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Good Scientific Practice

April 2nd 2019 1-2pm

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SAGEX
Scattering Amplitudes: from Geometry to Experiment

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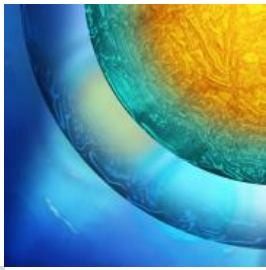
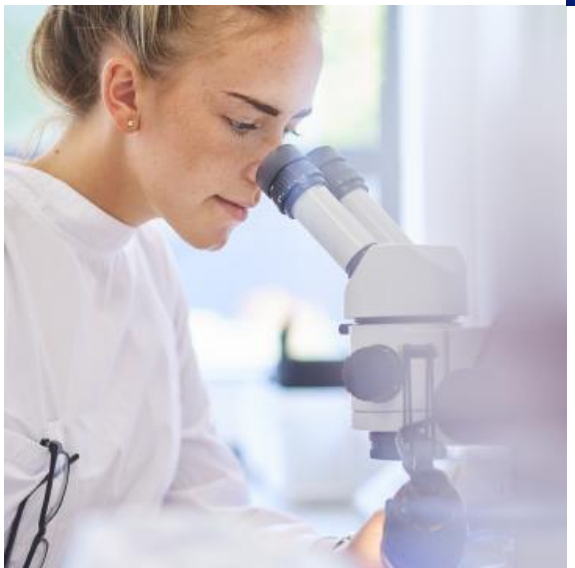
About this session

This session is based on three case studies and is designed to get you thinking and discussing some important ideas such as: the ownership of ideas, authorship and attribution, ethical concerns about the applications of research and your responsibilities to society at large.



- Case study 1: Whose idea is it anyway?
- Case study 2: Bad chemistry
- Case study 3: The use of research



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Ground rules

Trusted conversations

Respecting different opinions

Understanding different perspectives

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> Scientific fraud, plagiarism, and ghost writing are increasingly being reported in the news media, creating the impression that misconduct has become a widespread and omnipresent evil in scientific research.

Heinrich Rohrer

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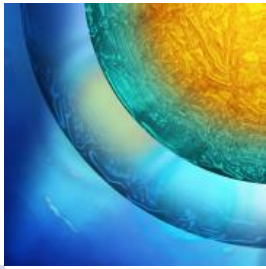
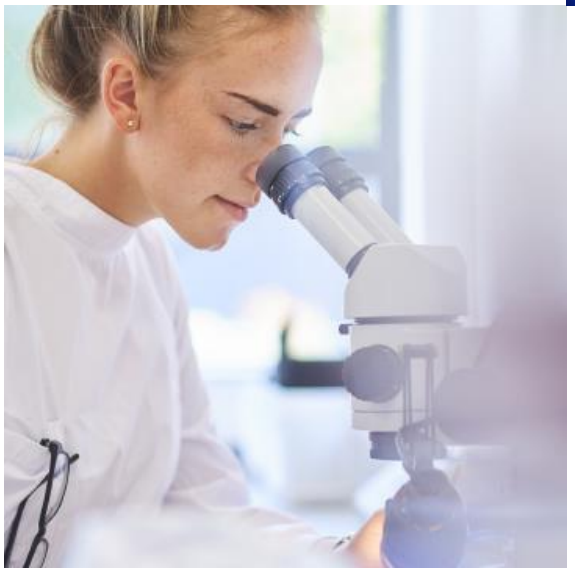
Research and Scholarly Integrity

- Personal honesty, ethics, and morals
- Expertise in the field of study – doing good science
- Professional codes of conduct and research practice, including publication policies established by professional journals
- Data ownership and control
- Institutional policies and regulations
- Governmental policies and regulations





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Examples of Breaches of Research Integrity

- Falsification of Data
- Fabrication of Results
- Plagiarism
- Breach of duty of care
- Misrepresentation

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… the goals of the project, and of project applicants, while important, should **always be secondary** to the dignity, rights, health, safety and well-being of the project participants and concerned communities.

University of Durham,
Faculty of Science
Ethics sub-committee

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Case study 1:

Who’s idea is it anyway?

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Whose idea is it anyway?

Form yourselves into groups of 4-5 people.

Have a look at Case Study 1: whose idea is it anyway.

In your groups, discuss your response to the questions.

Be prepared to explain your answers to the rest of the group.

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Researcher 1 meets up with Researcher 2 at a conference, and they discuss some work that Researcher 1 has been doing. They exchange emails about this several times over the next few days, then everything goes quiet.

A week or two later a paper by Researcher 2 appears on the arXiv, which is based on some of the ideas discussed with Researcher 1, but does not include them on the author list or acknowledge their contribution.

Whose idea is it anyway?

Q1

- How do you think researcher 1 feels in this situation?
- How should researcher 1 respond?
- Should researcher 1 be on the author list?

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Whose idea is it anyway?

Q2

- What actions could researcher 1 take?
- What are there possible implications?

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Who’s idea is it anyway?

Q3

- What are the longer term implications of this situation?

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Case study 2:

Bad chemistry

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Bad Chemistry – Who owns your ideas ?

Form yourselves into groups of 4-5 people have a look at Case Study 2: Bad Chemistry.

In your groups, discuss your responses to the questions.

Be prepared to explain your answers to the rest of the group.

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Bad Chemistry – Who owns your ideas ?

Q1

- How should Imhof respond to Dan Michaels' request for "disciplinary action"?
- What form(s) might such action take?

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Bad Chemistry: Who owns your ideas ?

Q2

- Who should be the co-authors on the paper and in what order should they be listed, assuming that it is most beneficial to have one's name listed first?

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Bad Chemistry: Who owns your ideas ?

Q3

- How do attitudes toward career goals affect this case?

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Bad Chemistry: Who owns your ideas ?

Q4

- What could Imhof have done differently over the past four years (including recently) to make the present situation less troublesome?

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If a man is keeping an idea to himself, and that idea is taken by stealth or trickery-I say it is stealing. But once a man has revealed his idea to others, it is no longer his alone. It belongs to the world

Linda Sue Park, A Single Shard

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Case study 3:

Use of research

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Use of research: A Young Woman's Struggle for Peace

In your groups read Case Study 3: Use of research: A Young Woman's Struggle for Peace**.**

Think about the questions sets provided and be prepared to explain your answers to the session.

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Use of research: A Young Woman's Struggle for Peace

- Characterize Ann's dilemma. Is it a conflict of interest or a personal moral dilemma?
- Depending on Ann's course of action, does Doe have a conflict of interest?
- Does Ann's dilemma change if she is Jewish? Muslim? Buddhist? Hindu? Humanist? If so, how?
- Identify Ann's goals and purpose as she matures and progresses. To what extent do Ann and Doe perceive differently the relevant applications, goals, or purposes of the research?

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https://www.onlineethics.org/Resources/gradres/gradresv4/peace.aspx

Use of research: A Young Woman's Struggle for Peace

- Does Ann have responsibilities to know and understand the applications of her work?
- How might these responsibilities depend upon the stage of her education or career?
- Is Doe obligated to reveal the applications of the research to his advisees and the corresponding funding agencies?
- Does he have a responsibility to be aware of ethical concerns that others may have about his work, even if he does not share those concerns?

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https://www.onlineethics.org/Resources/gradres/gradresv4/peace.aspx

Use of research: A Young Woman's Struggle for Peace

How is the funding agency related to the application of the research?

Does Ann's dilemma change if:

- she pursues the same basic research with funding from NSF or DOE?
- she pursues research that has no direct military application, but is funded by the Air Force?

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Use of research: A Young Woman's Struggle for Peace

- Consider the extent to which Ann and Doe have entered into a contractual relationship (written, verbal, implicit). It may help to draw upon your own experience as a student or faculty member.
- Is Ann bound by this contract if she discovers information that contradicts the initial premises of the contract? Is she obligated to reveal her own attitudes, which may conflict with her research?

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Use of research: A Young Woman's Struggle for Peace

What risks does Ann take if she voices her objections?

What risks does she take if she decides to change her research course?

Does Doe have responsibilities to Ann if Ann determines that she cannot participate in the research, given its intended purpose?

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The new generation of researchers must be given the skills and values - not just scientific ideals, but also awareness of human weaknesses - that will enable it to correct its forebears' mistakes.

Heinrich Rohrer

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What we covered today

Whose idea is it anyway?

Issues around discussing ideas with colleagues within the discipline.

How do informal discussions have an impact on your work?

Professional integrity as part of a team

What Role Does Ethics Play In the Outputs from Your Research ?

Moral dilemmas associated with research