

**Core Elements**

Supporting ethical and safe research is an essential component of the University of Pennsylvania School of Medicine’s research mission. We consider training that addresses **Bioethics, Laboratory Animal, Human Subjects and Radiation Safety** a mandatory part of the postdoctoral experience. In addition, departments usually provide postdocs with the opportunity to attend lectures, group discussions, grand rounds or journal clubs and it is strongly advised that postdocs attend such sessions to maintain contemporary knowledge of their field and develop collaborative relationships. It is also a fundamental aspect of postdoctoral training to develop competency in oral and written presentations.

Program Element	Description
<p><b>Bioethics Training</b></p>	<p>Training is mandatory as indicated by current PHS guidelines and is commensurate with current NIH Responsible Conduct of Research requirements. The online Bioethics Training Program is an electronic version of the former didactic workshop. It includes lectures on such topics as (i) misconduct in science; (ii) human subject research; (ii) research involving animals; (iii) ownership of intellectual property and data; (iv) responsible authorship and (v) peer review. The program includes a list of all URLs that link to University and Federal policies on these issues. It also contains a series of case studies dealing with topics not covered e.g. conflict-of-interest, with on-line questionnaires. All BPP Postdoctoral Appointees must complete the online Bioethics Training within their first year at Penn.</p>
<p><b>Laboratory, Occupational and Radiation Safety Office of Environmental Health &amp; Radiation Safety</b></p>	<p>The following training programs are required by the Occupational Safety &amp; Health Administration (OSHA) for all employees who work with hazardous substances including: chemicals, human blood, blood products, fluids, and human tissue specimens. Attendance at one or more sessions is required depending upon the postdoc's potential exposures.</p> <ul style="list-style-type: none"> <li>• Introduction to Laboratory and Biological Safety</li> <li>• Laboratory Safety-Annual Update</li> <li>• Intro to Occupational Exposure to Bloodborne Pathogens</li> <li>• Laboratory Safety-Bloodborne Pathogens Annual Update</li> <li>• HIV/HBV Training</li> <li>• Hazard Communication</li> <li>• Laser Safety</li> <li>• Shipping and Packaging Infectious and Biological Substances</li> </ul> <p>Radiation Safety Training for new postdocs that work in labs with radioisotopes can be completed on-line. Annual Radiation Safety Training must be completed each year after taking the initial training.</p>
<p><b>Orientation to Animal Research University Laboratory Animal Research</b></p>	<p>This half day workshop must be completed upon arrival or as needed for postdocs working with laboratory animals.</p>
<p><b>Human Subject Research Training</b></p>	<p>New federal policies will mandate separate and identifiable training in human subject research and procedures. Currently, Bioethics training deals with issues of informed consent and study design.. In addition, all postdoctoral appointees must complete the online HIPPA training program provided by the Office of Human Research.</p>
<p><b>Public Seminar on Research</b></p>	<p>Postdocs should present a talk on their current research during a departmental seminar, research retreat, or local or national</p>

	conference before the completion of their postdoc training.
<b>Develop Competency in Scientific Writing</b>	Postdocs should be the primary author of a paper on original research, a review article, book chapter or fellowship application before the completion of their postdoc training.
<b>Regular Attendance at Seminars</b>	Postdocs should regularly attend appropriate forums (seminars, small group discussions, grand rounds, or journal club) to broaden their scientific knowledge and develop collaborative relationships in the scientific community.
<b>Optional Elements</b>	
<p><b>Research success skills, continuing education opportunities and career guidance and development can be critical components of preparation for a successful independent scientific career. Participation in these elements requires time outside the laboratory and it is the responsibility of the postdoc to schedule this time in advance with his/her mentor.</b></p>	
<p><b>Research Success Skills</b>  <b>The following skills have been identified as important skills for succeeding in an independent research position.</b></p>	
<b>Program Element</b>	<b>Description</b>
<p><b>Scientific Writing</b></p> <p>Postdocs should learn how to prepare articles, abstracts, poster presentations, and review articles.</p>	<p>Scientific Writing is addressed in the Biomedical Postdoctoral Programs Research Success Skills Series-a group of lectures that is offered every year. In addition, BPP offers an online writing program for biomedical professionals three times a year. The course is fourteen weeks long and is taught by Penn's English Language Programs (ELP). There is a fee associated with this course that is paid directly to ELP.</p>
<p><b>Grant Writing/Obtaining Grant Funding</b></p> <p>This specialized type of Scientific Writing is important in order to learn how to assess and choose the most relevant funding opportunities, but also to understand what style, content and format is needed for acceptable submissions.</p>	<p>Grant Writing is addressed in the Biomedical Programs Research Success Skills Series. A group of lectures that is offered every year.</p> <p>The Office of the Vice Dean for Research and Research Training sponsors an annual seminar each Fall called the "Art and Science of Obtaining Federal Funding". The purpose is to educate faculty and researchers on various funding opportunities. Topics addressed include procedures on preparing a grant, available sources of support for research, and where to get help at the University.</p>
<p><b>Peer Review</b></p> <p>Postdocs must understand the process of peer review and take it into account when preparing scientific papers, articles and grants reviewed by peers.</p>	<p>Peer Review is addressed in Biomedical Postdoctoral Programs Research Success Skills Series. A group of lectures that is offered every other year.</p>
<p><b>Public Speaking</b></p> <p>Postdocs need to master public speaking skills. This includes the ability to communicate a variety of presentation formats effectively, from a ten-minute talk to a one-hour scientific seminar.</p>	<p>Public Speaking is addressed through a series of workshops offered every year with Lisa B. Marshall, <a href="http://www.lisabmarshall.com">http://www.lisabmarshall.com</a>.</p> <p>The large group seminars expose the postdocs to an effective technical presentation organizational structure, show them how to develop and practice "hallway" mini presentations, and explain effective design strategies for communicating scientific information.</p> <p>Through the presentation workshops (small groups) postdocs can experiment with and develop their speaking, presentation and interpersonal communication skills in a "communication laboratory". The workshops provide an invaluable and rare experience of presenting scientific work to other biomedical professionals in a supportive, educational environment.</p>

	Attendees also gain by deepening and broadening their understanding of their colleague's work.
<p><b>Establishing/Managing a Lab</b></p> <p>Understanding how to create budgets, supervise staff, and build collaborative networks in one's field and institution requires a foundation in the following skills:</p> <ul style="list-style-type: none"> <li>• Fiscal Management</li> <li>• Hiring/Managing Lab Personnel</li> <li>• Networking/Collaboration</li> </ul>	How to establish and manage a laboratory is addressed in Biomedical Postdoctoral Programs Research Success Skills Series. A group of lectures that is offered every year.
<p><b>Biomedical Postdoc Research Symposium</b></p> <p>It is important for postdocs to learn how to present their research to a group of their peers.</p>	Postdocs have an opportunity to present their research either in a lecture or poster format at this annual symposium in the fall. The event is organized by Biomedical Postdoctoral Programs and the Biomedical Postdoctoral Council.
<p><b>Continuing Education</b>  <b>There may be skills that a postdoc needs that he or she is not able to obtain working at the bench in his or her current lab.</b></p>	
<b>Program Element</b>	<b>Description</b>
<p><b>Coursework Opportunities</b></p> <p>Continuing Education credits may be critical for maintaining a license or certification. In addition, some training grants may provide funding for coursework specific to the training mission. Postdocs may choose to take an undergraduate and graduate course at Penn or a local college to enhance their own research experience and knowledge, however there is no tuition benefit for postdocs.</p>	Opportunities to obtain Continuing Education (CE) credits are available through courses and conferences. Additional educational opportunities exist for postdocs to enroll or audit an undergraduate or graduate course at Penn or another university. Mentor permission required.
<p><b>Conference Participation</b></p> <p>Conferences provide an opportunity to learn contemporary topics in a specific field, network with colleagues, and present research for peer review.</p>	Opportunities exist to attend local/national/international scientific meetings. Optional registration for Continuing Education credits may be available. Conference attendance should be mentor approved and may be mentor sponsored. Conferences may offer scholarships for postdocs. Postdocs would initiate an application for this type of support.
<p><b>Specialized Technique Training</b></p> <p>Training in a specific scientific technique that is not in the current skill set of the lab may be needed. Another lab or institution may have a program that teaches this skill.</p>	Technical skills that are critical for performing specific research may be identified by the Mentor.

<p><b>Career Guidance In preparation for an independent career, postdocs need to build a career plan. Postdoctoral appointees may need career advising and job search skills to identify and pursue job opportunities.</b></p>	
<b>Program Elements</b>	<b>Description</b>
<b>Career Workshops</b>	Biomedical Postdoctoral Programs sponsors a career workshop series every other year which is dedicated to examining trends in the job market, and reviewing basic job search skills, and discussing the

<p>The workshop series is designed to provide updates on current market trends, critical job search skills, types of employment opportunities, as well as to provide insights into the personal experiences of Penn postdoc alumni.</p>	<p>career experiences of individuals working in academia, industry, or alternative fields.</p>
<p><b>Career Advising and Programming</b></p> <p>Postdocs need to know how to best design their CV/resume, handle interviews, write letters, research job opportunities, balance careers and personal lives, and network. One-on-one advising sessions allow postdocs to develop personal search strategies, get their CVs reviewed, or practice interviewing.</p>	<p>The University's Career Services Office provides seminars, one-on-one advising, interview practice sessions and access to career library resources. Additional programs on a variety of topics are sponsored by the University's Career Services Office on an on-going basis.</p>
<p><b>Biomedical Career Fair</b></p> <p>As the job market evolves and provides increasingly diverse opportunities for our postdocs, the Fair will introduce them to potential future employers in all fields.</p>	<p>The Career Fair will be held annually in the Fall to allow postdocs to meet employers from a variety of fields (biotech, pharmaceutical companies, education, alternative careers, etc.) who are interested in hiring candidates with advanced degrees and postdoctoral experience.</p>
<p><b>Career Development Opportunities</b>  <b>Additional experience in scientific writing, business management, intellectual property, teaching, etc. may be necessary for the postdoc to attain his or her career goals.</b></p>	
<p><b>Program Elements</b></p>	<p><b>Description</b></p>
<p><b>Career Development Opportunities</b></p>	<p>Temporary, part-time, internships or apprenticeships in a variety of fields and skill areas are available to postdocs (Note: It is strongly recommended that senior postdocs only-3rd to 5th year-participate). Eligibility requires permission from the mentor. Postdocs must concomitantly fulfill their research obligations to the mentor as well as complete the core elements of the postdoctoral training program.</p>