Preventing disease
Promoting and protecting health
Responsible Conduct of Research

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Objectives:

- Define responsible conduct of research
- Explain the significance of maintaining a high standard when conducting research
- Compare and contrast fabrication, falsification and plagiarism
- Note examples of responsible conduct of research
Overview:

• Defining responsible conduct of research (RCR)
• Research misconduct
• Protection of human subjects
• Welfare of laboratory animals
• Conflicts of interest
• Data management practices
• Mentor and trainee responsibilities
• Collaborative research
• Authorship + publication
• Peer review
• Responsible research
• Summary
Cases

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Case – Responsible Conduct of Research

- Francine was just months away from finishing her Ph.D. dissertation when she realized that something was seriously amiss with the work of a fellow graduate student, Sylvia.

- Francine was convinced that Sylvia was not actually making the measurements she claimed to be making.

- They shared the same lab, but Sylvia rarely seemed to be there. Sometimes Francine saw research materials thrown away unopened.

- The results Sylvia was turning in to their common thesis advisor seemed too clean to be real.
Case – Responsible Conduct of Research

• Francine knew that she would soon need to ask her thesis advisor for a letter of recommendation for faculty and postdoc positions.

• If she raised the issue with her advisor now, she was sure that it would affect the letter of recommendation.

• Sylvia was a favourite of her advisor, who had often helped Sylvia before when her project ran into problems.

• Yet Francine also knew that if she waited to raise the issue the question would inevitably arise as to when she first suspected problems.
Both Francine and her thesis advisor were using Sylvia's results in their own research.

If Sylvia's results were inaccurate, they both needed to know as soon as possible.
Case - Questions

• Should Francine first try to talk with Sylvia, with her thesis advisor, or with someone else entirely?

• Does she know enough to be able to raise concerns?

• Where else can Francine go for information that could help her decide what to do?
Responsible Conduct of Research (RCR)

• **RCR refers to issues like:**
  - conflict of interest
  - research misconduct
    - which researchers may deliberately or unintentionally engage in

• **These actions may lead to:**
  - detrimental outcomes for science
  - cause impairment of the public’s trust
  - reduced research standards
  - compromise of research integrity
Responsible Conduct of Research

• Meets an acceptable standard of research

• Answers the questions:
  - How should you conduct your research?
  - What practices should you follow?
Responsible Conduct of Research

- Quality research should be:
  - Reliable
  - Valid
  - Appropriate
  - Generalizable
  - Adequate sample size for statistical analysis
Responsible Conduct of Research

- Research should be **ETHICAL**
  - Research design - answer research questions
  - Conflicts – effectively resolved
  - Ethical guidelines + laws - followed
Essential aspects of RCR

• Authorship
• Collaborative research
• COI
• Data management
• Financial responsibility
• Mentoring
• Peer review
• Plagiarism

• Research misconduct
• Research involving humans and animals
• Export controls
• Social and environmental issues relating to research
• Social responsibilities as a researcher
Journeying on the Road to RCR

Sources of Rules of RCR

- Professional codes
- Government regulations
- Institutional policies
- Personal convictions

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Research Misconduct

Research Misconduct Policies
• Define research misconduct
• Outline procedures for reporting + investigating misconduct
• Provide protection for:
  □ whistleblowers (Persons who report misconduct)
  □ persons accused of misconduct

When Research Misconduct becomes Public

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Research Misconduct

- Involves any action that wilfully compromises:
  - integrity of research

- Includes:
  - plagiarism
  - fabrication
  - falsification of data

When Research Misconduct becomes Public
Protection of Human Subjects

• Researchers must comply with:
  - laws
  - regulations
  - policies
  - codes of ethics
  - to protect human subjects

• Benefits > risks

Designing a responsible informed-consent form
Protection of Human Subjects

• Researchers must:
  ❑ know what research is subject to regulation
  ❑ understand + follow rules for research approval
  ❑ get appropriate training
  ❑ accept continuing responsibility throughout the study

Designing a responsible informed-consent form
Welfare of Laboratory Animals

• Most animal research is conducted primarily for benefit of humans

• Unlike humans, *animals cannot consent* to participate in research

• **Policies**
  - for appropriate care + use of animals in:
    - research
    - Research training
    - Biological testing activities

How do researchers decide which animals are used in research?
Welfare of Laboratory Animals

- Researchers can meet their responsibilities by:
  - Knowing what activities are subject to regulation
  - Understanding + following rules for project approval
  - Obtaining appropriate training
  - Accepting continuing responsibility for compliance through all stages of a project

How do researchers decide which animals are used in research?
Conflict of Interest (COI)

- Conflict of interest: Should NOT interfere with the responsible practice of research

- Secondary interests (financial gain) must NOT outweigh primary interests (protecting participants)

Whose interest comes first?
Conflict of Interest (COI)

• Conflict of interest related to:
  - Financial gain
  - Work commitments
  - Intellectual + personal matters
    - interfere with the responsible practice of research
    - should be avoided

Whose interest comes first?
Data Management Practices

4 important issues

• Ownership
• Collection
• Storage
• Sharing

Who owns research data?

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Data Management Practices

- Researchers spend much time collecting data

- Data may be used to:
  - confirm or reject hypotheses
  - identify new areas of investigation
  - guide the development of new investigative techniques

Who owns research data?
Data Management Practices

• Researchers should strive for **data integrity**
  - accuracy of data
  - consistency of data

• Data integrity + usefulness of research
  ↓ depends on

Careful attention to detail:
- from initial planning to final publication

Who owns research data?
Mentor + Trainee Responsibilities

• Mentor-trainee relationship:
  - requires firm commitment to make relationship work

• Researchers + trainees:
  - must know their roles
Mentor + Trainee Responsibilities

- Researchers:
  - should carefully consider what responsibilities they have to trainees BEFORE they take on the essential task of training new researchers
Mentor + Trainee Responsibilities

• Trainees:
  ☐ should be we aware of their responsibilities to mentors BEFORE accepting a position in a laboratory or programme

Mentor-trainee working relationship?
Mentor + Trainee Responsibilities

Good mentoring begins with:

- a clear understanding of mutual responsibilities

- a commitment to maintain a productive + supportive research environment

- proper supervision + review

- an understanding that the main purpose of the relationship is to prepare trainees to become successful researchers
Collaborative Research

• Project with > 1 person working on it
  - requires collaboration

• Principal investigator (PI)
  - is in charge

• Other researchers:
  - work under the PI’s direction

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Collaborative Research

Challenges associated with collaborative projects:
- the increasingly complex roles + relationships
- common, but not necessarily identical, interests
- management requirements
- cultural differences

Collaboration or competition?
Collaborative Research

Overcoming challenges associated with collaborative projects

\[ \downarrow \]

Will help them to **run smoothly**

Collaboration or competition?
Authorship + Publication

• Responsible publication in research should ideally meet some **minimum standards:**
  - a full + fair description of the work undertaken
  - an accurate report of the results
  - an honest + open assessment of the findings
Authorship + Publication

• In assessing the completeness of any publications, researchers should ask whether they have described:
   what they did (methods)
   what they discovered (results)
   what they make of their discovery (discussion)
Peer Review

- Peer review
  - evaluation by colleagues with similar knowledge + experience
  - is an essential component of research + the self-regulation of professions
  - Quality of decision made in each case depends heavily on quality of peer review

One of the benefits of serving as a peer reviewer?

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Peer Review

- Many important decisions about research depend on advice from peers, including:
  - which projects to fund (grant reviews)
  - which research findings to publish (manuscript reviews)
  - which scholars to hire + promote (personnel reviews)
  - which research is reliable (literature reviews + expert testimony)

One of the benefits of serving as a peer reviewer?
Peer Review

• Peer review
  - can make or break professional careers
  - directly influence public policy

One of the benefits of serving as a peer reviewer?
Peer Review

• For peer review to work it must be:
  - timely
  - thorough
  - constructive
  - free from personal bias
  - respectful of the need for confidentiality

One of the benefits of serving as a peer reviewer?
Peer Review

• Researchers who serve as peer reviewers should be mindful of the:
   public
   professional consequences of their evaluations

• Researchers:
   should exercise special care when making these evaluations

One of the benefits of serving as a peer reviewer?
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Case - Questions

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• Where else can Francine go for information that could help her decide what to do?
Case - Answers

• Given Francine’s insecurities, her 1\textsuperscript{st} \textbf{step} should entail:
  
  \textbf{reporting her suspicions} to an \textbf{official} at the institution prior to writing a formal report of her allegations about Sylvia
Case - Answers

• Francine’s concerns about the consequences of her actions + the possible negative impact on her future can be reduced:
  - if the institution has policies
  - she subsequently familiarizes herself with the policies
Case - Answers

• Policies should:
  - address research conduct
  - protect the whistleblower

• Policies:
  - should apply to both parties
  - should offer protection to Sylvia who may be wrongfully accused
SUMMARY

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Summary

• **Responsible Conduct of Research:**
  - entails conducting research in a commonly acceptable manner
  - encourages researchers to maintain a high standard of research conduct
  - supports the protection of human subjects
  - ensures a high quality of work that is:
    - ethically sound
    - scientifically sound
Summary

• **Research misconduct:**
  - should be discouraged

• **Qualities like:**
  - Fairness
  - Integrity
  - Accountability
  - Data accuracy
  - Trust
  - Respect
    - ought to be promoted
Summary

- Research policies
- Guidelines
- Regulations
- Laws

- are recommended for researchers so that research misconduct is deterred
Discussion

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CARPHA Thanks You!!!

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References:


