

Introduction to Research Ethics

Temporal Dynamics of Learning Center

REU Students

Institute of Neural Computation, B1

5:00-7 pm

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What is ethics?
How should you act?



1. Recognize problem
2. Identify possible solutions
3. Choose best approach and act
4. Learn from experience

Plagiarism

1. What is plagiarism?
2. Retraction Watch example
3. How much is too much?
4. What is the role of language differences?

Ebola



1. What is ebola?
2. What are some of the related ethical challenges?
3. How should we study possible treatments?

Image from: <http://www.stripes.com/news/us/who-ebola-decline-in-liberia-could-be-real-trend-1.311059>

RESEARCH CASE #1



The principal investigator (PI) of your research group has told you that the results of some of your research are inconsistent with what she believes is the right answer. She tells you to either leave these out or see if you can find some way to fix the data so the results come out “right.” What should you do now?

RESEARCH CASE #2



You have noticed that another graduate student appears to be writing results in his lab notebook for experiments that have not been done. You are worried that they may be making up these results (fabrication). What should you do?

RESEARCH CASE #3



You have just started a research internship in a neurobiology lab. The research involves surgery on rats. You have never done animal research before. In a brief demonstration of how to do the surgery, it seems to you that the animals suffer a great deal. However, before you have had much time to practice, you're left to do several surgeries on your own. What should you do?

GUIDELINES AND RESOURCES

1. Identify interests
2. Seek perspective
3. Many possible strategies:
 - confrontation, conflict resolution, mediation, arbitration, reporting of behavior
4. Ask!
5. Resources

From retractionwatch.com (<http://retractionwatch.com/2014/07/15/recursive-plagiarism-researchers-may-have-published-a-duplicate-of-a-study-retracted-for-plagiarism/>):

Abstracts:

Original paper (1999) published in *Physical Review E*:

The isotropic-to-nematic transition in an athermal solution of long rigid rods subject to a gravitational (or centrifugal) field is theoretically considered in the Onsager approximation. The new feature emerging in the presence of gravity is a concentration gradient that coupled with the nematic ordering. For rodlike molecules this effect becomes noticeable at centrifugal acceleration $g; 10^3 - 10^4 \text{ m/s}^2$, while for biological rodlike objects, such as tobacco mosaic virus, the effect is important even for normal gravitational acceleration conditions. Rods are concentrated near the bottom of the vessel, which sometimes leads to gravity induced nematic ordering. The concentration range corresponding to phase separation increases with increasing g . In the region of phase separation the local rod concentration, as well as the order parameter, follow a step function with height.

Plagiarized paper (2006) that was retracted by *Journal of Biophysics*:

*Papaseit et al. (Proc. Natl. Acad. Sci. U.S.A. **97**, 8364, 2000) showed the decisive role of gravity in the formation of patterns by assemblies of microtubules in vitro. By virtue of a functional scaling, the free energy for MT systems in a gravitational field was constructed. The influence of the gravitational field on MT's self-organization process, that can lead to the isotropic to nematic phase transition, is the focus of this paper. **A coupling of a concentration gradient with orientational order characteristic of nematic ordering pattern formation is the new feature emerging in the presence of gravity.** The concentration range corresponding to a phase coexistence region increases with increasing g or MT concentration. **Gravity facilitates the isotropic to nematic phase transition leading to a significantly broader transition region.** The phase transition represents the interplay between the growth in the isotropic phase and the precipitation into the nematic phase. **We also present and discuss the numerical results obtained for local MT concentration change with the height of the vessel, order parameter and phase transition properties.***

Google translation for paper in Chinese (2014), with title identical to 2006 paper:

*By virtue of a functional scaling, the free energy for Cytoskeletal microtubule (MT) Solution system in the gravitational field has been theoretically proposed and in this foundation the influence of the gravitational field on MT's self-organization process has been studied. **A coupling of a concentration gradient with orientational order characteristic of nematic ordering pattern formation is the new feature emerging in the presence of gravity.** Theoretical calculation results show that the **gravity facilitates the isotropic to nematic phase transition**, this is reflected in a **significantly broader transition region** and the **phase coexistence region increases with increasing g or MT concentration.** We also discussed the numerical results obtained for local MT concentration change with the height of the vessel and some phase transition properties.*

Responsible Conduct of Research at UC San Diego

- 1.** Ask about and obtain necessary approvals before any use of human subjects
Human Research Protection Program, UCSD
<http://irb.ucsd.edu>
- 2.** Ask about and obtain necessary approvals before any use of animals
for teaching or research
Institutional Animal Care and Use Committee
<https://iacuc.ucsd.edu>
- 3.** Discuss expectations before and during any collaboration
Macrina FL et al. (1995): Dynamic Issues in Scientific Integrity: Collaborative Research. American Academy
of Microbiology, Washington, D.C.
<http://academy.asm.org/images/stories/documents/dynamicissuesinscientificintegrity.pdf>
- 4.** Recognize, declare, and manage conflicts of interest
UCSD Conflicts of Interest Office
<http://coi.ucsd.edu>
- 5.** Report the truth
UCSD Integrity of Research Policy and Procedures
<http://adminrecords.ucsd.edu/ppm/docs/100-4.pdf>
- 6.** Give credit where credit is due
International Committee of Medical Journal Editors Authorship Guidelines
<http://www.icmje.org>
- 7.** Seek out mentors
How to Get the Mentoring You Want: A Guide for Graduate Students
<http://www.rackham.umich.edu/downloads/publications/mentoring.pdf>
- 8.** Ask about how to deal with questionable conduct
Office of the Ombuds
858-534-0777
<http://ombuds.ucsd.edu>
- 9.** Report misconduct
UCSD Hotline
877-319-0265
<http://blink.ucsd.edu/HR/supervising/resources/hotline.html>
- 10.** Continue learning about responsible conduct of research
Research Ethics Program
<http://ethics.ucsd.edu>