark) primary research articles genes(s) of interest **Alpha** Beta Delta Gamma Haematopoietic stem cell Mature blood cells

Identification of novel cell surface markers on stem cells

- 1,654 cell dataset, analyse as three different cell types (LT-HSC, HSPC, and Prog).
- Dataset is filtered to focus on surfaceome genes. Collaborate in your group to identify genes that are differentially expressed using RStudio.

Individually, identify 1 – 2 candidate genes of interest, whose expression can be validated using qPCR.

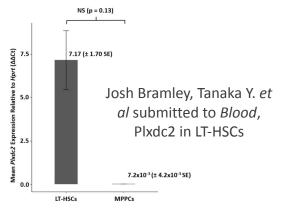


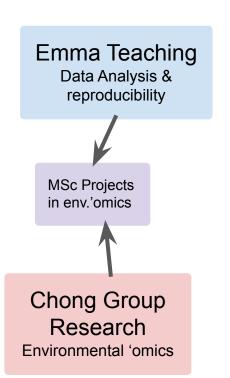
Figure 5: *Plxdc2* Is Not Significantly Upregulated In LT-HSCs Relative to MPPCs. *Plxdc2* expression was quantified relative to the expression of the *Hprt* housekeeping gene in LT-HSCs and MPPCs and data is presented as mean $\Delta\Delta$ Ct \pm Standard Error. Despite the data showing *Plxdc2* to be 995-fold upregulated in LT-HSCs relative to MPPCs, statistical analysis revealed this fold induction to be insignificant (Mann-Whitney: W = 8, n_{LT-HSC} = 2, n_{MPPC} = 4, p = 0.13).

Applied to the Summer studentship programme and was 1st reserve for an industry-funded technical role

- Following the recruitment process appointed to a 6-month RA role (Walrad Lab, MYND RNA binding protein)
- Will apply to PhD positions 2022

Theme B: professional training programmes

Teaching	Training and support for Research	Research
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Carpentries Data science skills to researchers worldwide. Travel by Dept training budget **Emma Teaching** PhD training Data Analysis & Rand E. (2021). White Rose BBSRC DTP Training: reproducibility An Introduction to Reproducible Analyses in R DOI: https://doi.org/10.5281/zenodo.4701167 **MSc Projects** in env.'omics **Chong Group**

Research
Environmental 'omics

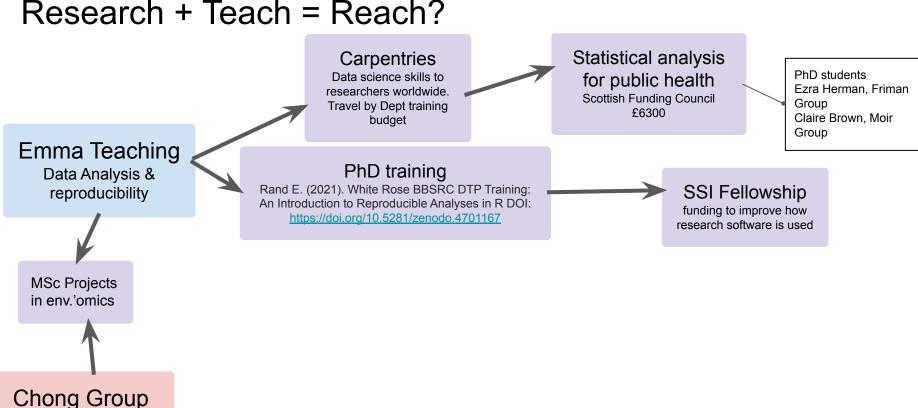
Carpentries Data science skills to researchers worldwide. Travel by Dept training budget Emma Teaching PhD training Data Analysis & Rand E. (2021). White Rose BBSRC DTP Training: reproducibility An Introduction to Reproducible Analyses in R DOI: https://doi.org/10.5281/zenodo.4701167 **MSc Projects** in env.'omics **Chong Group** Research

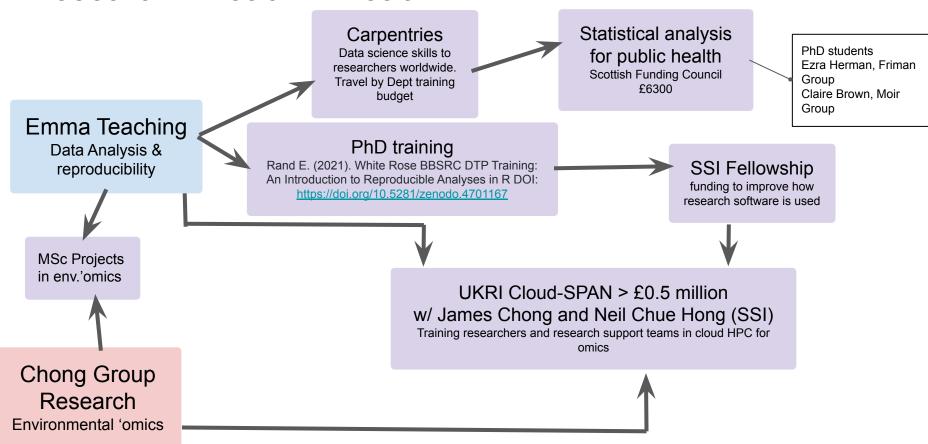
Environmental 'omics

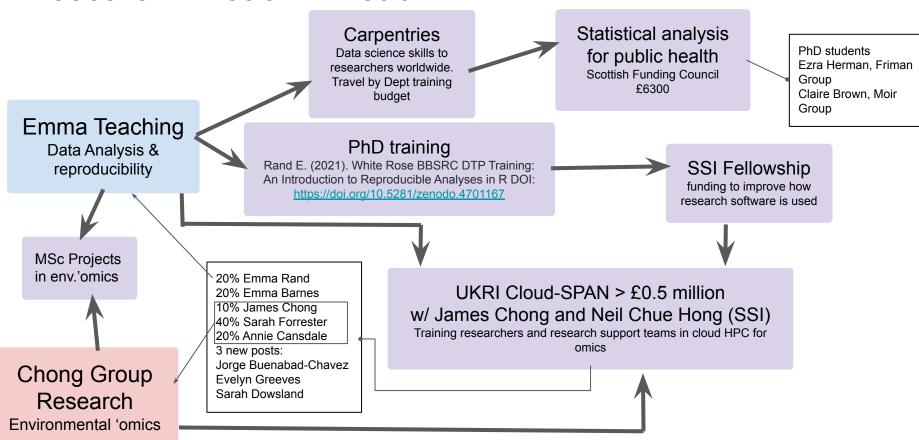
SSI Fellowship

funding to improve how research software is used

Research **Environmental 'omics**







What are we going to do now?

- What do we do well already?
 - How did you find, make and keep your professional friends in the department?
- What could we do better?
 - What barriers or constraints do you perceive when interacting with your current networks or growing them?
 - O What stops you finding new people?
- What would you like to see happening in the future?
 - In an ideal world!
 - What sort of induction processes, mentoring, working and socialising would help?





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Find your discussion group and go forth! https://forms.gle/CCLEA5fHe95KgFtAA





