Responsible Conduct of Research (year 1)

The first-year seminar is joined weekly by a faculty mentor (from the Pharmacology, Pathology and Molecular Medicine, Physiology and PTB Departments) and outside experts. The students and faculty instructor for each session take equal responsibility in selecting case studies and teaching. The case study approach is based on primary literature, reviews, and two texts: Francis Macrina's *Scientific Integrity* and Kathy Barker's *At the Bench.*

Each week, students are required to submit a reaction paper discussing the reading assignment. Because the class is structured to foster discussion, each student is asked to write a question for each class based on the readings and topic of the week. The student is told to be ready to raise the question in class. Students take turns leading the class discussion. The final assignment consists of a 5-page paper on a hot topic in bioethics. The students must attend all 10 sessions.

Week 1: Topic: Choosing a Mentor, the dynamics of the mentor/student relationship and the factors to consider in choosing a mentor. Also discuss the qualities of good advice.
Faculty: Dr. Samuel Katz

Week 2: Topic: Research with Humans, The ethical responsibilities toward volunteers in human research. What considerations must be made for children, the mentally ill or cognitively compromised?
Faculty: Dr. Ian Odell

Week 3: Topic: Research with Animals, Is use of animals in research justifiable? How should research animals be treated? What are the existing guidelines?
Faculty: Pat Preisig

Week 4: Topic: Authorship Responsibility and Collaborative Research. How is authorship determined? Who has the final say? What contributions warrant authorship? What is plagiarism?
Faculty: Dr. Claudio Alarcon

Week 5: Topic: Communicating Science to Nonscientists. What are the responsibilities of scientists and science writers for educating the public about science? How can these two groups interact successfully to convey science news to the layperson accurately?
Faculty: Dr. Robert Bazell

Week 6: Topic: Science and Controversies. What makes research controversial? How can we justify the pursuit of potentially problematic fields of study? Is it possible to create a set of rules to ensure ethical conduct in these research areas?
Faculty: Dr. Jon Demb

Week 7: Topic: Lab Dynamics. Discuss relationships and dynamics of a lab. What sorts of problems may arise between members of a lab? What are effective strategies for addressing these problems?
Faculty: Dr. Barbara Ehrlich

Week 8: Topic: Research-Related Issues Impacting Communities of Color
Faculty: Dr. Ayah Nuriddin

Week 9: Topic: Rigor and Reproducibility. How to conduct a comprehensive and critical literature review. How to optimally maintain a lab notebook to transparently record day-to-day research activities. How to generate an authentication plan for key biological or chemical resources
Faculty: Dr. Daniel Vatner

Week 10: Topic: Scientific Fraud. What guidelines are available for record-keeping, and can they prevent sloppy science? What are the rules for retracting a fraudulent publication?
Faculty: Dr. Karin Finberg

Responsible Conduct of Research (year 4)

As mandated by the NIH, all trainees receive a refresher in ethics in their fourth year. The 4th year RCR course has established a four-part re-training experience. Fourth year Trainees participate in a re-training program, which involves four two-hour lectures totaling eight contact hours focused on ethical considerations such as authorship, data manipulation, plagiarism, data falsification, civility issues in research environments and mentee and mentor responsibilities. All students are required to attend all four 2-hour sessions.

Week 1: Topic: Discuss responsible authorship, publication, and peer review.
Faculty: Dr. Megan King

Week 2: Topic: Data management—from acquisition to publication and sharing.
Faculty: Dr. Wei Hu

Week 3: Topic: Discuss mentor-mentee relationships and responsible conduct in the lab.
Faculty: Dr. Ya Chi-Ho

Week 4: Topic: Responsible data analysis and responsible data analysis collaborations.
Faculty: Dr. Edward Stites