New NSF Mentorship & Training Plan Requirements

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The National Science Foundation (NSF) now requires that any proposal requesting funds for graduate student or postdoctoral researchers must include, as a supplementary document, a description of the mentoring activities provided for such individuals.

This mentoring plan must describe in no more than one page the mentoring provided to all graduate student and/or postdoctoral researchers supported by the project.

A mentoring plan is not required, however, for postdoctoral fellows who are listed as senior personnel on the NSF budget.

NSF and Mentoring Activities of Trainees Listed on Grants

Examples of mentoring activities listed in the NSF Grant Proposal Guide include:
- 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.

Potential Points to Include in a Mentoring & Training Plan

- Discuss early expectation setting and plans
  - Individual Development Plan
    - Including:
      - Research and project deliverables
      - Career & professional development plans (IDPs, which we will discuss later)

- Assess trainee's skills and areas for growth and development
- Consider the NPA's Core Competencies:
  - 1) Discipline-specific conceptual knowledge
  - 2) Research skill development
  - 3) Communication skills
  - 4) Professionalism
  - 5) Leadership & management skills
  - 6) Responsible conduct of research

Potential Points to Include in a Mentoring & Training Plan

- Discuss how the trainee will be oriented to the specific research project in your lab
  - Requisite trainings in methods, tools, programs
  - Responsible Conduct of Research trainings
    - research.vt.edu/research-development/professional-development/required.html

- Meetings & Mentoring
  - Discuss frequency of meetings between trainee, supervisor, and other collaborators/mentors on the project
  - Mention planned interactions and opportunities for the trainee to engage with the lab/group, department/unit, college, university, and professional organizations (by attending and presenting at conferences)
  - Ensure it is clear that funds and resources will be provided to assist trainees in attending conferences

Potential Points to Include in a Mentoring & Training Plan

• Mention PI will encourage trainees to attend relevant campus events and programs, including those from:
- Career & Professional Development
- The Graduate School
- Office of Postdoctoral Affairs
- Research Development
- Etc…

• Ensure it is clear how PI will assist trainee in developing skills needed to become an independent researcher (grantsmanship, scientific publications, etc…)

• Indicate plans for 6 and 12 month review of "milestones" and progress toward research and career and professional development goals as outlined in the Individual Development Plan

Resources for Writing Mentoring & Training Plans for NSF Grants

Boilerplate text on resources available to VT postdocs for use in grant applications

Example NSF postdoc mentoring plans and templates

Individual Development Plans (IDPs)

The updated NSF PAPPG states postdoctoral scholars or graduate students who receive substantial NSF support must have an Individual Development Plan (IDP) which is required to be updated annually.
The IDP does not need to be submitted to NSF but should be "on file".
Certification by PI required in annual and final annual reports to NSF.

An IDP is a _process and a product_.

An IDP is a dynamic self-evaluation and career exploration tool that can be used by graduate students and postdocs to sett goals for research projects, skills development, and career planning.

For those with NIH support, as part of progress reports submitted via RPPR, PIs are expected to describe how IDPs are used to identify and promote the career goals of graduate students and postdoctoral researchers associated with the award.

What comprises an IDP?

The 2 primary features of any **IDP** should be:

(1) **professional development**, including research development, which helps the trainee become a productive and independent researcher

(2) **career development**, which provides guidance and resources for identifying and achieving the ***next career milestone***

According to myIDP from Science Careers, there are three types of goals a trainee should be considering in their IDP:

- Career advancement goals to help you move forward in your career
- Skills development goals to improve upon skill and knowledge areas in which you may be deficient
- Project completion goals to help you stay on top of the various projects you are working on

Online Tools to Assist with the IDP Process

Humanities & Social Sciences: https://www.imaginephd.com/assessment

STEM Fields, especially biological & biomedical sciences:
https://myidp.sciencecareers.org/

Chemical Sciences: https://chemidp.acs.org/

These tools should be used by graduate students and postdocs to:

- Assess their skills, interests, and values

- Explore potential career paths

- Make a plan for their project completion, skill development, & career advancement, which they may want to share with their advisor(s) or supervisor(s)

IDP Resources

Link to drive with example IDP templates (blank and completed) and other resources:

bit.ly/VT-postdoc-IDP-resources-2024

- Link includes folder with template IDP forms for new VT postdocs and those nearing their annual check-in.

Resources from other institutions:
- https://grad.berkeley.edu/idp/
- https://grad.wisc.edu/professional-development/individual-development-plan/
- https://career.ucsf.edu/IDP

Additional Resources

- NPA's Online Resource Library:
- nationalpostdoc.org/page/ResourceLibrary

- Join NPA for FREE to access resources at: bit.ly/VT-NPA-membership

- Postdoc Academy: www.postdocacademy.org/

- Hosts 2 online courses: Succeeding as a Postdoc & Building Skills for a Successful Career plus section with mentoring tools: https://www.postdocacademy.org/mentoring/

- Additional online career & professional development resources: bit.ly/online-pd-resources

- VT Graduate School Mentoring Toolbox

research.vt.edu/about/postdoctoral-associates.html

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NPA's Core Competencies for Postdoctoral Training

DISCIPLINE-SPECIFIC CONCEPTUAL KNOWLEDGE

An overall understanding of implications of work on broader field, the importance of innovation & creativity, & grasp of cultural, language & technical discipline-specific knowledge.

- Analytical approach to defining scientific questions
- Design of scientifically testable hypotheses
- Broad based & cross-disciplinary knowledge acquisition
- Interpretation & analysis of data

RESEARCH SKILL DEVELOPMENT

Ensure that postdocs are adequately equipped to carry out independent research, whether in bench- or non-bench related professions.

- Research techniques & laboratory safety
- Experimental design
- Data analysis & interpretation
- Statistical analysis
- Effective search strategies & critical evaluation of the literature
- Principles of the peer review process

COMMUNICATION SKILLS

Postdocs should master communication skills which ensure that messages are heard & understood by the appropriate audience.

- Writing (scientific publications, grants/applications, career documents)
- Speaking (presentations, interviews)
- Teaching
- Interpersonal Skills (style, negotiation, reviews/feedback, networking, conflict resolution, media management)

PROFESSIONALISM

Postdocs instill and enforce the virtues of honor, integrity, compassion, cooperation, reliability, &enhance the perception of this work in society.

- Workplace professionalism (diverse teams)
- Institutional professionalism (connecting at/across/with institutions as employees or representatives)
- Collegial professionalism (engaging as a citizen to scholarship)
- Universal professionalism

LEADERSHIP & MANAGEMENT SKILLS

Postdocs should understand which leadership styles are appropriate for any given time & situation increase performance & productivity. Leaders must also be able to competently manage projects, budgets, & staff.

- Management Skills (research staff management, project management, data & resource management, general management)
- Leadership Skills (Identifying & clarifying goals, motivating/inspiring others, serving as a role model)

RESPONSIBLE CONDUCT OF RESEARCH (RCR)

The pursuit & advancement of knowledge depend on openness, honesty, objectivity, & trust. Therefore, postdocs are responsible for upholding &engaging the ethical norms of their fields.

- Data ownership & sharing
- Publication practices & responsible authorship
- Research with human subjects or animals (where applicable)
- Identifying & mitigating research misconduct
- Conflicts of interest