Ethics & Integrity in Research

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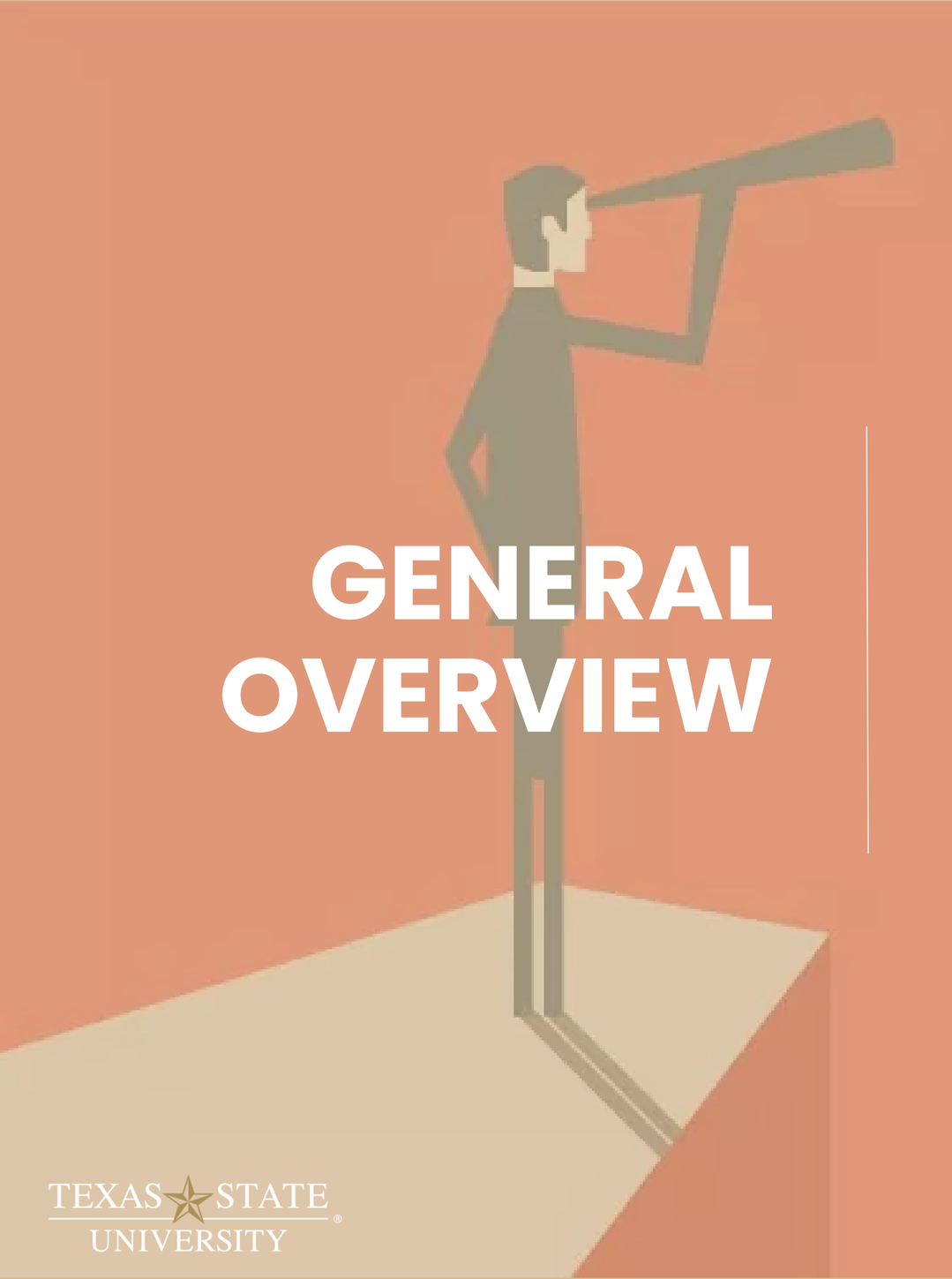

GENERAL OVERVIEW

- What are research ethics & integrity?
- Research ethics committees
- How to be an ethical researcher
- Research misconduct, the consequences, and how to avoid it!

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What are Research Ethics & Integrity?

- Research ethics and research integrity are overlapping themes that are usually talked about together.
- Research ethics and integrity practices make sure that research:
    1. Is conducted with the highest standards
    2. Is performed with the minimal risk of harmful outcomes or consequences

Definition of Research Ethics & Integrity

- Research ethics: doing research with responsibility, particularly towards participants, colleagues, employers, funders and society.
- Research integrity: doing research in ways that ensure confidence in the results, the researchers, and the research community.

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Why are they Important?

- Research ethics help to create safe, reliable experimental designs
- Research ethics and integrity principles are used as guidelines for situations in research
  - Academic scandal
  - Scientific misconduct
  - Research regulations

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CLASS DISCUSSION

1

As a class, come up with a research question.
This can be about any type of topic or research!

2

Then create a general research design.
How would you try to answer this question or test the hypothesis?

3

Now come up with 2 ways that there could be a breach in the ethics or integrity of the research.

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What are Ethical Risks to Consider in Research?

- As a researcher, you must be aware of potential risks to a participants'
  - Wellbeing
  - Autonomy
  - Justice
- If your project involves any potential risks, you will need to think about how to address them.

What are Ethical Risks to Consider in Research?

Some questions are:

- Will any of the participants be vulnerable?
- How will you show that any participants have agreed to take part?
- Are you collecting personal data?

RESEARCH ETHICS IN AGRICULTURE

Four main aspects of agricultural research are incredibly important when it comes to ethics.

These four aspects are

1. **People in the food industry**
2. **Public citizens**
3. **Farm animals (food supply)**
4. **The living environment**

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RESEARCH ETHICS IN AGRICULTURE

Ethics in agricultural research means making choices that are fair, safe, and respectful to people, animals, and the environment.

Four main areas of focus:

1. **Consumers and Producers**
   - Families make smart food choices.
   - Farmers ensure food safety and quality.
2. **Community Engagement**
   - Encourages healthy eating and supports local food programs.
3. **Farm Animals and the Environment**
   - Promotes animal care and eco-friendly farming practices.
4. **Nutrition and Wellness**
   - Highlights the importance of balanced diets and healthy lifestyles

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Research Ethics in Agriculture

Respect for	WELLBEING (Health & Welfare)	AUTONOMY (Freedom & Choice)	JUSTICE (Fairness)
PEOPLE IN THE FOOD INDUSTRY	Income and working conditions	Freedom of action	Fair trade laws & practice
CITIZENS	Food safety & quality of life	Democratic informed choice	Availability of affordable food
FARM ANIMALS	Animal welfare	Behavioural freedom	Intrinsic value
THE LIVING ENVIRONMENT	Conservation	Maintenance of biodiversity	Sustainability

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Discussion:

Examples of Agricultural Ethical Issues

- Food Safety
- Treatment of Animals
- Chemical Use

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Ethical Research Practices

- Data management
- Authorship
- Human and animal welfare

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Ethical Research Practices

When conducting human or animal research, certain precautions have to be taken to make sure there are no serious risks.
Here's a video that talks more about it.

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Human Research: Informed Consent

- Research with humans requires informed consent
- Informed consent: permission granted in the knowledge of the possible consequences

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Informed Consent Forms

Informed consent forms contain:

1. Disclosure of information
2. Competency of the participant (or surrogate) to make a decision
3. Voluntary nature of the decision
4. Documentation of the consent

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Human Informed Consent Form

Instructions to the Student Researcher(s): An informed consent/assent/permission form should be developed in consultation with the Adult Sponsor, Designated Supervisor or Qualified Scientist.
This form is used to provide information to the research participant (or parent/guardian) and to document written informed consent, minor assent, and/or parental permission.

- When written documentation is required, the researcher keeps the original, signed form.
- Students may use this sample form or may copy ALL elements of it into a new document.

If the form is serving to document parental permission, a copy of any survey or questionnaire must be attached.

Student Researcher(s): _____

Title of Project: _____

I am asking for your voluntary participation in my science fair project. Please read the following information about the project. If you would like to participate, please sign in the appropriate box below.

Purpose of the project:

If you participate, you will be asked to:

Time required for participation:

Potential Risks of Study:

Benefits:

How confidentiality will be maintained:

If you have any questions about this study, feel free to contact:

Adult Sponsor: _____ Phone/email: _____

Voluntary Participation:
Participation in this study is completely voluntary. If you decide not to participate there will not be any negative consequences. Please be aware that if you decide to participate, you may stop participating at any time and you may decide not to answer any specific question.

By signing this form I am attesting that I have read and understand the information above and I freely give my consent/assent to participate or permission for my child to participate.

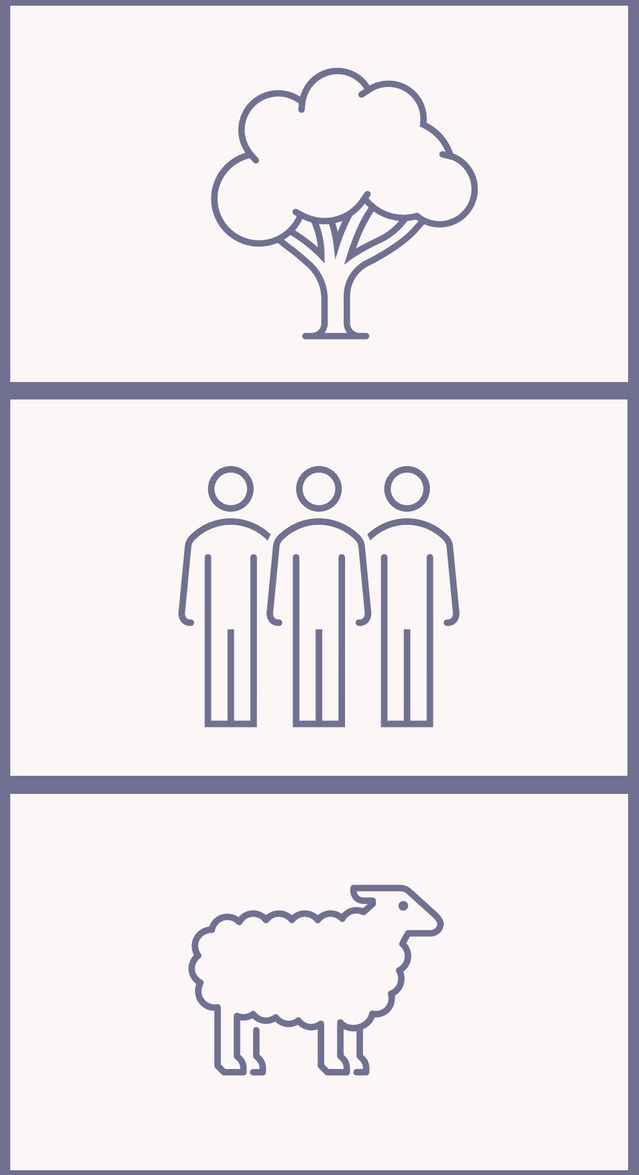
Adult Informed Consent or Minor Assent Date Reviewed & Signed: _____
Printed Name of Research Participant: Signature:

_____

Parental/Guardian Permission (if applicable) Date Reviewed & Signed: _____

Research Ethics Review Committees:

IRB, IACUC, and IBC



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Institutional Review Board (IRB)

- IRB reviews the paperwork and procedures of a researcher's project before the researcher is allowed to do it.
- IRB members have professional experience to provide scientific and ethical review.
- An IRB has 5 members and must have:
  - at least 1 scientist member
  - at least 1 member whose specialty is nonscientific

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Institutional Animal Care & Use Committee (IACUC)

- IACUC reviews the animal use protocols and purposes that researchers intend to use.
  - research that may cause suffering, distress, or death to animals must be described/justified to IACUC

- IACUC also has 5 members
  - At least 1 veterinarian,
  - 1 animal research scientist,
  - 1 member who is nonscientific,
  - and 1 member who is not affiliated with the institution

Institutional Biosafety Committee (IBC)

- The IBC must review and approve all research involving hazardous biological materials, including:
  - Recombinant DNA
  - Select agents and toxins
  - Human or zoonotic pathogens

- IBCs consist of many members, all experts or specialists in various fields like:
  - Infectious disease
  - Safety services
  - Public health
  - Biology

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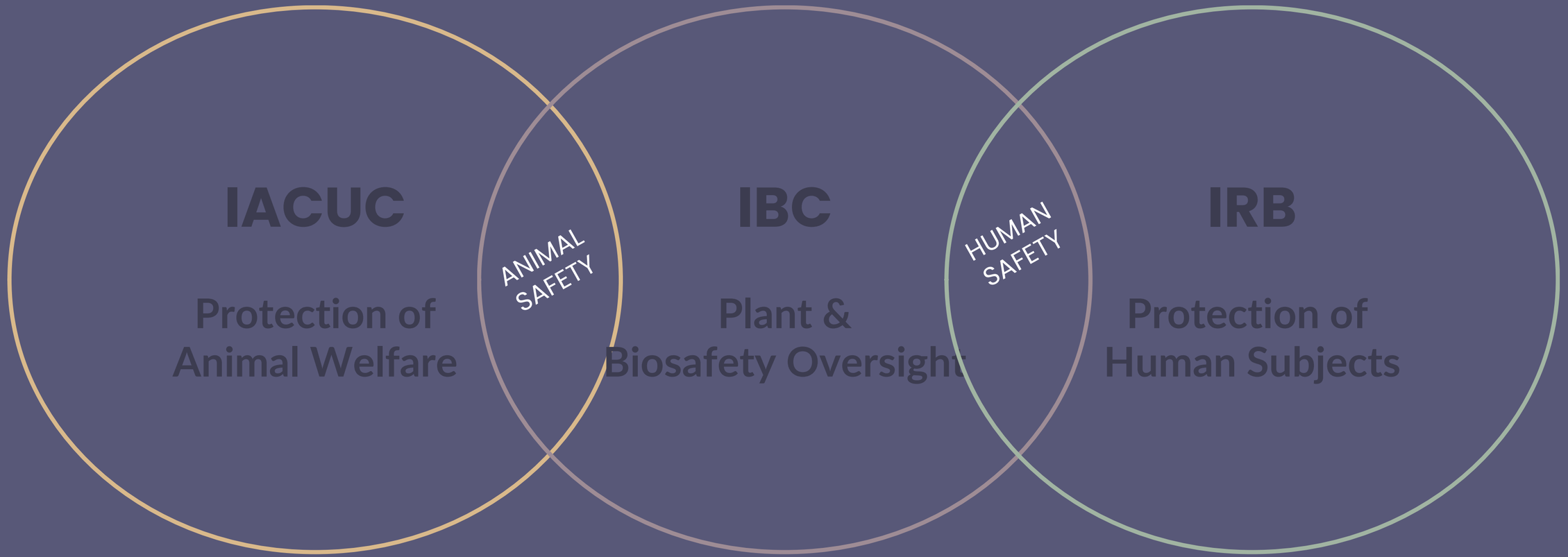
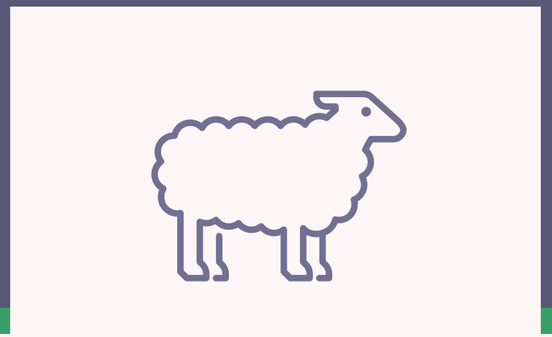

IACUC
Protection of
Animal Welfare
ANIMAL
SAFETY
IBC
Plant &
Biosafety Oversight
HUMAN
SAFETY
IRB
Protection of
Human Subjects

CLASS DISCUSSION:

Take a look at the headlines below, and decide which review board (IRB, IACUC, or IBC) must have given permission for these research experiments.

1. “Woman Cured of HIV After Human Umbilical Cord Blood Transplant”
2. “In a First, a Robot Performs Laparoscopic Surgery on Pig Without Human Help”
3. “Doctors Transplant Gene-Modified Pig Kidneys Into Brain-Dead Patient”
4. “New species of corn developed using genome manipulation will allow farmers to use less water and fertilizer while maintaining crop yields”



WHAT'S NEXT?

- What are research ethics & integrity?
  - Ethics in agriculture
- Research ethics committees
- How to be an ethical researcher
- Research misconduct, the consequences, and how to avoid it!

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WHAT WE'VE LEARNED SO FAR...

What we learned about research ethics:

- Help us do research safely and responsibly
- Remind us that research can have risks

To avoid these risks, researchers must:

- Keep data organized and accurate
- Give proper credit to authors and contributors
- Protect people and animals involved in research

Committees that check research ethics:

- IRB: Human subjects
- IACUC: Animal research
- IBC: Biological safety
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How to be an Ethical Researcher

- Good research practices are based on fundamental principles of research integrity
- They guide researchers in their work and help them with the ethical challenges they face in research

PRINCIPLES OF RESEARCH INTEGRITY

1. Reliability in ensuring the quality of research

2. Honesty in reporting research in a transparent, fair, and unbiased way

3. Respect for colleagues, research participants, society, ecosystems, cultural heritage and the environment

4. Accountability for the research, for its management, training, supervision, and for its wider impacts

RESEARCH MISCONDUCT

- Research misconduct is defined as fabrication, falsification, or plagiarism in performing research or reporting results.
- Research misconduct is taken very seriously and should be avoided in all its forms.

Fabrication, Falsification, & Plagiarism

Fabrication: making up data or results and recording or reporting them.

Falsification: Manipulating research materials, equipment, or processes, or changing or omitting data such that the research is not accurately represented.

Plagiarism: The appropriation of another person's ideas, processes, results, or words without giving appropriate credit.

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CLASS ACTIVITY: MATCH THE RESEARCH MISCONDUCT

Decide whether the examples below are fabrication, falsification, or plagiarism.

Example 1. A surveyor notices that their data is proving his hypothesis wrong. They decide to not include the data in their paper so that the work looks more favorable to their sponsors.
Example 2. In order to meet recruitment pressure and expectations, a coordinator completed enrollment forms using faked names and information. They submit the forms to their boss at the deadline.
Example 3. Two researchers are working on a project together and they both put effort into writing the research paper. After the paper is written, one of the researchers publishes the paper, but only with themselves as the author.

EXAMPLE OF AGRICULTURAL RESEARCH MISCONDUCT: MONSANTO

- Monsanto engaged in ghostwriting and other types of research misconduct to make it harder to regulate its most profitable products.
- Although public-science organizations have sanctions to punish research misconduct, private-science organizations do not. At Monsanto, they were allowing research misconduct.
- Journal editors who peer-reviewed the Monsanto documents were also unethical
    - They did not disclose their conflict of interest
- Scientific misconduct by private firms threatens the public's trust and integrity of public science.

Ghost writing: writing a document under someone elses name.

SUMMARIZING RESEARCH ETHICS

- Research ethics and integrity ensure research is conducted with the highest standards and the minimal risk of harm
- There are ethical risks when designing a research experiment, therefore scientists must address these and get approval from review boards (IACUC, IRB, IBC)
- Failure to follow research ethics properly can lead to research misconduct, resulting in serious consequences.
- Researchers engaging in misconduct may lose funding, research/facility privileges, their job, and respect/trust within the industry and academic community.

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The end!

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