INSTITUTIONAL GUIDE TO POSTDOC MENTORSHIP

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Introduction

Mentoring can have a profound influence on the relative satisfaction and success of postdoctoral scholars. Mentoring plans are tools to help optimize the mentoring experience by providing a roadmap for both the mentor and the postdoc of the activities that will be undertaken to further the postdoc's professional and career development. This includes support for the enrichment of a postdoc's research knowledge, skills, and productivity as well as assistance in furthering the postdoc's career prospects. Today postdocs need to consider all of their career options (academia, industry, nonprofit, governmental), and so effective mentoring becomes even more essential to their success.

Postdoctoral mentoring plans can provide a blueprint for the critical professional guidance that has been shown to be a key indicator for a successful postdoctoral outcome (c.f., Sigma Xi Postdoc Survey, Davis 2009). Effective mentoring can lead to more independent, productive and satisfied postdocs. Mentoring plans also can be used to satisfy recent requirements by the National Science Foundation (NSF) on proposals that include support for postdocs.

This mentoring toolkit includes resources developed by the National Postdoctoral Association (NPA) for how to draft a mentoring plan, suggestions for effective mentoring activities, and other resources on effective mentoring.

Background: NSF Mentoring Plan Requirement

Since 2009, the National Science Foundation (NSF) has required all grant proposals that include support for a postdoc to include a Postdoctoral Mentoring Plan. The plan may be no more than a page and must describe all mentoring activities provided to all postdocs supported by the project at all research sites. The one-page plan is included as a supplementary document and cannot be used to circumvent the 15-page limit on the research narrative. Proposals requesting postdoc support without a mentoring plan will be returned without review.

The **NSF Proposal & Award Policies & Procedures Guide** does not dictate the format Postdoctoral Mentoring Plans, but provides broad guidance in Part I, Chapter II: Proposal Preparation Instructions. Consult the most up to date version of the document for the latest guidance or the relevant NSF program officer.

Getting Started on a Postdoctoral Mentoring Plan

Developing a mentoring plan does not have to be complicated or time-consuming. The basic elements of an effective mentoring plan are:

1. An Individual Development Plan (IDP) to be completed at the start of the postdoc's appointment

    a. An Individual Development Plan (IDP) is a process through which a postdoc engages in self-assessment, career exploration, and goal setting, resulting in a written action plan for achieving the postdoc's short- and long-term professional goals. An IDP also provides an opportunity to discuss the postdoc's goals, critical core competencies (see **NPA Core Competencies**) that the postdoc wants to gain, and how the mentor can support these. There are a number of tools available for completing postdoc IDPs, such as **myIDP.sciencecareers.org**, **chemIDP.org**, and **imaginephd.com**.

2. Relevant activities to achieve both the mentor's research goals and the postdoc's IDP goals (See next section on **Core Activities for Every Mentoring Plan**)

    a. Activities should describe essential training to be provided to the postdoc, such as lab safety and Responsible Conduct of Research (RCR) training, as well as other opportunities for professional growth.

3. Regular meetings with the postdoc to provide guidance and feedback

    a. The frequency will depend on the individual situation, since some postdocs may need more frequent meetings than others. Take care not to let the research work take over the conversation; stay focused on the development of the person

4. Annual evaluation

    a. Performance evaluation fosters communication and feedback, and helps a postdoc update his/her IDP goals annually.

It is recommended that mentors avoid using "boilerplate" or a "laundry list" of activities and instead tailor any mentoring plan to the postdoc, the postdoc supervisors, the project and the institution. In practice mentoring is very individualized; therefore, a mentoring plan should allow for flexibility to accommodate an individual's needs as well as style of interaction (especially in the case where the postdoc in a funding proposal has not yet been identified).

Core Activities for Every Mentoring Plan

Any mentoring plan should include both: (1) professional development, including research development and building professional skills and **core competencies**, and (2) career development. The former involves helping the postdoc become a productive and independent researcher, and the latter involves providing guidance and resources for identifying and achieving the next career milestone.

1. Professional Development

- Don't try to do it all; use the IDP process to identify key areas for growth in a given year and focus there.

- Describe how you will provide initial orientation to the lab or research group, including topics such as group meeting schedule, working hours, notebooks, standard operating procedures for techniques, and ordering supplies. Consider including general expectations as part of this orientation as well. Ideally there will be a written document that covers these topics, but a face to face meeting would be satisfactory.

- Meet regularly with your postdocs to discuss progress on their research including: review of original data; data collection issues; additional experiments to be performed or data to be collected; data analysis and interpretation; and dissemination of results. Describe the frequency and format, whether these meetings are individual, in small groups, with the whole research group, or some combination thereof.

- Provide regular feedback, whether through informal interactions, like manuscript review and presentation style critique, or through more formal venues, like written performance evaluations. Detail the frequency and format of this feedback. Consult the NPA's Postdoc Office Toolkit section on "**Evaluating Postdocs**" for additional guidance (NPA membership required).

- Facilitate conference and meeting attendance where postdocs can present their work and expand their networks. Where possible, describe these opportunities by name. Consider including travel funds within the grant to support such activities.

- Encourage attendance at departmental seminars, journal clubs, and other opportunities where postdocs can expand their breadth of knowledge. **Providing explicit encouragement and approval of such activities can significantly influence whether or not a postdoc will feel that it is appropriate to participate.**

2. Career Development

- Discuss career goals with your postdocs and describe how you can help them to reach these goals. Completing an IDP can help a postdoc identify potential career options and set concrete goals for exploring and preparing for those careers.

- Become knowledgeable about the current job market for your postdocs so that you can provide meaningful input. For career avenues outside your experience, identify other

sources of information on this such as: books on career paths and outcomes; a career center or counselor; colleagues; or your professional society. Articulate your intention to provide this input as well as any other sources you think might be helpful.

- Encourage your postdocs to attend professional and career development programming at their institution or professional society meetings. Describe these activities within the plan. **Providing explicit encouragement and approval of such activities can significantly influence whether or not a postdoc will feel that it is appropriate to participate.** Potential sources for such programs are included in the next section.

Additional Mentoring Plan Activities

In addition to the core mentoring activities above, the following are suggestions for other types of activities that could also be included in a mentoring plan.

1. Opportunities within the Research Group

- Help your postdocs with core skill development. A useful guide to the core competencies postdocs should master at this stage of their career is the NPA's **Core Competencies**.

- Offer training and hands-on experience in grant writing by collaborating with your postdocs on future proposals.

- Provide opportunities for your postdocs to mentor students in the research group, which can provide them with useful supervisory and teaching experience. Couple this with guidance on effective mentoring and management skills.

- Provide guidance and training in successful presentation skills through presentations at group meetings, journal clubs, and/or department colloquia.

- Review with your postdocs the **Compact between Postdoctoral Appointees and Their Mentors**, a mentoring tool developed by the Association of American Medical Colleges (AAMC). Jointly agree to honor the commitments described therein.

- As possible, provide input and feedback on your postdocs' job search preparation, such as curriculum vitae (CV) development, drafting a research statement and teaching philosophy, practicing presentations, or rehearsing interviews.

2. Opportunities at the Institution

- Help integrate your postdocs into your local institutional community. For example, introduce them to departmental colleagues; make sure they are included on e-mail lists for announcements, seminars and events; and encourage their invitation to meetings with visitors and speakers.

- Help identify opportunities for postdocs to acquire teaching experience, such as guest lecturing, community college courses, graduate student seminars, and undergraduate lab courses. Consider having your postdocs play a role in any educational outreach or other broader-impacts activities.

- Encourage your postdocs to participate in programs and services offered by an office of postdoctoral affairs or similar office that oversees postdocs. A postdoc office (PDO) is an excellent source of training and guidance for postdocs and can be a fruitful partner for postdoc supervisors in providing mentorship.

- Seek out faculty development programs that are open to postdocs, such as workshops on grant writing, first-time investigator procedures, or teaching techniques. If postdocs

are not typically invited, find out if these programs can be expanded for postdocs in the future.

- Describe training programs as well as faculty-led continuing training in the responsible conduct of research (RCR) for postdocs. *Such training is required for trainees supported by NIH and NSF grants.*

- Support your postdocs' involvement with your institution's postdoc association (PDA) or postdoc office (PDO). This involvement will provide excellent experience in leadership, teamwork, event planning, and project management. If your institution does not have such opportunities available, encourage your postdocs to get involved with the **National Postdoctoral Association**, which always needs engaged volunteers in its advocacy and support work.

- Identify other professional development programs at your institution that might be useful for postdocs, such as from employee professional development programs, university extension programs, an international scholars office, or the graduate school. These programs might include workshops on work-life balance for academics, English language courses for international scholars, or scientific writing courses.

- Identify colleagues and research groups at the institution that have complementary research interests and could provide additional mentoring or guidance for your postdocs. Where possible, include their names and expertise.

- Find out if your institution's career center offers career counseling or workshops that are open to postdocs. If so, promote your postdocs' participation in these activities.

3. Opportunities Outside the Institution

- Find ways to expose your postdocs to your professional networks, such as introducing them to your collaborators and involving them in community planning or working groups.

- Provide opportunities for your postdocs to expand their technical skill sets and broaden their networks by sending them to other facilities or labs to learn new techniques.

- Encourage your postdocs to participate in professional development programs sponsored by your professional societies, such as grant-writing workshops at disciplinary society meetings.

- Recommend your postdocs as speakers or session chairs at regional, national and international conferences. Such opportunities can both broaden their networks as well as improve their presentation skills.

- Recommend your postdocs as manuscript reviewers to the journal editors with which you work.

- Encourage postdocs to attend the **NPA's Annual Conferences**, which offer professional development workshops for the individual postdoc as well as opportunities to network within the broader postdoctoral community.

- Help your postdocs identify other resources for professional growth, such as personal coaching.

- Encourage your postdocs to participate in career development programs sponsored by your professional societies, such as resume workshops at disciplinary society meetings.

Mentoring Resources

1. Policies

- **NIH Policy for Mentoring Postdocs Supported on Research Grants** (2007)
  NIH FAQ on research training, under Level of Effort, indicates that mentoring is part of percent effort reporting where mentoring cannot be readily separable from research activities.

- **NIH Encourages Institutions to Develop Individual Development Plans for Graduate Students and Postdoctoral Researchers** (July 2013)

- **Office of Management and Budget FAQ** on dual role of postdocs as both trainees and employees, requiring professional development. (August 2014)
  Federal Office of Management and Budget clarifies that all federally-funded postdocs are both trainees and employees, and therefore are expected to engage in career and professional development as part of their research effort on any grant. (See also: **NIH Policy Notice** on clarification)

- **AAMC Compact Between Postdoctoral Appointees and Their Mentors**
  The American Association of Medical Colleges has developed a compact for postdocs and their supervisors and lays out their relative roles and responsibilities. Some institutions have implemented the compact as a (non-binding) contract to be signed upon beginning the postdoctoral appointment.

2. Articles

- **Nature's Guide for Mentors** A guide on mentoring from Nature: Lee, A., Dennis, C., and Campbell, P. (2007) "Nature's guide for mentors." Nature 447: 791-797.

- **Mentoring Minority Science Students: Can a White Male Really be an Effective Mentor?** (2002) Article from ScienceCareers on a challenging topic in mentoring.

- **Beyond Mentoring**

- **The Science of Effective Mentoring in Science, Technology, Engineering, Medicine, and Mathematics (STEMM)** (forthcoming 2019)

3. Handbooks and Manuals

- **Adviser, Teacher, Role Model, Friend: On Being a Mentor to Students in Science and Engineering** The 1997 National Academies handbook on mentoring

- **Entering Mentoring: A Seminar to Train a New Generation of Scientists**, HHMI-sponsored handbook by Jo Handelsman, Christine Pfund, Sarah Miller Lauffer, and Christine Maidl Pribbenow; it outlines a seminar on how to be a mentor

- **How to Get the Mentoring You Want: A Guide for Graduate Students (2018)** & **How to Mentor Graduate Students: A Guide for Faculty (2018),** Some useful handbooks on mentoring for both the mentor and the mentee from the University of Michigan's Rackham Graduate School

- **"Mentoring and Being Mentored"** Chapter 5 from Burroughs Wellcome Fund and the Howard Hughes Medical Institute (2006) Making the Right Moves: A Practical Guide to Scientific Management for Postdocs and New Faculty, Second Edition

- **On the Right Track: A Manual for Research Mentors** (2003) This manual is available for a fee from the Council of Graduate Schools. It discusses the individual and corporate responsibilities of graduate faculty in producing competent scholars capable of conducting independent, original and ethically sound research.

- **Mentoring International Postdocs: Working to Advance Science & Careers** An online module available from the federal Office of Research Integrity, developed by the Children's Hospital of Philadelphia, an NPA member institution.

- *Getting the Most Out of Your Mentoring Relationships. A Handbook for Women in STEM* (2009), A handbook written by former Association for Women in Science President Donna J. Dean on mentoring for women in STEM fields.

4. Other Resources

- **Articles on Career Planning and myIDP**, ScienceCareers hosts the online myIDP tool, as well as a collection of articles on how best to use myIDP for career planning and mentoring.

- **MentorNet** is an internet based mentoring resource that connects individuals seeking mentors with those willing to serve as mentors through e-mail exchanges.

- **National Research Mentoring Network,** An NIH-supported mentor network that provides online mentoring, research mentor training, and grant writing support, with a focus on diverse trainees. It also has an active research component, with **NRMN publications found here**.