Online Ethics Center
FOR ENGINEERING AND SCIENCE

Recommended Resources

Description

Recommended readings and resources for the Instructor's Guide to Prepare Research Group Leaders as RCR Mentors.

Body

NOTES TO THE INSTRUCTOR

- While this section shouldn't be considered exhaustive, it does provide many starting points for what has been covered in the workshop. Because participants may not realize its importance, it is worth a moment at the end of the workshop to underline the overall value of this section and to specifically cite examples particularly relevant to your version of the workshop.

The purpose of this section on readings is to provide a starting point for further information about the teaching of research ethics or responsible conduct of research, particularly in the context of the research environment. While all of the resources listed are recommended, this list is not intended to be comprehensive. Resources recommended as a starting point are written in **bold**.

Selected Resources: By Topic

Recommended Starting Resources are in bold.

Agreements/IDPs

1. AAAS (2015). MyIDP. Science Careers.

2. **AAMC (2008a): Compact Between Postdoctoral Appointees and Their Mentors.**

3. **AAMC (2008b): Compact Between Biomedical Graduate Students and Their Research Advisors.**

4. FASEB. Statement on Including Postdoctoral Mentoring Plans in Research Grant Applications.

5. **FASEB: Individual Development Plan for Postdoctoral Fellows.**

6. Hobin J, Fuhrman CN, Lindstaedt B, Clifford PS (2012): You Need a Game Plan. Science Careers.

7. UK Research Integrity Office. Checklist for Researchers.

8. University of Michigan (2014): Appendix 1. Compact Between Postdoctoral Appointees and their Mentors, Handbook for Postdoctoral Fellows.

9. University of Wisconsin: Mentees Individual Development Plans Overview, Resources for each phase of the mentoring relationship.

Assessment and Goals

1. ***Antes AL, Murphy ST, Waples EP, Mumford MD, Brown RP, Connelly S, Devenport LD (2009): A Meta-Analysis of Ethics Instruction Effectiveness in the Sciences. Ethics Behav 19(5): 379-402*.**
2. **Elliott D, Stern JE (1996): Evaluating Teaching and Students' Learning of Academic Research Ethics. Science and Engineering**

Ethics 2: 345-366.

3. Frankel MS (2003): Developing a Knowledge Base on Integrity in Research and Scholarship, Phi Kappa Phi Forum 83(2): 46-49.
4. Heitman E, Olsen CH, Anestidou L, Bulger RE (2007): New Graduate Students' Baseline Knowledge of the Responsible Conduct of Research. Academic Medicine. 82(9): 838-845.
5. **Kalichman M (2013): Why do we teach research ethics? Proceedings from National Academy of Engineering Workshop on Practical Guidance on Science and Engineering Ethics Education. pp. 5-16.**
6. Kalichman MW, PJ Friedman (1992): A pilot study of biomedical trainees' perceptions concerning research ethics. Academic Medicine 67: 769-775.
7. **Kalichman MW, Plemmons DK (2007): Reported Goals for Responsible Conduct of Research Courses. Academic Medicine 82(9): 846-852**.
8. Mumford MD, Connelly MS, Brown RP, Murphy ST, Hill JA, Antes AL, Waples EP, Devenport LR (2008): A sensemaking approach to ethics training for scientists: Preliminary evidence of training effectiveness. Ethics and Behavior 18: 315-346.
9. Nightingale P, Te Wiata I, Toohey S, Ryan G, Hughes C, Magin D (1996): Assessing learning in universities. Sydney: Professional Development Centre, University of New South Wales.
10. Plemmons DK, Kalichman MW (2007): Reported Goals for Knowledge to be Learned in Responsible Conduct of Research Courses. Journal of Empirical Research on Human Research Ethics 2(2): 57-66.
11. Powell S, Allison MA, Kalichman MW (2007): Effectiveness of a Short-term Course in the Responsible Conduct of Research for Medical Students. Science and Engineering Ethics 13(2): 249-264.
12. Schmaling KB, Blume AW (2009): Ethics instruction increases graduate students' responsible conduct of research knowledge but not moral reasoning. Accountability in Research 16: 268–283.

Cases

1. American Association for the Advancement of Science (1996): Scientific Integrity Videos, Information available online.

2. **Bebeau MJ with Pimple KD, Muskavitch KMT, Borden SL, Smith DH (1995): Moral Reasoning in Scientific Research: Cases for Teaching and Assessment. Indiana University.**

3. Elliott D, Stern JE (1997): Research Ethics - A Reader. University Press of New England, Hanover, NH.

4. **Cases and Scenarios, Online Ethics Center for Engineering and Research, National Academy of Engineering.**

5. Herreid CF: National Center for Case Study Teaching in Science, State University of New York at Buffalo.

6. Korenman SG, Shipp AC (1994): Teaching the Responsible Conduct of Research through a Case Study Approach: A Handbook for Instructors. Association of American Medical Colleges, Washington, DC.

7. **Macrina FL (2014): Scientific Integrity: An Introductory Text with Cases. 4th edition, American Society for Microbiology Press, Washington, DC.**

8. National Academy of Sciences (2009): On Being a Scientist: Responsible Conduct in Research. 3rd Edition. Publication from the Committee on Science, Engineering, and Public Policy, National Academy of Sciences, National Academy of Engineering, and Institute of Medicine. National Academy Press, Washington DC.

9. Penslar RL, ed. (1995): Research Ethics: Cases and Materials. Indiana University Press, Bloomington, IN.

10. **Pimple KD (2002): Using Small Group Assignments in Teaching Research Ethics, The Poynter Center, Indiana University, Bloomington.**

11. **Pimple KD (2007): Using case studies in teaching research ethics.**

12. **Schrag B, ed. (1996): Research Ethics: Cases and Commentaries, Volumes 1-6, Association for Practical and Professional Ethics, Bloomington, Indiana.**

Checklists

1. Science Student Council (2014): Authorship Determination Scorecard. American Psychological Association.

2. **Gallagher K (2012): The Use of Checklists in Research, Inside Higher Ed, October 21, 2012.**

3. **Gawande A (2011): The Checklist Manifesto: How to get things right. Picador.**

4. Perez-Sindin X (2012): 10-Point Checklist to Write a Good Research Proposal.

5. A checklist for checklists.

6. Texas A&M University, Division of Research. Investigator Self-Assessment Checklist for Human Subjects Research.

7. UK Research Integrity Office. Checklist for Researchers.

8. **University of Oxford (2014): Research Integrity and the Responsible Conduct of Research Checklist for Research Students and their Supervisors at the University of Oxford.**

9. Winston, Jr., R. B. (1985). A suggested procedure for determining order of authorship in research publications. Journal of Counseling and Development, 63, 515-518.

Codes of Conduct

1. Baker R (2005): A Draft Model Aggregated Code of Ethics for Bioethicists. American Journal of Bioethics 5: 33-41.

2. Bullock M, Panicker S (2003): Ethics for all: Differences across scientific society codes. Science and Engineering Ethics 9(2):159-170.

3. Center for the Study of Ethics in the Professions (2020): Ethics Codes Collection .

4. Davis M (1999): Writing a Code of Ethics. Perspectives on the Professions. 19 (1).

5. **Davis M (2007): Eighteen Rules for Writing a Code of Ethics. Science and Engineering Ethics 13(2): 171-189.**

6. **Frankel MS (1989): Professional Codes: Why, How and With What Impact? Journal of Business Ethics. 8: 109-115.**

7. Frankel MS (2003): Developing a Code of Ethics for Academics - Commentary on 'Ethics for All: Differences Across Scientific Society Codes' (Bullock and Panicker). Science and Engineering Ethics 9(2): 171-179.

8. Joyce NR, Rankin TJ (2010): The Lessons of the Development of the First APA Ethics Code: Blending Science, Practice, and Politics. Ethics and Behavior. 20(6): 466-481.

9. Luegenbiehl HC (1983): Codes of Ethics and the Moral Education of Engineers. Business and Professional Ethics Journal 2(4): 41-61.

10. McKinney JA, Emerson TL, Neubert MJ (2010): The Effects of Ethical Codes on Ethical Perceptions of Actions Towards Stakeholders. Journal of Business Ethics. 97: 505-516.

11. Schwartz MS (2003): The Development of a Model Code for Ethics Professionals. Professional Ethics 11: 3-16.

Group Policies

1. Executive Committee on Research (2009): Policy for Authorship on Scientific and Scholarly Publications. Washington University in St. Louis.

2. Faculty Council (1999): Authorship guidelines. Harvard Medical School.

3. Nosek B, Spies JR, Motyl M (2012): Scientific Utopia: II. Restructuring Incentives and Practices to Promote Truth over Publishability, Perspectives on Psychological Science. 7(6): 615-631.

4. **Schreier AA, Wilson K, Resnik D (2006): Academic Research Record-Keeping: Best Practices for Individuals, Group Leaders, and Institutions. Academic Medicine 81(1): 42–47.**

5. **Stanford University: Research Policy Handbook.**

6. University Court (2011): Research data management policy. University of Edinburgh.

General Resources

General Web Resources

1. **Making the Right Moves (Howard Hughes Medical Institute).**

2. **Online Ethics Center (National Academy of Engineering).**

3. **Project for Scholarly Integrity (Council of Graduate Schools)**

4. **Resources for Research Ethics Education (UC San Diego).**

6. Responsible Conduct of Research (RCR) for Postdocs (National Postdoctoral Association).

7. Singapore Statement on Research Integrity. 2nd World Conference on Research Integrity, 2010.

Texts on Research Ethics

1. Barnbaum DR, Byron M (2001): Research Ethics: Text and Readings, Prentice Hall, New Jersey.

2. **Bulger RE, Heitman E, Reiser SJ (2002): The Ethical Dimensions of the Biological and Health Sciences, Cambridge Univ. Press, NY.**

3. **Comstock G (2013): Research Ethics: A Philosophical Guide to the Responsible Conduct of Research, Cambridge University Press, NY**

4. D'Angelo J (2012): Ethics In Science: Ethical Misconduct in Scientific Research. CRC Press, Boca Raton, F.

5. Harris CE, Pritchard M, Rabins M (2008): Engineering Ethics: Concepts and Cases 4e. Wadsworth Publishing, Belmont CA.

6. Israel M, Hay I (2006): Research Ethics for Social Scientists. Sage Publications, Thousand Oaks.

7. Kovac J (2003): The Ethical Chemist: Professionalism and Ethics in Science. Prentice Hall.

8. **Macrina FL (2014): Scientific Integrity, ASM Press, 4th ed., Washington, D.C.**

9. **National Academies of Science (2009): On Being a Scientist: A Guide to Responsible Conduct in Research.**

10. Oliver P (2003): The Student's Guide to Research Ethics. Open University Press, NY.

11. Penslar RL, ed. (1995): Research Ethics: Cases and Materials. Indiana University Press, Bloomington.

12. Pritchard MS (2006): Professional Integrity: Thinking Ethically. Univ. Press of Kansas.

13. Shamoo AE, Resnik DB (2002): Responsible Conduct of Research, Oxford Univ. Press, NY.

14. Steneck NH (2004): ORI Introduction to the Responsible Conduct of Research.

15. Steward C N (2011): Research Ethics for Scientists: A Companion for Students. Wiley-Blackwell, Oxford.

Research Ethics Internet Courses

1. Responsible Conduct of Research (University of Pittsburgh).
2. Responsible Conduct in Research Instruction (Eastern Michigan University):

Courses for Research Ethics Instructors

1. Teaching Responsible Conduct of Research (RCR) Certificate program: National Center for Professional and Research Ethics.

Fostering Integrity in Research

1. IOM (2002): Integrity in Scientific Research: Creating an Environment That Promotes Responsible Conduct. National Academies Press, Washington, DC.

2. Kalichman MW (2007): Responding to challenges in educating for the responsible conduct of research. Academic Medicine 82(9): 870-875.

3. Martinson BC, Anderson MS, DeVries R (2005). Scientists Behaving Badly. *Nature* 435, 737-738 (9 June 2005) | doi: 10.1038/435737a; Published online 8 June 2005.

4. Martinson BC, Crain LA, De Vries R & Anderson MS (2010). The Importance of Organizational Justice in Ensuring Research Integrity. JERHRE, 67-83.

Integrating Ethics in the Curriculum or Discipline

1. Bebeau MJ (2002): Influencing the Moral Dimensions of Professional Practice: Implications for Teaching and Assessing for Research Integrity. In: Steneck NA and Scheetz MH (eds.): Proceedings of the First ORI Research Conference on Research Integrity. Office of Research Integrity, Washington, DC pp. 179–187.

2. Collaborative Development of Ethics Across the Curriculum Resources and Sharing of Best Practices, University of Puerto Rico at Mayaguez.

3. **Davis M (2004): Five Kinds of Ethics Across the Curriculum. Teaching Ethics 4(2): 1-11.**

4. **Davis M (2006). Integrating Ethics into Technical Courses: Micro-Insertion. Science and Engineering Ethics, 12, 717-730.**

5. **Drake M, Griffin P, Kirkman R, Swann J (2005): Engineering Ethical Curricula: Assessment and Comparison of Two Approaches. Journal of Engineering Education 94: 223-231.**

6. **Society for Ethics Across the Curriculum.**

7. **Teaching Ethics Across the Engineering Curriculum, Michael Davis, Illinois Institute of Technology.**

Mentoring and Responsible Conduct

1. **Anderson MS, Horn AS, Risbey KR, Ronning EA, DeVries R & Martinson BC (2007): What Do Mentoring and Training in the Responsible Conduct of Research Have To Do with Scientists' Misbehavior? Findings from a National Survey of NIH-Funded Scientists. Academic Medicine 82(9): 853-860.**

2. Anderson MS, Louis KS (1994): The graduate student experience and subscription to the norms of science. Res Higher Ed 35: 273–99.

3. Brown S, MW Kalichman (1998): Effects of training in the responsible conduct of research: A survey of graduate students in experimental sciences. Science and Engineering Ethics 4(4): 487-498.

4. Eastwood S, Derish P, Leash E, Ordway S (1996): Ethical issues in biomedical research: Perceptions and practices of postdoctoral research fellows responding to a survey. Science and Engineering Ethics 2: 89-114.

5. Fryer-Edwards K (2002). Addressing the Hidden Curriculum in Scientific Research. American Journal of Bioethics, 2(4): 58-59.

6. Kalichman M (2014). A Modest Proposal to Move RCR Education Out of the Classroom and into Research. Journal of Microbiology & Biology Education, 15(2), 93–95.

7. Peiffer AM, Laurenti PJ, Hugenschmidt CE (2008). Fostering a Culture of Responsible Lab Conduct. Science, 322: 1186

8. Plemmons DK, Kalichman MW (2013). Reported Goals of Instructors of Responsible Conduct of Research for Teaching of Skills. Journal of Empirical Research on Human Research Ethics : JERHRE, 8(2), 95–103. http://doi.org/10.1525/jer.2013.8.2.95.

9. **Swazey JP, Anderson MS (1996): Mentors, advisors, and role models in graduate and professional education. Association of Academic Health Centers, Washington, DC.**

10. **Whitbeck C (2001): Group mentoring to foster the responsible conduct of research. Science and Engineering Ethics 7: 541-558.**

11. Wright DE, Titus SL, Cornelison JB (2008): Mentoring and Research Misconduct: An Analysis of Research Mentoring in Closed ORI Cases. *Science and Engineering Ethics* 14(3): 323-336.

Mentoring

1. Macrina FL (2014): Chapter 3. Mentoring. In: (Macrina FL, au.) Scientific Integrity. An Introductory Text with Cases. 4th Edition, ASM Press, Washington, D.C.

2. **National Academy of Sciences, National Academy of Engineering, and Institute of Medicine (1997): Adviser, Teacher, Role Model, Friend: On Being a Mentor to Students in Science and Engineering. National Academy Press, Washington, D.C., 84 pp.**

3. National Institutes of Health: A Guide to Training and Mentoring in the Intramural Research Program at NIH.

4. University of Michigan (2010): How to Get the Mentoring You Want: A Guide for Graduate Students, Rackham Graduate School.

5. **University of Michigan (2011): How to Mentor Graduate Students: A Guide for Faculty. Rackham Graduate School.**

6. University of Wisconsin: Resources for Each Phase of the Mentoring Relationship.

Readings for Students about Science and Ethics

1. Angier N, Thomas L (1999): Natural Obsessions: Striving to Unlock the Deepest Secrets of the Cancer Cell. Mariner Books.

2. Barker K (2002): At the Helm: A Laboratory Navigator. Cold Spring Harbor Laboratory Press.

3. Barker K (2005): At the Bench: A Laboratory Navigator. Cold Spring Harbor Laboratory Press.

4. Beveridge WIB (1950): The Art of Scientific Investigation. Vintage Books, New York.

5. Bishop JM (2003): How to Win the Nobel Prize: An Unexpected Life in Science. Harvard University Press.

6. Feibelman PJ (1993): A Ph.D. is Not Enough: A Guide to Survival in Science. Addison-Wesley, Reading, MA.

7. Grinnell F (2008): The Everyday Practice of Science Oxford University Press.

8. Gunsalus CK (2012): The Young Professional's Survival Guide: From Cab Fares to Moral Snares. Harvard University Press.

9. Kanigel R (1993): Apprentice to Genius: The Making of a Scientific Dynasty. Johns Hopkins University Press.

10. **Kennedy D (1997): Academic Duty. Harvard University Press.**

11. Lang JM (2005): Life on the Tenure Track: Lessons from the First Year. Johns Hopkins University Press, Baltimore.

12. Medawar PB (1979): Advice to a Young Scientist. Harper & Row, Philadelphia.

13. Ramon y Cajal S (1999): Advice for a Young Investigator. MIT Press.

14. Selye H (1964): From Dream to Discovery: On Being a Scientist. McGraw-Hill, New York.

15. Schoenfeld C (1992): Mentor in a manual: climbing the academic ladder to tenure. Magna Publications, Madison, WI.

16. Sindermann CJ (1987): Survival Strategies of New Scientists. Plenum Press, New York.

17. Skloot R (2010): The Immortal Life of Henrietta Lacks. Crown.

18. Slack JMW (1998): Egg and Ego: An Almost True Story of Life in the Biology Lab. Springer Press.

19. Sutton RI (2007): The No Asshole Rule: Building a Civilized Workplace and Surviving One That Isn't. Business Plus.

Rights

Resource Type

Instructor Materials

Topics

Mentors and Trainees

Discipline(s)

Research Ethics
Teaching Ethics in STEM