# RESEARCH ETHICS AND INTEGRITY

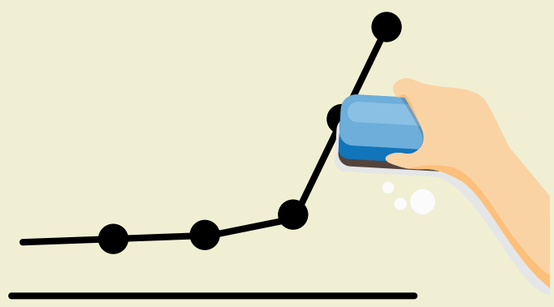
IndiaBioscience

*Scientific progress is not above ethics. In the fast pace of scientific advancements, it is crucial to know where the ethical boundaries lie. This infographic highlights some* of the key aspects of doing research ethically.*

## 01 CREDIT

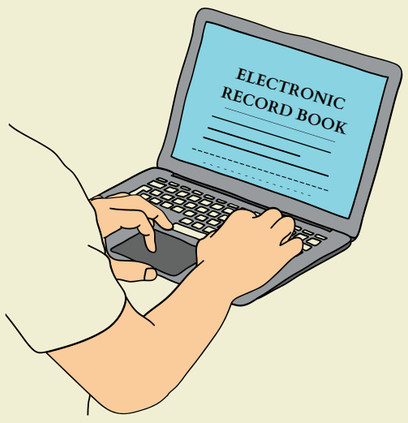

***Plagiarism*** refers to copying or modifying words, images, ideas, or other works without crediting the source. Say no to and stay mindful of plagiarism, be it for a research publication or a class project.

## 02 DATA AUTHENTICITY



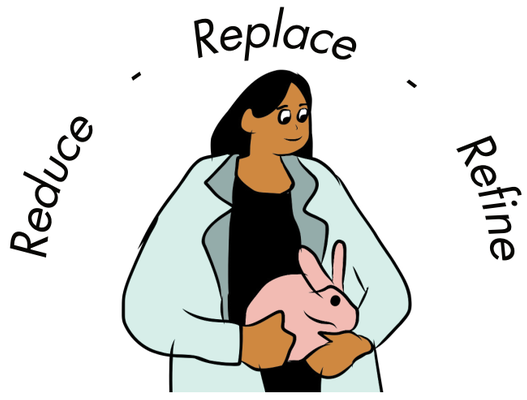
Do you have data that rejects your favourite hypothesis? Don't ignore it or alter it in a rush to publish. Data ***fabrication***, ***falsification*** and 'cherry-picking' are unethical and fraudulent, and hurt scientific progress. Change your hypothesis, not your data.

## 03 DATA REPRODUCIBILITY



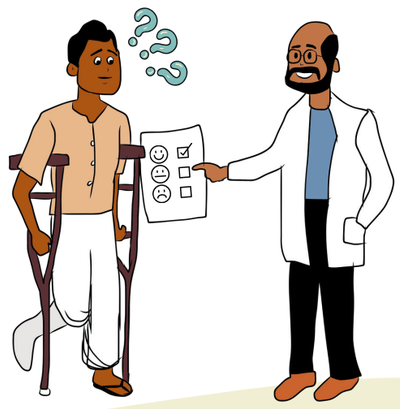

***Document everything***. Follow good practices of recording and storing your work, including the 'failed' experiments. Your peers (and future self) will thank you for it.

## 04 ANIMALS IN RESEARCH




Animals feel stress, pain and fear too. Treat them humanely. Consider ***replacing*** them with non-animal models and products. If you can't, consider ***reducing*** their usage and ***refining*** your experiments to get the most out of fewer animals.

## 05 CLINICAL RESEARCH ETHICS



Before a clinical study, ensure that the participants truly and entirely understand the goals of the study and its impact on them. Proceed only with their ***informed and understood consent***. Uphold the ***confidentiality*** of their information.

## 06 RESOURCE MANAGEMENT

***Use resources wisely***. Avoid wasting paper, plastic, water, electricity, instruments, reagents or human resources. Take care in handling and disposing of hazardous materials. Do not compromise the ***safety*** of your workspace or the people in it or outside.

## 07 UNDERSTANDING CONFLICT OF INTEREST


Here are two scenarios of conflict of interest. Who do you think is acting ethically – person A or B?

If your invention, research study, or other work could benefit you in ways that clash with your professional responsibilities, then there is a ***conflict of interest***. Be ***transparent*** about it, even when the possibility of a conflict is remote.

## 08 UPHOLDING A PROFESSIONAL CODE OF HONESTY

It is human to err. ***Own your mistakes*** and take the necessary steps to correct them. Create a workspace that encourages honesty and openness in your team members.

## 09 BROADER IMPACT OF RESEARCH


Think about how your work impacts the world.
If unsure, ***talk to experts*** in the area of ethics and integrity.

## 10 STAY UPDATED WITH RESEARCH ETHICS


Science is a social enterprise with multiple stakeholders, including scientists, educators, students, entrepreneurs, policymakers and the public. Engage in discussions on research ethics and integrity with all stakeholders. ***Revisit and revise the policies regularly.***

*Did we miss something?
Let us know by writing to **hello@indiabioscience.org**

**Concept: Vijeta Raghuram and Karishma Kaushik** ■ **Author: Vijeta Raghuram** ■ **Illustrations: Moumita Mazumdar**

IndiaBioscience thanks Sabuj Bhattacharyya, the Research Ethics, Integrity & Documentation Officer at InStem, Bengaluru, for his valuable inputs in the development of this infographic.