**PLAN FOR INSTRUCTION IN THE RESPONSIBLE CONDUCT OF RESEARCH**

**REMOVE THIS SECTION AFTER EDITING**

**(You may use this boilerplate freely. Be sure to customize it to match your other training plan documents and the specific requirements of your funding agency. For individual applicants, feel free to edit this document to your own voice, however, the areas highlighted in green include critical information that NIH will use to judge whether your RCR training plan meets NIH requirements, do not remove.)**

Scientific integrity and ethics are an essential component of my scientific training. To facilitate my development as a responsible member of the science and research community and as a mentor capable of establishing a culture of responsible conduct in my future mentees, I have included both formal and informal RCR instruction in my training plan, as presented below.

**Formal Training in Responsible Conduct in Research**

**YEAR 1 Course – C234: Ethics and Accountability in Biomedical** **Research** (Instructors: Dr. Lynn Talton and faculty discussants). This course in Biomedical Research Ethics and Responsible Conduct in Research is designed for trainees in laboratory and computational biosciences disciplines. Trainees are required to attend ten 2-hour sessions, which start with an introductory didactic presentation and discussion, followed by faculty-led case study discussion, in small groups of 10-12 trainees. The faculty members from the participating training programs actively participate as small-group discussion leaders, exposing the students to a number of different perspectives and interpretations of these difficult issues. The class presentations are supported by reading assignments from selections such as *On Being a Scientist*, National Academies Press, *Making the Right Moves*, from the Howard Hughes Medical Institute, and other additional articles. Trainees are asked to present case-studies within their small groups, while the discussion is led by the faculty mentor. Directed discussion is the primary mode of learning, although the course also contains more formal didactic instruction. The course introduces standard and ethical practices in biomedical and life sciences, with emphasis on responsibilities in research activities.

* The **course format** consists of mixture of didactic instruction and small-group discussions around case-studies. The instructor or invited guest speaker will present briefly on the topic of discussion, and then students break into groups of 10-12, to be led by faculty members from the participating training programs. Each student is asked to present a case to the group each session, followed by group discussion of the ethical and practical considerations of each case.
* The **course subject matter** includes standard and ethical practices in the life sciences, with emphasis on responsibilities in research activities, including: research misconduct, malfeasance, and whistle-blowing, questionable research practices, data management - i.e., data acquisition, record-keeping, retention, ownership, security, analysis, interpretation, and sharing; responsible authorship and publication; peer review and open and confidential review standards; conflicts of interest and commitment; mentor/mentee responsibilities and relationships; collaborative research across research groups, with industry and internationally; policies regarding laboratory safety, biosafety, and dual use research of concern; animal and human subjects; maintaining safe and inclusive research environments which promote equity, mental health and wellness and combat discrimination, bias and harassment; views about scientists as responsible members of society; social and environmental impacts of research; and contemporary ethical issues in biomedical research.
* The **course faculty participation** consists of leadership of the small-group case-study discussions. Faculty participants attend the didactic portion of the class and are asked to comment upon the presented material. Then, they lead their group of 10-12 students in discussions of related case-studies. There are opportunities for 70 faculty mentors to participate as a small group leader during the course, and faculty mentor involvement is rotated among the participating training programs so that each program contributes every year and every faculty mentor has a chance to regularly participate.
* The **course duration** is 10 weeks of 2-hour classes offered each Spring quarter, 20 total hours. The **course frequency** is the full C234 course during the first year of training and a refresher course in the fourth year of training.

The Year 1 course introduces the RCR topics from the perspective of a trainee navigating the training environment and mentored research, the Year 4 formal training, RCR Refresher Course, is taught with the goal of training developing mentors. Participating students are senior trainees in their laboratory group that mentor more junior trainees and most are aspiring faculty mentors. Through the course, trainees develop a playbook of best practices for establishing a culture of responsible conduct of research for their mentees, while reviewing the RCR topics with a more mature perspective from that in Year 1 training.

**Year 4 - Responsible Conduct of Research Refresher Course** (Instructors: Dr. Lynn Talton and Faculty discussants) The RCR Refresher course is based on the formal C234 introductory course, but the cases and examples are more nuanced, reflecting the greater maturity and experience of the participants. Each module has a course packet that contains case-studies, thought exercises, discussion topics and the opportunity to crowd-source best practices from the participants, instructor and faculty discussant. The format of the discussion is designed to be similar to the *NRMN/CIMER Entering Mentoring* training program, but with an RCR perspective. At the end of each module, the packet is updated with the best practices and samples developed by the group and shared back with the students to take as a handbook to use in their mentoring practice. The refresher course has the following changes from the formal course:

The **refresher course format** is a small class of 15-20 trainees in directed discussion of case studies. The discussion is led by the instructor and a guest faculty mentor. The **refresher course duration** is 8 modules of 1.5 hours each (12 total hours of training). The **refresher** **course frequency** is once in the fourth year of training following the full, formal C234 course in the first year of training. The **refresher course subject** matter covers the same topics as C234, but from a mentorship perspective: research misconduct; questionable research practices, data acquisition, analysis, security, and management; responsible presentation of data and descriptive statistics; responsible authorship and publication; peer review; conflicts of interest and commitment; mentor/mentee responsibilities and relationships; collaborative science across research groups, industries and borders; civility issues in research environments; laboratory safety, biosafety, and dual use research of concern; animal and human subjects; maintaining a safe and inclusive research environment, scientists as responsible members of society; social and environmental impacts of research; and contemporary ethical issues in biomedical research. The **refresher course faculty** participation includes one active faculty mentor co-leading the discussion during each module (8 faculty participants per 15-20 trainees).

**Synergy with Rigor and Reproducibility Training**

I will take both RCR and Rigor and Reproducibility courses during my first year of training, which are designed to be complementary. For example, the Rigor and Reproducibility course covers the ethical presentation of data and use of descriptive statistics, and the RCR course covers the importance of laboratory safety and responsible use of animals and humans in research as part of rigorous science.

**Further Training in the Responsible Conduct of Research and Reproducibility**

I also receive informal training in responsible conduct of research and reproducibility through several mechanisms. Primarily, through [monthly] meetings with [mentor/program/etc.] in which I have the opportunity to present my research and get feedback and advice on steering my project toward rigorous, reproducible science that is high quality. My faculty mentor participates in the RCR training courses to refresh [his/her/their] expertise, to assess the current level of understanding of trainees, and to lend [his/her/their] perspective and experience to the training. I work in a collaborative environment among more senior researchers that have also received responsible conduct in research training and can provide a model for ethical science. These principles are further enforced in venues such as research presentations, laboratory meetings, departmental seminars, and career development events. Because I participate in research involving [animal subjects, humans, or agents with biosafety considerations], I have participated in UCLA-required training and received certification before I began any work in these areas. Also, UCLA’s career development training seminars often include career-related topics in ethics, e.g. mentor/mentee responsibilities, fostering scientific rigor and reproducibility, maintaining good scientific notes or laboratory notebooks, intellectual property and technology transfer, and ethical issues at the frontiers of science and medicine.