

Suggested Postdoctoral Mentoring Language for NSF Proposals

UNL Office of Postdoctoral Studies

As of January 2009, all NSF grant applications that include funding support for postdoctoral fellows MUST include a mentoring plan. The specific language of the requirement is:

Chapter II, Section C.2j:

Each proposal that requests funding to support postdoctoral researchers must include, as a supplementary document, a description of the mentoring activities that will be provided for such individuals. In no more than one page, the mentoring plan must describe the mentoring that will be provided to all postdoctoral researchers supported by the project, irrespective of whether they reside at the submitting organization, any subawardee organization, or at any organization participating in a simultaneously submitted collaborative project. Proposers are advised that the mentoring plan may not be used to circumvent the 15-page project description limitation.

Examples of mentoring activities include, but are not limited to: career counseling; training in preparation of grant proposals, publications and presentations; guidance on ways to improve teaching and mentoring skills; guidance on how to effectively collaborate with researchers from diverse backgrounds and disciplinary areas; and training in responsible professional practices. The proposed mentoring activities will be evaluated as part of the merit review process under the Foundation's broader impacts merit review criterion.

We've provided the following guidelines and example mentoring summaries to help you in preparing this section. Although the NSF has recommended against the use of 'boilerplate' language and expects PIs to tailor their mentoring plans best suited to their own laboratories and research programs, we recommend you address many or all of the following points:

General Guidelines

- The goal of the mentoring program is to provide the skills, knowledge, and experience to prepare your postdoctoral associates to become independent researchers and to excel in their chosen career path. Simply put, your mentoring efforts should be directed at enhancing the postdoctoral experience through a program of structured activities.
- Indicate that establishing and implementing an *Individual Development Plan* and an *Annual Performance Review* are integral components of the mentoring process for each of your postdocs.
- You should indicate that you encourage/require your postdocs to attend relevant seminars and workshops offered by the Office of Postdoctoral Studies, the Office of Research (e.g., RCR, ethical and safety issues training, grant writing), or other providers.
- Indicate if you've provided forums (e.g., meetings, lab sessions, seminars, conferences) for postdoctoral researchers to give formal or informal presentations of their research.
- Indicate how frequently you meet individually with each postdoc to address the following areas:
 - research results
 - (weekly, biweekly, monthly) lab meetings, in which postdocs have the opportunity to present and discuss their research with the rest of the laboratory
 - the postdoc's specific career goals
- You should indicate if you've provided structured opportunities for your postdoc(s) to acquire both teaching experience and an understanding of faculty roles and responsibilities.
- Indicate if you provide travel support for postdocs to attend local, regional, national, and/or international scientific meetings to facilitate their training and provide networking opportunities.

- You should also indicate that the success of your mentoring plan will be evaluated by tracking postdoctoral associates through their *Individual Development Plans*, conducting periodic interviews to assess associates' satisfaction with the mentoring program, and tracking progress toward career goals after finishing their postdoctoral training at UNL.
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The two very different sample mentoring summaries below reflect adaptations of examples provided in 2008 by the Federation of American Societies for Experimental Biology (FASEB). Although the examples are discipline-specific, you can readily adapt the content—or include your own specific aspects—to fit your research field. What's important is the overall approach to clearly illustrate an effective and persuasive mentoring program.

Example 1

“Postdoctoral scholars working in my laboratory will conduct research on the neuronal processes involved in Pavlovian fear learning. Under my mentorship, they will learn to formulate and test hypotheses related to the acquisition, consolidation, and retrieval of fear memories; develop expertise in behavioral and neurobiological techniques including intracranial drug infusion, single-unit and slice electrophysiology, and immunocytochemical analysis; and acquire expert knowledge of the scientific literature in our research area.

“At the start of their training, postdocs will be required to provide the Office of Postdoctoral Studies (OPS) with relevant contact information so they receive announcements of upcoming training seminars and events offered by OPS and the Office of Research; attendance at these professional and career development seminars will serve to supplement the individualized mentoring I provide. Postdocs will also be encouraged to make use of the extensive professional and career development resources on both the OPS (www.unl.edu/postdoc) and the National Postdoctoral Association (NPA) websites. UNL is a sustaining member of the NPA.

“To foster open and clear communication with my postdocs, I will provide each with the *Compact Between Postdoctoral Appointees and Their Mentors* (attached), which describes the commitments both they and I make to ensure an effective postdoctoral training experience. We will discuss these expectations and the steps we will take to achieve the goals of the *Compact* at the start of the postdoctoral appointment. On an individual basis, we will also collaboratively complete an *Individual Development Plan* (attached) to help postdocs identify both their short- and long-term goals and the skills and abilities needed to achieve them. Used in conjunction with the *Annual Performance Review* (attached), the IDP will serve as an iterative mentoring tool that will help establish an ongoing, productive mentor-mentee partnership characterized by mutual respect and understanding.

“Because effective communication of research findings is an essential component of scientific success, I will help my postdocs hone their communication skills by having them write research articles and develop oral and poster presentations for lab meetings, department seminars, and scientific meetings. I will also help them prepare their own research grants and involve them in the development of mine. Finally, I believe that all trainees benefit from the perspectives and guidance of multiple mentors; therefore, while I will serve as my postdocs' primary advisor and mentor, I will encourage them to seek additional mentors within and outside our institution.”

Example 2

“Scientific and technical skills

- Postdocs will contribute to research on the role glutamate-dependent neuronal plasticity plays in addiction to psychostimulant drugs such as cocaine and amphetamine.
- They will work under my guidance and with assistance from senior lab members and faculty collaborators to develop the scientific and technical skills necessary to carry out this research program.
- In the course of this research, they will develop expertise in behavioral and biochemical techniques, including drug self-administration, immunocytochemical analysis, BS3 assay, SDS-PAGE, and Western blotting. These skills will have broad applicability to other areas of research and will be an immense benefit to postdocs as they establish their own laboratories.
- Postdocs will add to their scientific knowledge by reading and discussing scientific literature with me and other members of the lab and participating in journal clubs and seminars related to this research.

“Career planning and professional development

- I will work with postdocs to design an individual development plan describing their research, training, and career goals as well as the approaches they will take to achieve those goals. We will review and revisit this plan on a regular basis.
- I will meet weekly with postdocs to discuss their progress on research projects and to identify and resolve any difficulties carrying out their work.
- Postdocs will be encouraged to attend workshops on responsible conduct of research, career opportunities, resume writing, and interview skills.

“Communication skills

- Postdocs will improve their ability to communicate research findings by presenting and obtaining feedback on their research at regularly scheduled lab meetings.
- Postdocs will also have an opportunity to present their research at our weekly departmental colloquium series at which faculty, graduate students, postdocs, and invited speakers present on a rotating basis.
- Postdocs will be encouraged to give poster and oral presentations during the Experimental Biology annual meeting.
- I will help postdocs enhance their writing skills by working with them to develop research reports and review articles.
- Postdocs will be invited to join me in teaching a freshman seminar on our research topic. This will give them experience presenting complex scientific information to an audience of non-experts, and it will provide valuable teaching experience.

“Grants management

- I will involve postdocs in the preparation of new grant applications and competing renewals.
- I will encourage postdocs to apply for independent research support, such as a National Science Foundation postdoctoral fellowship or a National Institutes of Health Pathway to Independence award. I will provide guidance as they develop these grant applications.

“Laboratory management

- Postdocs will be required to receive training in lab safety, animal care and use, and responsible conduct of research.
- Postdocs will be involved in day-to-day management of lab operations (e.g., ordering laboratory supplies, overseeing the lab budget, maintaining research equipment and facilities, ensuring compliance with safety standards).
- Postdocs will be involved in training and mentoring undergraduate and graduate students.
- Postdocs will have a role in recruiting and interviewing new students and employees to the lab.”