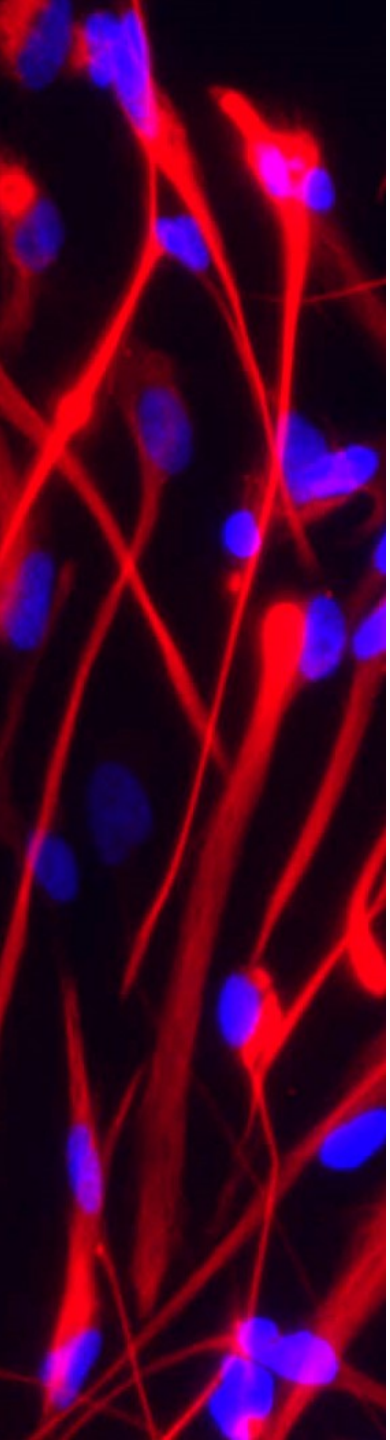

MRC Medical Research Council

Centre for Regenerative Medicine

Teaching through discussion – active learning approaches of postgraduate training programmes

Dr Marieke A Hoeve

Manager of Wellcome Trust 4-yr PhD programme in Tissue Repair

Director of MScR in Regenerative Medicine and Tissue Repair

wellcome

College of Medicine and Veterinary Medicine

Wellcome Trust 4 year PhD Programme in Tissue Repair

THE UNIVERSITY of EDINBURGH

Active learning for PG students

Centre for Regenerative Medicine

Weekly discussion groups hosted by group leaders

For **postgraduate students** on

- Wellcome Trust 4-year PhD programme
- CRM PhD programme
- MSc by Research in Regenerative Medicine and Tissue Repair



Discussion Groups

Centre for Regenerative Medicine

- **In-depth discussions** of research papers on range of biomedical topics
- Broaden the student's **scientific knowledge and critical thinking**
- Introduce students to **breath of research topics in labs** of supervisors
- Combined **independent and directed learning**
- Support **cohort-building** and enhance student-experience

Formats

Centre for Regenerative Medicine

- **Informal** setting
- Papers (~2) circulated 1 week in advance to **prepare**
- Brief overview of the **research in host's lab**

Formats

Centre for Regenerative Medicine

- **Informal** setting
- Papers (~2) circulated 1 week in advance to **prepare**
- Brief overview of the **research in host's lab**

Present & discuss

- Students **discuss a paper in small groups**, then present to other groups
- Students **present papers/ figures to peers**, followed by group discussion
- **Host presents papers**, followed by group discussion
- **Slides** of key figures helpful

Formats

Centre for Regenerative Medicine

Questions-led

- Students prepare & present answers to **Qs posed by host**, to the group
- Qs can be about e.g. the **methods** (pros/cons), the biological **concepts**, **implications** of the findings for the wider research field or future research

Formats

Centre for Regenerative Medicine

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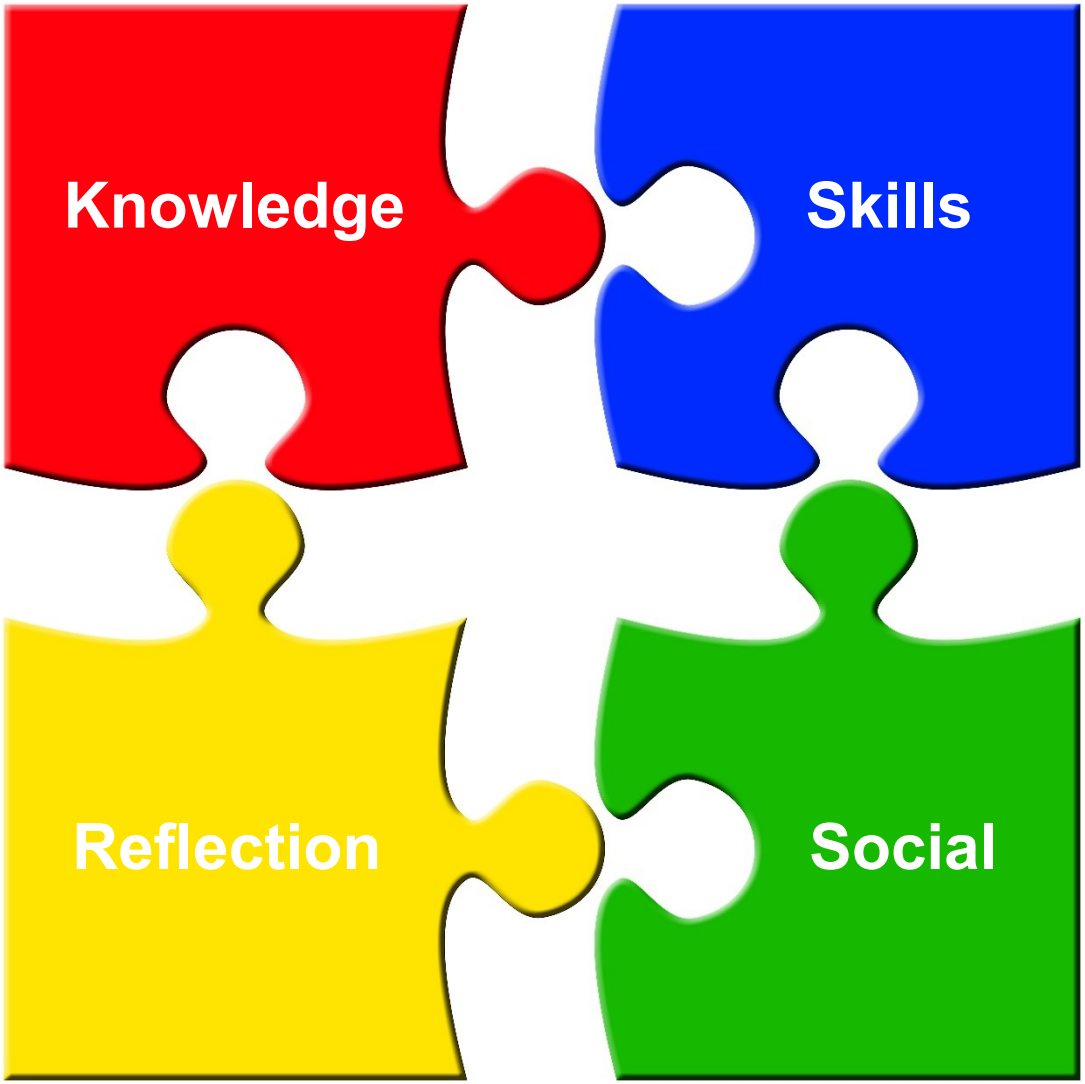
- Students prepare & present answers to **Qs posed by host**, to the group
- Qs can be about e.g. the **methods** (pros/cons), the biological **concepts**, **implications** of the findings for the wider research field or future research

Peer review

- Students act as peer-reviewers of a pre-published manuscript and then **compare this with the published version**
- Students review **papers from preprint servers (eg BioRxiv)** and prepare constructive feedback to send to the authors

Outcomes

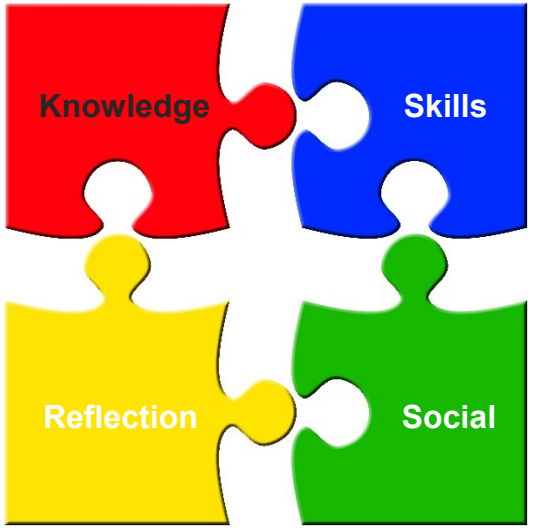
Centre for Regenerative Medicine



Knowledge

Centre for Regenerative Medicine

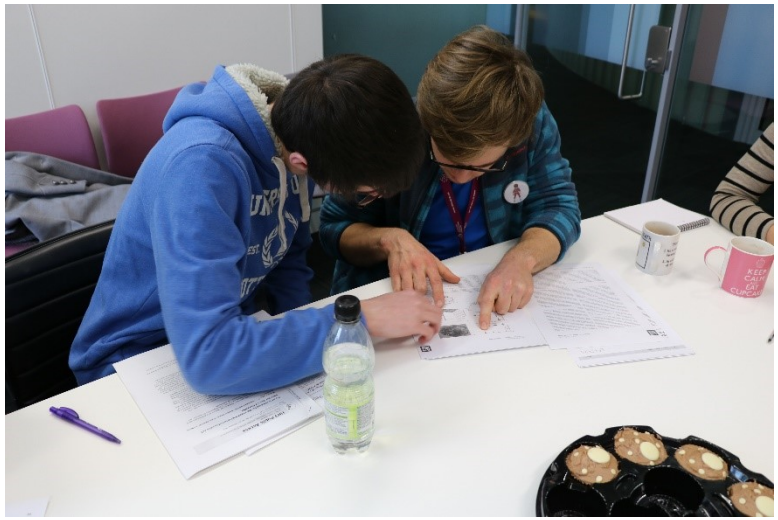
- **Fundamental principles** in relevant topics
- Variety of **scientific concepts**
- Review of the diverse **techniques, models systems and approaches** applied in their field

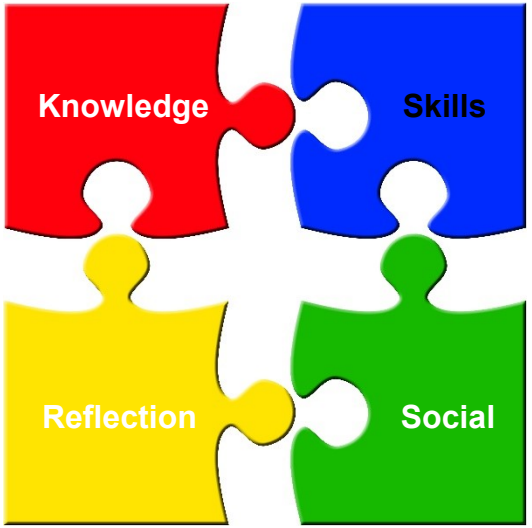


Skills

Centre for Regenerative Medicine

- Scientific **reasoning**
- Master **critical assessment** of research papers
- **Effective communication** of findings to peers and experts
- Relevant **contributions** to group discussions



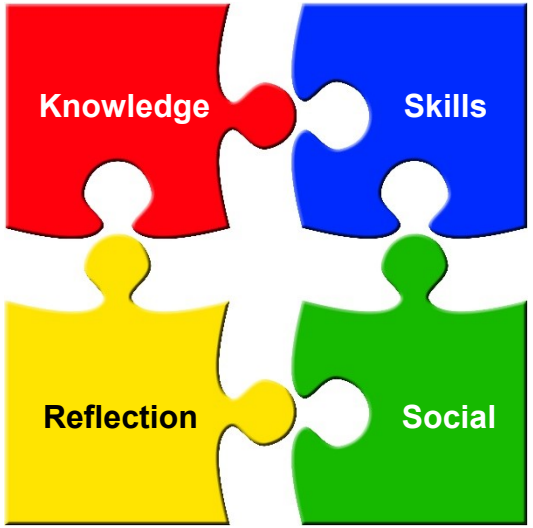


Reflection

Centre for Regenerative Medicine

- Work with supervisors to **discuss research projects**
- Reflect on personal **research interests** and career direction
- Develop their own, unique inter-disciplinary **PhD research proposal**

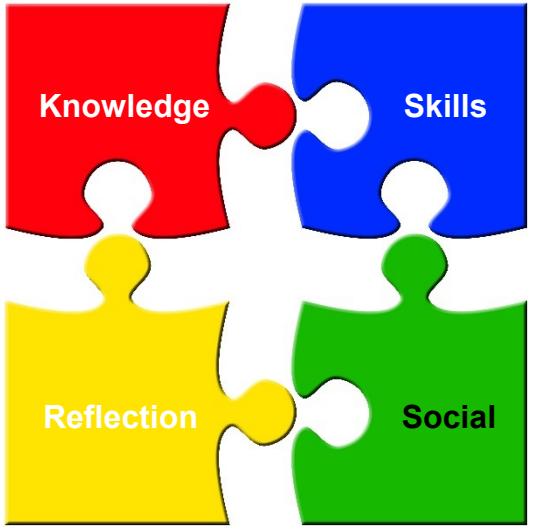
  (with guidance from their prospective supervisor)



Social

Centre for Regenerative Medicine

- Opportunity to regularly **meet and work with peers** while undertaking rotations at different labs across the campus / centre
- **Build a network** of researcher contacts and peers
- **Share and learn together** as a cohort



Feedback - students

Centre for Regenerative Medicine

- The best number of papers is 2, **one research article and one review** for background information to aid discussion ('*..allows time to dissect results and methodologies and diverge, making it stimulating and interesting*')
- The review provides **essential background** as many areas are new
- Papers were particularly good if they were either a **seminal paper** in the field, a very modern paper where to discuss the **latest in the field** or a **technical paper** to discuss the intricacies of the work
- **Papers with things wrong** which could be dissected and criticised were also good

Feedback - students

Centre for Regenerative Medicine

- '*One person going through a figure, but opening up points for discussion to the wider group improved the amount and quality of discussion as well as being a* ***valuable opportunity to appreciate other people's thought process/ perspective on a particular problem/question, which no doubt helps when approaching new problems in the future***'.

- '*Having 2 papers and an open, guided format allows you to* ***think more deeply about a particular research area and the Qs posed within it****, which I would argue, generates more imaginative and creative thinking/problem solving*.'

Feedback - authors

Centre for Regenerative Medicine

- '*First off, thank you for sending these questions over! It's actually a refreshing aspect of BioRxiv that* ***we can get constructive questions and comments before our work is entirely complete***'.
- '*I shared your questions with John, and the following answers are from both of us (but actually almost entirely John's). I hope they help, and* ***please pass on our thanks to your group***.'
- *'We thank .. the students of the Tissue Repair PhD programme at the University of Edinburgh for critically reading the manuscript' – Acknowledgement in https://doi.org/10.1016/j.devcel.2015.01.001*

Value for students and University

Centre for Regenerative Medicine

Discussion Groups contribute towards strategic aims of UofE:

- Offer inspiring and challenging **educational experiences**
- Develop opportunities for **experiential learning** on campus
- Educate the **next generation of leaders** and influencers
- Enable our students to **fulfil their full potential**
- Ensure that our degree **programmes remain current**
- Ensure that graduates are equipped with the **abilities and skills employers need**

Acknowledgements

Centre for Regenerative Medicine

Prof Catherina G Becker

Prof Stuart J Forbes

Dr Elaine Emmerson

Tissue Repair & CRM supervisors

CRM PG team

PG students

wellcome

College of Medicine and Veterinary Medicine

Wellcome Trust 4 year PhD Programme in Tissue Repair

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