

Research Ethics

[See online here](#)

Whether you are working in basic science, transitional or clinical research, a set of ethics and morals should guide your decision-making process. This collection of ethics can be learned from our supervisors, our colleagues, lab seminars, professional organizations concerned for example for the ethical handling of animals, and courses specifically dealing with ethical issues. Finally, our family, friends and our own religious beliefs also help form our moral compass and can make us make ethical decisions related to our research.



Definition

Research ethics are the guidelines followed while conducting research. These ethics guide and monitor the scientist involved in the research so that the level of the research is maintained.

Objectives of Research Ethics

We need to follow ethics when we conduct research for three main reasons. We are obliged to honor the trust of our supervisors, mentors and fellow graduates. We must conduct research responsibly to reach our goals. And finally, we need to conduct research

that clearly benefits the public.

Ethics Related to Scientific Knowledge

We conduct our research mainly to extend our knowledge about a particular subject or problem. This new scientific knowledge should be shared with others via research publication, authorship, and collaboration. Therefore, it is considered as unethical to withhold such valuable information from interested parties. On the other hand, it is also unethical to publish results that were hand-picked. Unfortunately, many researchers prefer to publish their positive results while ignoring their negative results. This results in misleading information.

Once one publishes his or her own work, others can get the opportunity to criticize the work, reproduce it thus confirming the results, or to dispute the results. Different forms exist for sharing scientific knowledge obtained from research such as presentations, publications in peer-reviewed journals, thesis writing, and publication. Many people, in fact, have argued that if your research cannot produce a publishable paper, then your research was simply never done.

Ethics Related to Authorship

When we publish our results in the form of a scientific paper, we usually present a list of authors who may or may not have contributed equally to the work in hand. It is considered unethical to include people in the authors' list if they did not contribute substantially to the design, interpretation or drafting of the manuscript. Therefore, people who once helped you in a completely informal way and were not directly involved in your research should be thanked in the acknowledgment section. Additionally, once the paper is published, it is unethical to cite this work and to do any changes to the order of the authors say in your resume. Usually, the first author is the graduate student who did most of the work related to designing the experiments, running them and writing the manuscript.

Second authors might have also contributed significantly to the work. The last author is usually your main supervisor and the one before your supervisor might be your co-supervisor. These people, the supervisors, usually guide you through your research career, choose the topic that you should work in, and in many cases help you design the experiments. Authors between the supervisors and the first and second authors are usually people who contributed to the interpretation of the data, did some statistical analysis or helped you acquire a substantial amount of the data but did not contribute 'intellectually' substantially to the work. Whether you should put their names in the acknowledgment section or in the authorship list is always debatable.

In order for us to understand who is a true author and who is simply someone who offered help but should not be considered as an author, we should remember the responsibilities of the author. The author should ensure that the work is new and original, hence research the literature. Authors usually are aware of the submission and choose the journal together. Authors usually have used parts of the work previously in conferences and presentations, while someone who offered you informal help will unlikely use any part of the work.

Before you start working on a research project, you should know whether your results might be publishable or not. Findings that are original, significant, reproducible, well presented to the reader, concise, specific and complete are usually easy to publish. If

your work involves any plagiarism of others' work, or if you perform questionable unethical research practices, you will most likely end up with non-publishable data that could also cause legal harm to you.

Research Misconduct

Definition

Research misconduct includes falsification, fabrication, and plagiarism in research projects. It is unethical to fabricate data, fabrication means making of untruthful data. Falsification means manipulating the research materials, omitting certain data and present your findings in a way that would trick the reader. Plagiarism is using others results, words, and ideas without proper citation.

Additionally, it is not acceptable to submit the work to multiple journals with little changes. Related works should be mentioned to the editor of the journal you are submitting to. Selectively choosing your results in favor of your hypothesis is another discouraging unethical research practice.

Many authors cite papers without fully reading and understanding them. By doing so, you can incorrectly cite papers that do not fully agree with your findings, or in fact, oppose them! Therefore, one should always read the paper intended to be cited before citation and determine whether it fits in the context or not.

Journals, if they detect any form of research misconduct, might withdraw the published paper. They can ban the authors from publication for up to 5 years in the journal and any other related journals. In less severe cases of research misconduct, they can put the author on a watch list. Being on a watch list means that any future papers submitted for publication will undergo careful examination and delays before being submitted to the reviewers.

Some Advice for a Successful Research Career

You should understand that your work is done mainly for your benefit, the patient's benefit and you should honor your colleagues by following ethical research practices. You should develop goals that are clear and you should have deadlines for yourself. When you are at work, you should use the internet mainly for scientific reading and literature research related to your work. Finally, you should invest at least eight hours per day in the lab for you to have good results that are accurate and possibly publishable.

References

Committee on Science, Engineering and Public Policy; National Academy of Sciences, Engineering and Institute of Medicine. ON BEING A SCIENTIST: A GUIDE TO RESPONSIBLE CONDUCT IN RESEARCH. Third Edition. 2009

Legal Note: Unless otherwise stated, all rights reserved by Lecturio GmbH. For further legal regulations see our [legal information page](#).