

## Compact Between Postdoctoral Appointees and Their Mentors

Postdoctoral training is an integral component of the preparation of scientists for career advancement as scientific professionals. Postdoctoral appointees typically join an institution to further their training in a chosen discipline after recently obtaining their terminal degree (e.g., Ph.D., M.D., D.V.M.). This training is conducted in an apprenticeship mode where she/he works under the supervision of an investigator who is qualified to fulfill the responsibilities of a mentor. The postdoctoral appointee may undertake scholarship, research, service, and teaching activities that together provide a training experience essential for career advancement.

### Core Tenets of Postdoctoral Training

#### Institutional Commitment

Institutions that train postdoctoral appointees must be committed to maintaining the highest standards of training and to providing a program sufficient to ensure, that when completed, the trainee can function independently as a scientific professional. Institutional oversight must be provided for terms of appointment, salary, benefits, grievance procedures, and other matters relevant to the support of postdoctoral appointees. A responsible institutional official must be designated to provide this oversight, and a suitable office should be available for the administrative support of postdoctoral affairs.

#### Quality Postdoctoral Training

Individuals should be trained to independently formulate meaningful hypotheses, design and conduct interpretable experiments, adhere to good laboratory practices, analyze results critically, understand the broad significance of their research findings, and uphold the highest ethical standards in research. The development of additional skills—including oral and written communication, grant writing, and laboratory management—are considered integral to this training.

#### Importance of Mentoring in Postdoctoral Training

Effective mentoring is critical for postdoctoral training and requires that the primary mentor dedicate substantial time to ensure personal and professional development. A good mentor builds a relationship with the trainee that is characterized by mutual respect and understanding. Attributes of a good mentor include being approachable, available, and willing to share his/her knowledge; listening effectively; providing encouragement and constructive criticism; and offering expertise and guidance.

#### Foster Breadth and Flexibility in Career Choices

Postdoctoral appointees must have training experiences of sufficient breadth to ensure that they are prepared to pursue a wide range of professional career options. Effective and regular career guidance is essential and should be provided by the mentor and the institution.

## Commitments of Postdoctoral Appointees

- **I acknowledge that I have the primary responsibility for the development of my own career.** I recognize that I must take a realistic look at career opportunities and follow a path that matches my individual skills, values, and interests.
- **I will develop a mutually defined research project with my mentor that includes well-defined goals and timelines.** Ideally, this project should be outlined and agreed upon at the time of the initial appointment.
- **I will perform my research activities conscientiously, maintain good research records, and catalog and maintain all tangible research materials that result from the research project.**
- **I will respect all ethical standards when conducting my research including compliance with all institutional and federal regulations as they relate to responsible conduct in research, privacy and human subjects research, animal care and use, laboratory safety, and use of radioisotopes.** I recognize that this commitment includes asking for guidance when presented with ethical or compliance uncertainties and reporting on breeches of ethical or compliance standards by me and/or others.
- **I will show respect for and will work collegially with my coworkers, support staff, and other individuals with whom I interact.**
- **I will endeavor to assume progressive responsibility and management of my research project(s) as it matures.** I recognize that assuming responsibility for the conduct of research projects is a critical step on the path to independence.
- **I will seek regular feedback on my performance and ask for a formal evaluation at least annually.**
- **I will have open and timely discussions with my mentor concerning the dissemination of research findings and the distribution of research materials to third parties.**
- **I recognize that I have embarked on a career requiring “lifelong learning.”** To meet this obligation I must stay abreast of the latest developments in my specialized field through reading the literature, regular attendance at relevant seminar series, and attendance at scientific meetings.
- **I will actively seek opportunities outside the laboratory (e.g. professional development seminars and workshops in oral communication, scientific writing, and teaching) to develop the full set of professional skills necessary to be successful for my chosen career.**
- **At the end of my appointment, in accordance with institutional policy, I will leave behind all original notebooks, computerized files, and tangible research materials so that other individuals can carry on related research. I will also work with my mentor to submit the research results for publication in a timely manner.** I can make copies of my notebooks and computerized files, and have access to tangible research materials which I helped to generate during my postdoctoral appointment according to institutional policy.

## Commitments of Mentors

- **I acknowledge that the postdoctoral period is a time of advanced training intended to develop the skills needed to promote the career of the postdoctoral appointee.**
- **I will ensure that a mutually agreed upon set of expectations and goals are in place at the outset of the postdoctoral training period, and I will work with the postdoctoral appointee to create an individual career development plan.**
- **I will strive to maintain a relationship with the postdoctoral appointee that is based on trust and mutual respect.** I acknowledge that open communication and periodic formal performance reviews, conducted at least annually, will help ensure that the expectations of both parties are met.
- **I will promote all ethical standards for conducting research including compliance with all institutional and federal regulations as they relate to responsible conduct in research, privacy and human subjects research, animal care and use, laboratory safety, and use of radioisotopes.** I will clearly define expectations for conduct of research in my lab and make myself available to discuss ethical concerns as they arise.
- **I will ensure that the postdoctoral appointee has sufficient opportunities to acquire the skills necessary to become an expert in an agreed upon area of investigation.**
- **I will provide the appointee with the required guidance and mentoring, and will seek the assistance of other faculty and departmental/institutional resources when necessary.** Although I am expected to provide guidance and education in technical areas, I recognize that I must also educate the postdoctoral appointee by example and by providing access to formal opportunities/programs in complementary areas necessary for a successful career.
- **I will provide a training environment that is suited to the individual needs of the postdoctoral appointee in order to ensure his/her personal and professional growth.** I will encourage a progressive increase in the level of responsibility and independence to facilitate the transition to a fully independent career.
- **I will encourage the interaction of the postdoctoral appointee with fellow scientists both intra- and extramurally and encourage the appointee's attendance at professional meetings to network and present research findings.**
- **I will ensure that the research performed by a postdoctoral appointee is submitted for publication in a timely manner and that she/he receives appropriate credit for the work she/he performs.** I will acknowledge her/his contribution to the development of any intellectual property and will clearly define future access to tangible research materials according to institutional policy.

- **I recognize that there are multiple career options available for a postdoctoral appointee and will provide assistance in exploring appropriate options.** I recognize that not all postdoctoral appointees will become academic faculty. To prepare a postdoctoral appointee for other career paths, I will direct her/him to the resources that explore non-academic careers, and discuss these options.
- **I will commit to being a supportive colleague to postdoctoral appointees as they transition the next stage of their career and to the extent possible, throughout their professional life.** I recognize that the role of a mentor continues after the formal training period.

*This compact serves both as a pledge and a reminder to mentors and their postdoctoral appointees that their conduct in fulfilling their commitments to one another should reflect the highest professional standards and mutual respect.*

## Example Compact for Postdocs from Laboratory of Dr. Jo Handelsman, Yale University

*This compact can be used to align expectations around research projects and career development.  
The primary goal is for the mentor and mentee to agree on timelines and progress milestones.*

Name \_\_\_\_\_

### Lab Planning Document for Post-Doctoral Scholars

#### Annual Planning Document

#### 1. Current Research Activities

Project Title	Central Hypothesis	Key Experiments	Collaborators

#### 2. Publications

Paper title	Authors	Target journal	Main point	Target submission date

#### 3. Grants

Agency/ Program	Project Goal	Specific Aims	Target submission date

#### 4. Career goals and training

Ideal job description	Training to attain ideal job	Needs to attain goals

#### 5. Training plan for the next year

## **Compact Between Biomedical Graduate Students and Their Research Advisors**

Pre-doctoral training entails both formal education in a specific discipline and an apprenticeship in which the graduate student trains under the supervision of one or more investigators who are qualified to fulfill the responsibilities of a mentor. A positive mentoring relationship between the pre-doctoral student and the research advisor is a vital component of the student's preparation to become not only an independent and successful research scientist but also an effective mentor to future graduate students.

Individuals who pursue a biomedical graduate degree are expected to take responsibility for their own scientific and professional development. Faculty who advise students are expected to fulfill the responsibilities of a mentor, including the provision of scientific training, guidance, instruction in the responsible conduct of research and research ethics, and financial support. The faculty advisor also performs a critical function as a scientific role model for the graduate student.

### **Core Tenets of Pre-doctoral Training**

#### **Institutional Commitment**

Institutions that train biomedical graduate students must be committed to establishing and maintaining high-quality training programs with the highest scientific and ethical standards. Institutions should work to ensure that students who complete their programs are well-trained and possess the foundational skills and values that will allow them to mature into independent scientific professionals of integrity. Institutions should provide oversight for the length of study, program integrity, stipend levels, benefits, grievance procedures, and other matters relevant to the education of graduate students. Additionally, they should recognize and reward their graduate training faculty.

#### **Program Commitment**

Graduate programs should endeavor to establish graduate training programs that provide students with the skills necessary to function independently in a scientific setting by the time they graduate. Programs should strive to maintain scientifically relevant course offerings and research opportunities. Programs should establish clear parameters for outcomes assessment and closely monitor the progress of graduate students during their course of study.

#### **Quality Mentoring**

Effective mentoring is crucial for graduate school trainees as they begin their scientific careers. Faculty mentors must commit to dedicating substantial time to graduate students to ensure their scientific, professional and personal development. A relationship of mutual trust and respect should be established between mentors and graduate students to foster healthy interactions and encourage individual growth. Effective mentoring should include teaching the scientific method, providing regular feedback in the form of praise and constructive

criticism to foster individual growth, teaching the “ways” of the scientific enterprise, and promoting students’ careers by providing appropriate opportunities. Additionally, good graduate school mentors should be careful listeners, actively promote and appreciate diversity, possess and consistently exemplify high ethical standards, recognize the contributions of students in publications and intellectual property, and have a strong record of research accomplishments and financial support.

**Provide Skills Sets and Counseling that Support a Broad Range of Career Choices**

The institution, training programs, and mentor should provide training relevant to academic, industrial, and research careers that will allow their graduate students to appreciate, navigate, discuss, and develop their career choices. Effective and regular career guidance activities should be provided, including exposure to academic and non-academic career options.

## Commitments of Graduate Students

- **I acknowledge that I have the primary responsibility for the successful completion of my degree.** I will be committed to my graduate education and will demonstrate this by my efforts in the classroom and the research laboratory. I will maintain a high level of professionalism, self-motivation, engagement, scientific curiosity, and ethical standards.
- **I will meet regularly with my research advisor and provide him/her with updates on the progress and results of my activities and experiments.**
- **I will work with my research advisor to develop a thesis/dissertation project.** This will include establishing a timeline for each phase of my work. I will strive to meet the established deadlines.
- **I will work with my research advisor to select a thesis/dissertation committee.** I will commit to meeting with this committee at least annually (or more frequently, according to program guidelines). I will be responsive to the advice of and constructive criticism from my committee.
- **I will be knowledgeable of the policies and requirements of my graduate program, graduate school, and institution.** I will commit to meeting these requirements, including teaching responsibilities.
- **I will attend and participate in laboratory meetings, seminars and journal clubs that are part of my educational program.**
- **I will comply with all institutional policies, including academic program milestones.** I will comply with both the letter and spirit of all institutional safe laboratory practices and animal-use and human-research policies at my institution.
- **I will participate in my institution's Responsible Conduct of Research Training Program and practice those guidelines in conducting my thesis/dissertation research.**
- **I will be a good lab citizen.** I will agree to take part in shared laboratory responsibilities and will use laboratory resources carefully and frugally. I will maintain a safe and clean laboratory space. I will be respectful of, tolerant of, and work collegially with all laboratory personnel.
- **I will maintain a detailed, organized, and accurate laboratory notebook.** I am aware that my original notebooks and all tangible research data are the property of my institution but that I am able to take a copy of my notebooks with me after I complete my thesis/dissertation.
- **I will discuss policies on work hours, sick leave and vacation with my research advisor.** I will consult with my advisor and notify fellow lab members in advance of any planned absences.
- **I will discuss policies on authorship and attendance at professional meetings with my research advisor.** I will work with my advisor to submit all relevant research results that are ready for publication in a timely manner prior to my graduation.
- **I acknowledge that it is primarily my responsibility to develop my career following the completion of my doctoral degree.** I will seek guidance from my research advisor, career counseling services, thesis/dissertation committee, other mentors, and any other resources available for advice on career plans.



## Commitments of Research Advisors

- **I will be committed to the life-long mentoring of the graduate student.** I will be committed to the education and training of the graduate student as a future member of the scientific community.
- **I will be committed to the research project of the graduate student.** I will help to plan and direct the graduate student's project, set reasonable and attainable goals, and establish a timeline for completion of the project. I recognize the possibility of conflicts between the interests of externally funded research programs and those of the graduate student, and will not let these interfere with the student's pursuit of his/her thesis/dissertation research.
- **I will be committed to meeting one-on-one with the student on a regular basis.**
- **I will be committed to providing financial resources for the graduate student as appropriate or according to my institution's guidelines, in order for him/her to conduct thesis/dissertation research.**
- **I will be knowledgeable of, and guide the graduate student through, the requirements and deadlines of his/her graduate program as well as those of the institution, including teaching requirements and human resources guidelines.**
- **I will help the graduate student select a thesis/dissertation committee.** I will assure that this committee meets at least annually (or more frequently, according to program guidelines) to review the graduate student's progress.
- **I will lead by example and facilitate the training of the graduate student in complementary skills needed to be a successful scientist, such as oral and written communication skills, grant writing, lab management, animal and human research policies, the ethical conduct of research, and scientific professionalism.** I will encourage the student to seek opportunities in teaching, if not required by the student's program.
- **I will expect the graduate student to share common laboratory responsibilities and utilize resources carefully and frugally.**
- **I will not require the graduate student to perform tasks that are unrelated to his/her training program and professional development.**
- **I will discuss authorship policies regarding papers with the graduate student.** I will acknowledge the graduate student's scientific contributions to the work in my laboratory, and I will work with the graduate student to publish his/her work in a timely manner prior to the student's graduation.
- **I will discuss intellectual policy issues with the student with regard to disclosure, patent rights and publishing research discoveries.**
- **I will encourage the graduate student to attend scientific/professional meetings and make an effort to secure and facilitate funding for such activities.**
- **I will provide career advice and assist in finding a position for the graduate student following his/her graduation.** I will provide honest letters of recommendation for his/her next phase of professional development. I will also be accessible to give advice and feedback on career goals.



- **I will provide for every graduate student under my supervision an environment that is intellectually stimulating, emotionally supportive, safe, and free of harassment.**
- **Throughout the graduate student's time in my laboratory, I will be supportive, equitable, accessible, encouraging, and respectful.** I will foster the graduate student's professional confidence and encourage critical thinking, skepticism and creativity.

**Example Compact from Laboratory of Dr. Trina McMahon for Graduate Students,  
University of Wisconsin-Madison**

## **MENTOR-MENTEE CONTRACT**

### **THE BROAD GOALS OF MY RESEARCH PROGRAM**

As part of my job as a professor, I am expected to write grants and initiate research that will make tangible contributions to science, the academic community, and to society. You will be helping me carry out this research. It is imperative that we carry out good scientific method, and conduct ourselves in an ethical way. We must always keep in mind that the ultimate goal of our research is publication in scientific journals. Dissemination of the knowledge we gain is critical to the advancement of our field. I also value outreach and informal science education, both in the classroom and while engaging with the public. I expect you to participate in this component of our lab mission while you are part of the lab group.

### **WHAT I EXPECT FROM YOU**

Another part of my job as a professor is to train and advise students. I must contribute to your professional development and progress in your degree. I will help you set goals and hopefully achieve them. However, I cannot do the work for you. In general, I expect you to:

- Learn how to plan, design, and conduct high quality scientific research
- Learn how to present and document your scientific findings
- Be honest, ethical, and enthusiastic
- Be engaged within the research group and at least two programs on campus
- Treat your lab mates, lab funds, equipment, and microbes with respect
- Take advantage of professional development opportunities
- Obtain your degree
- Work hard – don't give up!

### **☉ You will take ownership over your educational experience**

- ✓ **Acknowledge that you have the primary responsibility for the successful completion of your degree.** This includes commitment to your work in classrooms and the laboratory. You should maintain a high level of professionalism, self-motivation, engagement, scientific curiosity, and ethical standards.
- ✓ **Ensure that you meet regularly with me and provide me with updates on the progress and results of your activities and experiments.** Make sure that you also use this time to communicate new ideas that you have about your work and challenges that you are facing. Remember: I cannot address or advise about issues that you do not bring to my attention.
- ✓ **Be knowledgeable of the policies, deadlines, and requirements of the graduate program, the graduate school, and the university.** Comply with all institutional policies, including academic program milestones, laboratory practices, and rules related to chemical safety, biosafety, and fieldwork.
- ✓ **Actively cultivate your professional development.** UW-Madison has outstanding resources in place to support professional development for students. I expect you to take full advantage of these resources, since part of becoming a successful engineer or scientist involves more than just doing academic research. You are expected to make continued progress in your development as a teacher, as an ambassador to the general public representing the University and your discipline, with respect to your networking skills, and as an engaged member of broader professional organizations. The Graduate School has a regular seminar series related to professional development. The Delta Program offers formalized training in the integration of

research, teaching, and learning. All graduate degree programs require attendance at a weekly seminar. Various organizations on campus engage in science outreach and informal education activities. Attendance at conferences and workshops will also provide professional development opportunities. When you attend a conference, I expect you to seek out these opportunities to make the most of your attendance. You should become a member of one or more professional societies such as the Water Environment Federation, the American Society for Microbiology, or the American Society for Limnology and Oceanography.

### ☉ *You will be a team player*

- ✓ **Attend and actively participate in all group meetings, as well as seminars that are part of your educational program.** Participation in group meetings does not mean only presenting your own work, but providing support to others in the lab through shared insight. You should refrain from using your computer, Blackberry, or iPhone during research meetings. Even if you are using the device to augment the discussion, it is disrespectful to the larger group to have your attention distracted by the device. Do your part to create a climate of engagement and mutual respect.
- ✓ **Strive to be the very best lab citizen.** Take part in shared laboratory responsibilities and use laboratory resources carefully and frugally. Maintain a safe and clean laboratory space where data and research participant confidentiality are protected. Be respectful, tolerant of, and work collegially with all laboratory colleagues: respect individual differences in values, personalities, work styles, and theoretical perspectives.
- ✓ **Be a good collaborator.** Engage in collaborations within and beyond our lab group. Collaborations are more than just publishing papers together. They demand effective and frequent communication, mutual respect, trust, and shared goals. Effective collaboration is an extremely important component of the mission of our lab.
- ✓ **Leave no trace.** As part of our collaborations with the Center for Limnology and other research groups, you will often be using equipment that does not belong to our lab. I ask that you respect this equipment and treat it even more carefully than our own equipment. Always return it as soon as possible in the same condition you found it. If something breaks, tell me right away so that we can arrange to fix or replace it. Don't panic over broken equipment. Mistakes happen. But it is not acceptable to return something broken or damaged without taking the steps necessary to fix it.
- ✓ **Acknowledge the efforts of collaborators.** This includes other members of the lab as well as those outside the lab. Don't forget important individuals like Dave Harring at the CFL and Jackie Cooper at CEE.

### ☉ *You will develop strong research skills*

- ✓ **Take advantage of your opportunity to work at a world-class university by developing and refining stellar research skills.** I expect that you will learn how to plan, design, and conduct high quality scientific research.
- ✓ **Challenge yourself by presenting your work at meetings and seminars as early as you can and by preparing scientific articles that effectively present your work to others in the field.** The 'currency' in science is published papers, they drive a lot of what we do and because our lab is supported by taxpayer dollars we have an obligation to complete and disseminate our findings. I will push you to publish your research as you move through your training program, not only at the end. Students pursuing a Masters degree will be expected to author or make major contributions to at least one journal paper submission. Students pursuing a doctoral degree will be expected to be lead author on at least two journal papers submissions, preferably three or four.
- ✓ **Keep up with the literature so that you can have a hand in guiding your own research.** Block at least one hour per week to peruse current tables of contents for journals or do literature searches. Participate in journal clubs. Better yet, organize one!

✓ **Maintain detailed, organized, and accurate laboratory records.** Be aware that your notes, records and all tangible research data are my property as the lab director. When you leave the lab, I encourage you to take copies of your data with you. But one full set of all data must stay in the lab, with appropriate and accessible documentation. Regularly backup your computer data to the Bacteriology Elizabeth McCoy server (see the wiki for more instructions).

✓ **Be responsive to advice and constructive criticism.** The feedback you get from me, your colleagues, your committee members, and your course instructors is intended to improve your scientific work.

⊙ ***You will work to meet deadlines***

✓ **Strive to meet deadlines: this is the only way to manage your progress.** Deadlines can be managed in a number of ways, but I expect you to work your best to maintain these goals. We will establish mutually agreed upon deadlines for each phase of your work during one-on-one meetings at the beginning of each term. For graduate students, there is to be a balance between time spent in class and time spent on research and perhaps on outreach or teaching. As long as you are meeting expectations, you can largely set your own schedule. It is your responsibility to talk with me if you are having difficulty completing your work and I will consider your progress unsatisfactory if I need to follow-up with you about completion of your lab or coursework.

✓ **Be mindful of the constraints on my time.** When we set a deadline, I will block off time to read and respond to your work. If I do not receive your materials, I will move your project to the end of my queue. Allow a minimum of one week prior to submission deadlines for me to read and respond to short materials such as conference abstracts and three weeks for me to work on manuscripts or grant proposals. Please do not assume I can read materials within a day or two, especially when I am traveling.

⊙ ***You will communicate clearly***

✓ **Remember that all of us are “new” at various points in our careers.** If you feel uncertain, overwhelmed, or want additional support, please overtly ask for it. I welcome these conversations and view them as necessary.

✓ **Let me know the style of communication or schedule of meetings that you prefer.** If there is something about my mentoring style that is proving difficult for you, please tell me so that you give me an opportunity to find an approach that works for you. No single style works for everyone; no one style is expected to work all the time. Do not cancel meetings with me if you feel that you have not made adequate progress on your research; these might be the most critical times to meet with a mentor.

✓ **Be prompt.** Respond promptly (in most cases, within 48 hours) to emails from anyone in our lab group and show up on time and prepared for meetings. If you need time to gather information in response to an email, please acknowledge receipt of the message and indicate when you will be able to provide the requested information.

✓ **Discuss policies on work hours, sick leave and vacation with me directly.** Consult with me and notify fellow lab members in advance of any planned absences. Graduate students can expect to work an average of 50 hours per week in the lab; post-docs and staff at least 40 hours per week. I expect that most lab members will not exceed two weeks of personal travel away from the lab in any given year. Most research participants are available during University holidays, so all travel plans, even at the major holidays, must be approved by me before any firm plans are made. I believe that work-life balance and vacation time are essential for creative thinking and good health and encourage you to take regular vacations. Be aware, however, that there will necessarily be epochs – especially early in your training—when more effort will need to be devoted to work and it may not be ideal to schedule time away. This includes the field season, for students/post-docs working on the lakes.

- ✓ **Discuss policies on authorship and attendance at professional meetings with me before beginning any projects to ensure that we are in agreement.** I expect you to submit relevant research results in a timely manner. Barring unusual circumstances, it is my policy that students are first-author on all work for which they took the lead on data collection and preparation of the initial draft of the manuscript.
- ✓ **Help other students with their projects and mentor/train other students.** This is a valuable experience! Undergraduates working in the lab should be encouraged to contribute to the writing of manuscripts. If you wish to add other individuals as authors to your papers, please discuss this with me early on and before discussing the situation with the potential co-authors.

#### WHAT YOU SHOULD EXPECT FROM ME

- ✓ **I will work tirelessly** for the good of the lab group; the success of every member of our group is my top priority, no matter their personal strengths and weaknesses, or career goals.
- ✓ **I will be available for regular meeting and informal conversations.** My busy schedule requires that we plan in advance for meetings to discuss your research and any professional or personal concerns you have. Although I will try to be available as much as possible for “drop in business”, keep in mind that I am often running to teach a class or to a faculty meeting and will have limited time.
- ✓ **I will help you navigate your graduate program of study.** As stated above, you are responsible for keeping up with deadlines and being knowledgeable about requirements for your specific program. However, I am available to help interpret these requirements, select appropriate coursework, and select committee members for your oral exams.
- ✓ **I will discuss data ownership and authorship policies regarding papers with you.** These can create unnecessary conflict within the lab and among collaborators. It is important that we communicate openly and regularly about them. Do not hesitate to voice concerns when you have them.
- ✓ **I will be your advocate.** If you have a problem, come and see me. I will my best to help you solve it.
- ✓ **I am committed to mentoring you, even after you leave my lab.** I am committed to your education and training while you are in my lab, and to advising and guiding your career development – to the degree you wish – long after you leave. I will provide honest letters of evaluation for you when you request them.
- ✓ **I will lead by example and facilitate your training in complementary skills needed to be a successful scientist, such as oral and written communication skills, grant writing, lab management, mentoring, and scientific professionalism.** I will encourage you to seek opportunities in teaching, even if not required for your degree program. I will also strongly encourage you to gain practice in mentoring undergraduate and/or high school students, and to seek formal training in this activity through the Delta program.
- ✓ **I will encourage you to attend scientific/professional meetings and will make an effort to fund such activities.** I will not be able to cover all requests but you can generally expect to attend at least one major conference per year, when you have material to present. Please use conferences as an opportunity to further your education, and not as a vacation. If you register for a conference, I expect you to attend the scientific sessions and participate in conference activities during the time you are there. Travel fellowships are available through the Environmental Engineering program, the Bacteriology Department, and the University if grant money is not available. I will help you identify and apply for these opportunities.
- ✓ **I will strive to be supportive, equitable, accessible, encouraging, and respectful. I will try my best to understand your unique situation, and mentor you accordingly.** I am mindful that each student comes from a different background and has different professional goals. It will help if you keep me in formed about your experiences and remember that graduate school is a job with very high expectations. I view my role as fostering your professional confidence and encouraging your critical thinking, skepticism, and creativity. If my

attempts to do this are not effective for you, I am open to talking with you about other ways to achieve these goals.

### **YEARLY EVALUATION**

Each year we will sit down to discuss progress and goals. At that time, you should remember to tell me if you are unhappy with any aspect of your experience as a graduate student here. Remember that I am your advocate, as well as your advisor. I will be able to help you with any problems you might have with other students, professors, or staff.

Similarly, we should discuss any concerns that you have with respect to my role as your advisor. If you feel that you need more guidance, tell me. If you feel that I am interfering too much with your work, tell me. If you would like to meet with me more often, tell me. At the same time, I will tell you if I am satisfied with your progress, and if I think you are on track to graduate by your target date. It will be my responsibility to explain to you any deficiencies, so that you can take steps to fix them. This will be a good time for us to take care of any issues before they become major problems.

**Example of an Undergraduate Mentee Contract**  
**from *Entering Research: Workshops for Students Beginning Research in Science***

Branchaw, J. L., Pfund, C., and Rediske, R. 2010 *Entering Research Facilitator's Manual: Workshops for Students Beginning Research in Science*, WH Freeman & Company.

Undergraduate Mentee: \_\_\_\_\_

Graduate or Postdoc Mentor: \_\_\_\_\_

This contract outlines the parameters of our work together on this research project.

1. Our major goals are:

- A. research project goals –
- B. mentee's personal and/or professional goals –
- C. mentor's personal and/or professional goals –

2. Our shared vision of success in this research project is:

3. We agree to work together on this project for at least \_\_\_\_ semesters.

4. The mentee will work at least \_\_\_\_ hours per week on the project during the academic year, and \_\_\_\_ hours per week in the summer.

The mentee will propose his/her weekly schedule to the mentor by the \_\_\_\_ week of the semester.

If the mentee must deviate from this schedule (e.g. to study for an upcoming exam), then s/he will communicate this to the mentor at least \_\_\_\_ (weeks / days / hours) before the change occurs.

5. On a daily basis, our primary means of communication will be through (circle):

face-to-face / phone / email / instant messaging / \_\_\_\_\_

6. We will meet one-on-one to discuss our progress on the project and to reaffirm or revise our goals for at least \_\_\_\_ minutes \_\_\_\_ time(s) per month.

It will be the (mentee's / mentor's) responsibility to schedule these meetings. (circle)

In preparation for these meetings, the mentee will:

In preparation for these meetings, the mentor will:

At these meetings, the mentor will provide feedback on the mentee's performance and specific suggestions for how to improve or progress to the next level of responsibility through (circle):

a. a written evaluation   b. a verbal evaluation   c. other: \_\_\_\_\_



7. When learning new techniques and procedures, the mentor will train the mentee using the following procedure(s) (e.g. write out directions, hands-on demonstration, verbally direct as mentee does procedure, etc.):

8. If the mentee gets stuck while working on the project (e.g. has questions or needs help with a technique or data analysis) the procedure to follow will be:

9. The standard operating procedures for working in our research group, which all group members must follow and the mentee agrees to follow, include (e.g. wash your own glassware, attend weekly lab meeting, reorder supplies when you use the last of something, etc.):

10. Other issues not addressed above that are important to our work together:

By signing below, we agree to these goals, expectations, and working parameters for this research project.

Mentee's signature: \_\_\_\_\_ Date: \_\_\_\_\_

Mentor's signature: \_\_\_\_\_ Date: \_\_\_\_\_

Professor's signature: \_\_\_\_\_ Date: \_\_\_\_\_

### Expectations for All Undergraduate Mentees:

Example from former University of Wisconsin-Madison graduate student mentor, Ashely Shade

1. **Send me weekly e-mail updates by Fridays at 5 p.m.** describing briefly what you've been working on, what you plan to do the following week, and any questions or troubles you had. Important things to include: project you've worked on, broken equipment, storage/equip conflicts, if your data look weird.
2. **Attend lab meeting.** The entire lab assembles approximately once a week to discuss our research. Generally, the person leading lab meeting will distribute reading materials in advance. You should read these materials and come prepared to participate actively in the discussion.
3. **Be organized.** There is a lot of overlap in projects, and it is essential that you keep track of all of the samples in the way that I specify. This includes updating the data spreadsheets and lab notebooks immediately.
4. **Read background information and protocols about our projects, and about the McMahon lab research.** This includes the protocol handout, the wiki, and related journal articles from the lab that I've suggested. I'd love to discuss any journal article or protocol, so just say the word and we'll grab some coffee and chat.
5. **Be consistent with your lab schedule.** E-mail/call me if you are going to be Very Late or unable to make your scheduled lab time.
6. **Be independent.** I am periodically away, and I expect you to get things done well without me. Ask questions when I am around, but don't be afraid to try to do detective work on your own if I am not. We have a helpful, experienced lab so know that folks other than me may be excellent resources.
7. **Respect the lab area and your colleagues.** Keep it neat and ask if you have questions on equipment use, cleaning, etc. It is very important that you tell me if a piece of equipment breaks. Do not be worried that I will be angry. These things happen all the time in labs and the important thing is that I know it is broken and can arrange to have it fixed.
8. **Let me know if you need anything from me as a mentor, or if you have questions.** Be up- front and I will do the same.
9. **I have an "open door" policy.** Let me know if you have having troubles or concerns that you want to talk about with me, work-related or not. My phone number is XXXXXX.

# Welcome to the Lab!

## Mission Statement

My lab has three central goals:

- To do quality science
- To develop each lab member to become a successful scientist
- To maintain a collegial and intellectually-stimulating environment

As your Ph.D. advisor, I will provide the mentorship and training needed to help you develop into an independent scientist. To accomplish this goal, it is important that we establish effective communication and align expectations with each other. This document provides a framework for communicating the culture of my lab, and how you and I will work together to further your scientific productivity and intellectual development. I believe in mentoring each individual in a manner that best meets their needs, and I look forward to having open discussions about these expectations and revisiting them as necessary to enable your successful professional development. **Please note that this document is not a substitute for university rules and regulations, and that those policies and any legal requirements supersede anything in this document.**

## What you can expect from me

- **I will set the scientific direction for the lab and provide the means to pursue those directions.** This will include helping you to find a research topic, writing grants to fund the research, and maintaining the necessary university protocols for us to utilize the laboratory. Additionally, I will seek out collaborators for our work to further your opportunities.
- **I am committed to mentoring you now and in the future.** I am committed to your education and training while in my lab, and to advising and guiding your career development. I will work to promote you and your work.
- **I will encourage you to attend scientific meetings and make an effort to fund these activities.** These meetings are important to showcase your work and for the networking opportunities as you pursue positions after your time in my lab ends.
- **I will be available for regular meetings and will provide timely review of research.** In addition, I will do my best to provide an open door policy and respond quickly to e-mails. Please be aware that there will be times when I will be unavailable due to other obligations. For abstracts and small data questions, I will generally be able to review in 1-2 days, for papers and thesis, I will need 1-2 weeks. In the event of a lab emergency, I may be contacted on my cell phone.
- **I will provide a work environment that is intellectually stimulating, supportive, safe, and free from harassment.** I take seriously any difficulties you experience in relationship to this statement – if there are conflicts with another lab member, please inform me and I will work with you and the other lab member to find a resolution. I will strive to understand your unique situation and am open to your suggestions on how to improve your experience in the lab.

## What I expect from you

***You will take ownership of your educational experience***

- You will need to **determine the requirements for your individual graduate program and are responsible for insuring that you are in compliance.** As you progress, I will work with you to select courses, qualifying exams, and committee members.
- You will **keep me updated on your research progress and challenges.**
- To earn your degree **you must transition towards independence.** We will work together to track this process, but ultimately when you earn a degree will be up to the work you produce, not simply the time you put in.
- **Seek out professional development opportunities** – being a successful scientist involves

more than being good at the bench. You must communicate well (presentations, papers, grants), develop personal skills (lab management, mentoring), maintain high ethical standards, and for a faculty career, teach. However, these opportunities must be balanced with the most important element of your career development – research progress towards your thesis.

### ***You will develop your personal research skills***

- Begin **reading the scientific literature** - read the papers I suggest, run a literature search and read papers suggested by this search. Spend some time each week updating your literature and just browsing. Subscribe to relevant eTOCs.
- Learn how to **plan your experiments** so that they help you progress on the overall goal of your project. Make sure your experiments address the question of interest correctly – this includes learning how to do the appropriate controls, techniques, etc. You will also need to learn how to effectively plan and multi-task to prevent down times. Develop plans with short/medium/long-term goals.
- Keep **detailed lab notebooks** – these are essential to turn your hard work into a finished paper or thesis. Your notes should allow your work to be reproduced (meaning they must be understandable by people other than yourself) and will help to assign credit for authorship. They are required by funding agencies and for any potential patents. You are required to leave the originals behind when you leave the lab for others to build upon your work.
- Develop your **writing and presentation skills**. As you start to make progress, begin outlining a paper's figures and drafting the text. Be prepared to go through rounds of revisions before submitting an abstract or paper. Although the availability of travel funds will vary, I encourage you to submit your work for presentation at one conference per year. **Attend relevant seminars** – I suggest 1-2/month to learn both science and how to give a good talk.
- Develop your **mentoring and management skills**. Mentoring undergraduate researchers not only helps you achieve your experimental goals, but also provides an opportunity to further your professional development as a supervisor. As the direct supervisor of an undergraduate student, you will be expected to train them appropriately, provide them with experimental guidance, and ensure that they operate in a safe and respectful manner in the lab.
- Consider **applying for fellowships, traineeships, and travel grants**. Not only will an award help your career and the overall lab funding situation, the experience of writing the proposal will help you think about what you are doing more deeply.
- Learn how to **accept and utilize constructive criticism**. The feedback from me, colleagues, committee members, and course instructors is intended to improve your work.

### ***You will contribute to the lab and be a good lab citizen***

- Senior graduate students are responsible for helping to train new students in the ways of the world (*i.e.* lab procedures, how individual/group meetings work, literature searching, etc.). **Science is a community** - many people will help you along the way and you should return the favor. Share your insider knowledge of techniques with others.
- **Data belongs to the lab, not to any one individual** – as a result, you will be expected to leave your original notebooks and files when you leave the lab. In addition, there will be times when you will be asked to assist me in submitting grant applications to NIH/NSF/etc. This activity is essential to provide continuing support for the lab.
- You will have **designated lab jobs** such as ordering, general maintenance, taking care of one of the instruments, etc. Failure to do your lab jobs not only affects you, it can impede the entire lab and will not be tolerated. Everyone is expected to help with dishes, making sure that supplies do not run out, aliquotting, reporting problems with equipment to the person in charge, and general lab cleanliness.
- **You will work safely in the lab**. Before beginning in the lab you must complete safety training and will be expected to renew that training as needed. You will follow all safety procedures defined in our lab protocols and immediately communicate any safety concerns to me.
- You will **keep lab protocols up-to-date** on the main lab computer.

- When working in the labs of other investigators, be polite, neat, and gracious. Always follow their rules. If something breaks during your use, report it immediately to the appropriate person.
- **Be respectful, tolerant of, and work collegially with laboratory colleagues: respect individual differences in values, personalities, and work styles.**

## Nuts and Bolts

### ***Hours and Vacation***

I do not believe in tracking hours – instead, I am interested to see that you are productive. However, if I sense that this is being taken advantage of, the situation will be addressed. You will quickly recognize that biology is not a 9-5 proposition - night and weekend hours come with the territory. I ask that you discuss with me at least 4 weeks before a planned absence - this way we can determine if it is an appropriate time for a vacation and if there are grant or other deadlines during that period we have ample time to prepare. I expect you to satisfactorily complete all assigned research duties prior to your planned departure.

### ***Meetings***

Come prepared to discuss/present your recent research and next steps. A written agenda including what you have done and what you propose to do in the next week must be e-mailed to me by 3 pm the day before the meeting. You must bring your lab notebook to each meeting.

### ***Annual Evaluations***

Each year we will have an evaluation – this will help us to determine things that are going well or are areas for improvement. I will tell you if I am satisfied with your progress and help identify steps you can take to fix any concerns. This is also an opportunity for you to communicate to me what I can do to help you succeed. Tell me if you feel that you need more guidance, more independence, to meet more often, etc.

### ***Authorship***

One of the most important tasks in science is disseminating your research through publications and presentations; therefore, authorship on these items is an important indicator to the outside world of your role. Authorship implies a significant contribution to a paper such as intellectual ideas that change the research or experimental contributions (just following instructions and not actively participating in the experimental design/interpretation will be acknowledged, but likely would not result in an authorship). While the order of authors varies by specific field, in general for bioengineering the first author is the student/post-doc who took the lead and wrote the paper, the last author is the PI, and the authors in between are in order of decreasing contribution. Failure to complete papers before leaving the lab may result in a junior member doing so as the 1<sup>st</sup> author in your place.

### ***Conflict Resolution***

If a conflict arises with another lab member during your time in my lab, I will work with you to find a resolution. If the conflict fails to be resolved or you do not feel comfortable involving me, I encourage you to consult with the Department Chair, Chair of your graduate program, or the university Ombuds office to attempt to settle the disagreement.