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UNIVERSITY OF PENNSYLVANIA

School of Medicine Office of Postdoctoral Programs

Guidelines for Postdoctoral Appointments, Training and Education

SCHOOL OF MEDICINE OFFICE OF POSTDOCTORAL PROGRAMS

Guidelines for Postdoctoral Appointments, Training and Education

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Introduction

Why Develop a Standardized Postdoctoral Training Program?

Data from the Association of American Universities (AAU)¹ indicate that the University of Pennsylvania's postdoctoral population is the seventh largest in the nation. Postdoctoral appointees are responsible for a major portion of the successful research endeavor within our University, and the School of Medicine (SOM) has the largest segment of Penn's postdoc population with over 680 appointees out of a total of 1,000. The increase in research awards, which has ranked the School of Medicine second in National Institutes of Health (NIH) funding (1999), as well as the increase in research space with the opening of Biological Research Building II/III, suggest that the School of Medicine will become more dependent on talented postdoctoral individuals than ever before. Postdocs provide many benefits to our institution including the generation of pilot data for Principal Investigator initiated grant applications, the publication of peer-reviewed articles, the training of staff and students in technical skills, and the transfer of expertise from one laboratory to another. By developing an intramural postdoctoral training program, we not only ensure that we are able to attract the best and brightest candidates, but also significantly add to the quality of the scientific endeavor at the School of Medicine, enhance the long term viability of our nation's scientific endeavor, and ensure our postdocs' success in a competitive scientific market.

While many disciplines place increasing emphasis on the postdoctoral experience as a terminal credential, recent reports have acknowledged the lack of a standardized approach to postdoctoral education and training. Nationally, postdocs are often a forgotten community with no policies governing stipends, benefits, or training. Many complain about their working conditions and some are in postdoctoral limbo as they wait for permanent job opportunities. Statistics from the Pew Charitable Trust and the Commission on Professionals in Science and Technology (CPST) indicate that the most rapidly growing portion of the job market for postdoctoral appointees is non-tenure track academic appointments

¹ Association of American Universities Committee on Postdoctoral Education -Report and Recommendations March 31, 1998

that are dependent entirely upon extramural funding, which raises concerns about job security. With this climate, there has been growing unrest nationwide in the postdoctoral community and grassroots postdoctoral scholar associations have formed at some major universities to advocate change.

A closer look at the pressures affecting the postdoctoral job market and research enterprise will help us define our current program needs and the benefits it will provide. A well-developed postdoctoral program will allow faculty members to focus on science training while the infrastructure supports complementary skill development. Postdocs will be attracted to the quality training at this institution, and this will improve faculty members' ability to recruit top-notch postdocs. A defined program will also create a stronger scientific community in the institution, improve collaboration, and increase productivity. Most importantly, a quality training program will ensure that we have excellent candidates to fill competitive tenured academic slots, as well as to prepare postdocs for a variety of scientific careers in a rapidly changing market. After standards have been established, the program can be reworked and improved in the coming years in response to changes in the research enterprise environment.

A number of highly publicized reports have appeared in the last eighteen months which have cited the lack of standards for postdoctoral training and have examined postdoctoral career trends. These reports served as the basis of our review of the School of Medicine's current postdoctoral environment .

*Association of American Universities (AAU) Committee on
Postdoctoral Education (March 1998)*

NATIONAL
REPORTS ON
POSTDOCTORAL
TRAINING

This report offered a scathing assessment of postdoctoral education in the United States. It indicated that the size of the postdoctoral community has doubled from 16,000 to 32,000 in the last twenty years and at the same time the availability of tenure-track faculty positions has declined. The report was highly critical of the lack of institutional policies for postdoctoral appointments. It likened the current state of postdoctoral training to Ph.D. training of the 1890's --postdoctoral training has become the terminal academic credential to secure a permanent position, but there is no standardized training associated with this credential.

The report recommended² that institutions adopt a standard definition of a postdoc with the following key elements: (a) the appointee must have been recently awarded a Ph.D. or equivalent terminal degree; (b) the appointment must be temporary and involve full-time research or scholarship in preparation for a permanent academic

² The Association of American Medical Colleges (AAMC) endorsed the AAU report as policy on December 20, 1999.

and/or research career; (c) the appointment is not part of a clinical training program³; (d) the appointee works under the supervision of a mentor; and (e) the appointee has the freedom and is expected to publish the results of his or her research. In addition, it is recommended that universities adopt core policies addressing the length of the appointment and minimal standards for stipends and benefits. It is also recommended that policies be established to deal with publication rights, faculty mentoring and evaluation, career advising and job placement, and ethics education.

National Research Council (NRC) Report-Trends in the Early Careers of Life Scientists (September 1998)

The Tilghman Report concluded that the United States is training too many life sciences Ph.D.s due to the fact that the number of individuals who obtain full-time tenure track faculty positions has plummeted. It found that at least two-thirds of all postdocs seek a tenure-track faculty appointment, but less than twenty five percent are successful. Similar statistics were reported by the American Association for the Advancement of Science (AAAS). The Tilghman report highlighted the fact that the mean age of postdoctoral appointees has increased⁴ and this can result in higher expectations or demands for competitive stipends and benefits. The report recommended: (a) the rate of growth of graduate students in the life-sciences should be restrained; (b) there should be accurate dissemination of information regarding career trends and prospects; (c) the educational experience of trainees should be improved; and (d) there should be an increase in opportunities for postdocs to achieve independence through “career transition” grants.

Report from Postdoctoral Attendees at the Annual Graduate Research, Education and Training Group (GREAT) Meeting of the American Association of Medical Colleges (AAMC)- (October 1998).

This report identified issues important to postdoctoral appointees and made recommendations for good postdoctoral training practices. The quality of postdoctoral mentoring, career development, and the postdoc-mentor relationship were the main issues raised. It was recommended that mentors provide a regular assessment of progress and promote professional development. In addition to supporting quality research leading to publications, a mentor should help postdocs acquire special skills

³ This is not intended to exclude individuals who are in a laboratory or research training phase of a clinical fellowship program.

⁴ As a result of starting graduate school slightly older and taking more than two years longer to obtain his/her Ph.D. degree than graduates in the 1960s and 1970s, today's life scientist Ph.D. graduate is on average 32 years old.

that enhance their ability to obtain a job. This career development is multi-faceted and includes both scientific training and the development of improved personal and professional success skills. Many of these skills are built outside the laboratory through activities such as participation in professional society meetings, academic reviews, teaching in the community and formal coursework. An implicit understanding of most postdoctoral appointees is that part of the compensation for the work they perform, in lieu of salary, is provided by career development opportunities. Several models of relationships between postdoctoral appointees and the institution were examined and the recommended model was a program with an identified administrative officer and/or office that has responsibility for supporting postdoctoral appointments.

Postdoctoral Appointments at the University of Pennsylvania

The Policy for Postdoctoral Fellows in the Physical, Biological, and Health Science and in Engineering

The University of Pennsylvania was one of the first institutions in the country to adopt a University-wide postdoc policy. The *Policy for Postdoctoral Fellows in the Physical, Biological, and Health Sciences and in Engineering* (Almanac April 30, 1996), was visionary in that it stipulated that (a) all postdoctoral appointments should be accompanied by a formal offer letter stating the duration of the appointment, the source of stipend, and health insurance benefits; (b) minimum stipend levels are to be the National Institutes of Health recommended minima based on years of experience; (c) single-coverage health insurance is mandatory and that it should not be deducted from the stipend; (d) no individual can be in a postdoc title at the University for more than five years; (e) postdocs are eligible to receive up to six weeks new child leave with full pay; (f) appointees must provide proof of doctoral degree; and (g) postdocs have specific obligations as part of the responsible discharge of their research duties. The policy also indicates that appointments have to be terminated in writing at least three months prior to the end of the appointment. In addition, the policy requires that a standard compendium of orientation information be provided to postdocs as well as access to mediation services for grievances.

A copy of the University's Postdoctoral Policy is in the Appendix or can be viewed on-line at the Office of Postdoctoral Programs website. .

School of Medicine Office of Postdoctoral Programs (OPP)

A Resource Office for Postdocs, Faculty and Staff

Notably, much of the content of the University-wide *Policy for Postdoctoral Fellows in the Physical, Biological, and Health Sciences and in Engineering* is consistent with the more recent recommendations of the American Association of Universities (AAU) report. However, for a policy to be effective it must be implemented. Under the leadership of Dean William N. Kelley, M.D., the School of Medicine accepted a proposal from Neal Nathanson, M.D., Professor Emeritus of Microbiology, and established the Office of Postdoctoral Programs (OPP) in 1997 to oversee implementation of the Postdoctoral Policy in the Medical School.

Mission Statement

"The University of Pennsylvania created the *Policy for Postdoctoral Fellows in the Physical, Biological and Health Sciences and in Engineering* in 1996. This policy describes the rights and obligations of postdoctoral fellows as members of the University community. The School of Medicine established the OPP in July 1997 to serve as a central resource and to enhance and support the work experience of postdoctoral appointees, their faculty mentors, and staff engaged in research and research training."

Organizational Structure

Dr. Trevor M. Penning, Associate Dean for Postdoctoral Research Training, is the Director of the School of Medicine OPP, Ms. Victoria Mulhern (Director of Faculty Affairs) serves as the Administrative Director, Ms. Janet Zinser serves as a full-time Associate Director and Ms. Elizabeth Ellington serves as full-time Administrative Assistant. Dr. Penning reports directly to Dr. Glen N. Gaulton, Vice Dean for Research and Research Training. The OPP is served by an Advisory Committee consisting of senior faculty members: Drs. Maja Bucan, Carol Deutsch, Ann Kennedy,

An
Organizational
Chart for the
Office of
Postdoctoral
Programs is in
the Appendix or
can be viewed
on-line at the
OPP website
under
Guidelines.

Greg Kopf, Yvonne Paterson, Irwin Lucki, Hillary C. Nelson, Alan Rosenquist, Michael Robinson, Harvey Rubin, and Michael Selzer, as well as Office staff. Due to the large number of postdocs, it was determined that monthly roundtable meetings would provide a forum to discuss important issues and be the most effective way to have postdoctoral representation in OPP' proposals. As a result of these roundtables, a formal Postdoctoral Council has been created which now meets regularly with Dr. Penning.

Initial Accomplishments

Also see the *Training* page of the OPP website for programming initiated after the drafting of these guidelines.

The OPP has established a standardized appointment procedure for all postdocs within the School of Medicine. This includes the use of approved (by the Standing Committee of Departmental Chairs and Directors of Centers and Institutes) appointment letters for initial appointments, renewals and terminations and verification of doctoral degree. It monitors length of service to ensure no one is appointed to the postdoc title for more than five years. An orientation package is provided upon arrival and semi-annual orientation sessions are held for new postdocs. Part of the orientation process includes a registration form to provide information for the postdoctoral database. A comprehensive website (<http://www.med.upenn.edu/postdoc>) contains an on-line postdoctoral directory and information on mandatory training sessions, postdoctoral funding opportunities, resource offices and career development. There is also a PENNMed Postdoctoral posting service which permits all School of Medicine faculty to post postdoctoral openings on-line. The OPP works with Biomedical Graduate Studies and the Center for Bioethics to provide Bioethics training. In Spring 1999, the Office developed a series of postdoctoral Career Workshops which addressed basic-job search skills, academic careers, industrial careers and alternative careers that we plan to run every other year.

Postdoctoral Roundtables

OPP held monthly postdoctoral roundtables beginning May 1998 to obtain the postdoctoral perspective on training in the School of Medicine. We have met with over 150 appointees and common themes arose from the discussions. These include: (a) Lack of "Postdoc" Definition-Postdocs sometimes feel they are trainees, other times they feel they are super-technicians and employees. They also feel that this lack of clarity causes confusion about their rights and responsibilities; (b) Mentor-Postdoc Relationship- The mentor's control over the postdoc's stipend and career progression can cause difficulty in negotiations about important concerns. It was suggested that a mentor's guide be created and distributed; (c) Continuing Education Opportunities - Postdocs wanted the opportunity to take formal course work for credit, but there is no University supported tuition benefit for postdocs and the cost is prohibitive; (d) Career Guidance-Postdocs felt uninformed about career options and had concerns about their marketability; (e) Comprehensive Training-Postdocs requested a structure that would

permit specific skill and career development in the areas such as teaching, business management, computer science and technology transfer.

Since the initial drafting of this document, a Postdoctoral Council was formed in Fall of 1999. The Council members serve as representatives of the postdoctoral population at large. The Council meets monthly and will use roundtable discussions and town hall meetings on an ad hoc basis, as the group deems necessary.

OPP also held thematic roundtables which addressed several specific concerns. In defining their own role, postdocs believe that appointments should be for individuals who are pursuing research full-time and in the process are receiving further professional training in order to transition to independent scientist roles. They feel that the postdoc position is not a career, and that there should be a limit on the number of years spent in the appointment. They also stated that an individual pursues a postdoctoral experience for its advanced training and not for financial reward. They expect that the training offered should partially compensate for the lower stipend level. Ideally, an apprenticeship type relationship should exist between the postdoc and mentor. During this transitory training period, postdocs believed that they should interact and network with senior scientists, apply for funding opportunities, refine their scientific writing and presentation skills, understand and handle peer review, attend conferences and seminars to gain exposure and knowledge of a specific scientific field, be trained in lab management skills, and receive career guidance. They expect mentors to make a commitment to spend time training their postdocs. Postdocs feel that mentors have an obligation to ensure that advanced technical skills are taught, they should meet regularly with their postdocs to discuss their progress and career development, they should foster intellectual development, encourage postdocs to publish and present their work, and apply for funding. To ensure that postdocs were given the opportunity to express their opinions, these recommendations were e-mailed to all School of Medicine postdocs on our list⁵ for further comment.

⁵ Our e-mail list contained over 550 postdoc appointees at that time and continues to grow.

Postdoc Policy and Program Development

Creating More Comprehensive Guidelines

The School of Medicine OPP has now had several years of experience implementing the University's *Policy for Postdoctoral Fellows in the Physical, Biological, and Health Sciences and in Engineering*. During that time, issues not covered in the current Postdoc Policy have been identified. These include mentor obligations, sick leave, vacation, and termination for cause. Furthermore, after reviewing the AAU, the NRC and the GREAT Group reports, it is clear that the University would benefit from a working definition of a postdoc. Our School of Medicine postdocs and faculty have raised many of these same issues during meetings, one-on-one conversations and roundtable discussions.

The University Council Committee on Research subcommittee, which created the Postdoc Policy, is no longer active. Moreover, the parent committee does not meet with regularity. With over two-thirds of the University's postdoctoral population, it was clear that the School of Medicine needed to address these issues as soon as possible. With the support of the University Council Committee on Research, the OPP Advisory Committee assumed the task of making policy recommendations for School of Medicine postdocs and developing a framework for the postdoctoral training experience within the School. This charge included developing a statement of goals for the postdoctoral program, plans for a standardized training experience, and plans for career development programming and opportunities. Simultaneously, postdoctoral roundtables were held in order to maintain active postdoc participation and representation. Members of the Advisory Committee attended these monthly discussions.

Procedure

In the Fall of 1998, Dr. Penning divided the OPP Advisory Committee into two working subcommittees. The charge of the Policy Subcommittee was to define a "postdoctoral appointee" and to provide policy recommendations for areas not covered by the existing policy. The charge of the Program Subcommittee was to define

the goals of our postdoctoral training program, mentor's obligations, and to determine the key components of a structured postdoctoral program.

Policy Subcommittee

The Policy Subcommittee met on:

☞ September 14, 1998

☞ October 23, 1998

☞ December 1, 1998

☞ February 1, 1999

Members of the Policy Subcommittee were Drs. Yvonne Paterson (Chair), Maja Bucan, Trevor Penning, Hillary Nelson, Alan Rosenquist, and Harvey Rubin, and Ms. Victoria Mulhern and Ms. Janet Zinser.

Resource Documents:

☞ The University's *Policy for Postdoctoral Fellows in the Physical, Biological, and Health Sciences and in Engineering* (Almanac 1996)

☞ National Institutes of Health National Research Service Awards (NRSA) Guidelines

☞ National Institutes of Health Fellows Handbook (NIH -Intramural Program)

☞ The American Association of Universities (AAU) Report

☞ The Graduate Research, Education and Training (GREAT) Group Report.

Program Subcommittee

The Program Subcommittee met on:

☞ September 17, 1998

☞ October 12, 1998

☞ November 16, 1998

☞ January 14, 1999

Members of the Program Subcommittee were Drs. Trevor M. Penning (Chair), Carol Deutsch, Ann Kennedy, Greg Kopf, and Mickey Selzer; and Ms. Janet Zinser and Ms. Elizabeth Ellington.

Resource Documents:

☞ NIH-Intramural Training Opportunities

☞ The American Association of Universities (AAU) Report

☞ The Graduate Research, Education and Training (GREAT) Group Report

☞ The National Research Council (NRC) report

☞ The Belfer Institute-Albert Einstein Postdoctoral Association Training Opportunities

☞ Penn's Bioethics Training Syllabus

☞ NIH Responsible Conduct in Research Guidelines.

When each subcommittee reached consensus, recommendations were presented to the entire OPP Advisory Committee. The Advisory Committee discussed these recommendations at length during meetings on March 2, 1999, April 1, 1999 and April 29, 1999. The following recommendations were unanimously supported by the School of Medicine OPP Advisory Committee and also reflect the sentiments voiced by our postdoctoral community. These recommendations were presented to all Principal Investigators of NIH postdoctoral training grants, at town-hall meetings with the School of Medicine faculty and postdocs, and were supported by the Postdoctoral Council. The recommendations were finally approved by the Standing Committee of Departmental Chairs and Directors of Centers and Institutes (SCDC) on May 17, 2000 and by the Medical Faculty Senate on May 2, 2000.

Policy Guidelines

Definition of a Postdoc

The Advisory Committee recommendations were accepted as School of Medicine policy in May 2000 and supplement the university-wide Postdoctoral Policy.

The OPP Advisory Committee spent considerable time defining a “postdoctoral” appointee. It recommended that the postdoctoral title be reserved for individuals that have recently received their qualifying terminal degree. Individuals several years past this degree should already be in a permanent career track and not considered trainees. This appointment is, by nature, preparatory and therefore there is an obligation for the institution, school, department and faculty mentor to provide training. The following definition has been adopted:

A postdoctoral appointee is a person who has recently earned a Ph.D., M.D. or equivalent doctoral degree, and who joins the University of Pennsylvania to perform research full-time under the supervision of a member of the faculty. The position can be held for up to five years and is meant to provide additional research and/or scholarly training in preparation for a position in academe, industry, or government.

Sick Leave Policy

Because postdoctoral appointments are considered training positions and are not traditional staff positions, postdocs are not eligible for full-time employment benefits. However, this does not mean that they should not receive adequate benefits. Over the past two years, questions have arisen concerning sick leave for postdoctoral appointees. The policy recommendation is based upon NRSA guidelines which stipulate that fellows may continue to receive stipends for up to 15 calendar days of sick leave per year. The following addition to the Postdoctoral Policy as it applies to School of Medicine postdoctoral appointees has been adopted:

Postdoctoral Appointees may continue to receive stipends for up to 15 calendar days of sick leave per year. Sick leave is not cumulative from one appointment year to the next. Under exceptional circumstances, this period may be extended at the discretion of the mentor. Mentors may require medical verification by a physician for absences longer than three consecutive sick days.

It is the responsibility of the mentor to monitor the sick leave taken by Postdoctoral Appointees.

Vacation Policy

It is recognized that postdoctoral appointees should be eligible for vacation so that they can regroup and refresh. The current Postdoc Policy does not address vacation time for postdoctoral appointees. The committee again referred to NRSA guidelines as a benchmark for examining this topic. NRSA guidelines do not stipulate a specific number of allowable days, but indicate that vacation should be paid and should be of equal duration to that allowed to comparable trainees at the institution. It was decided that setting a minimum only would continue to allow mentors and postdocs the flexibility to do what is best for the individual laboratory, at the same time it ensures that postdocs receive at least a minimum amount of time off. The following addition to the postdoctoral policy as it applies to School of Medicine postdoctoral appointees has been adopted:

Postdoctoral Appointees are eligible for at least one day accrued paid vacation leave per two calendar months of appointment, in addition to the ten days the University is officially closed. Individuals who work on University holidays may take another day in lieu of the University holiday, to be scheduled with approval of the mentor. Vacation leave is accrued annually and is not cumulative from one appointment year to the next. A period of terminal leave is not permitted and payment may not be made from grant funds for leave not taken. All vacation leave must be scheduled in advance and approved by the mentor, and it is the responsibility of the mentor to monitor the vacation taken by Postdoctoral Appointees. Requests for additional time must be negotiated with the mentor and it is recommended that those requests be documented in writing.

New Child Leave Policy

The existing child leave policy in the University-wide Postdoc Policy was developed by combining the available parental leave (30 calendar days) and sick leave (15 calendar days) recommended in the NRSA guidelines. The new policy clarifies this issue by stating that if all six weeks are taken, 15 calendar days could be taken from either sick leave or vacation days. The following addition to the postdoctoral policy as it applies to School of Medicine postdoctoral appointees has been adopted:

Postdoctoral appointees are eligible to receive up to six weeks, new child leave with full pay, paid from the same source as the stipend. This time consists of 30 calendar days child leave and 15 calendar days, which can be taken from either sick leave or vacation. When days are taken from sick leave or vacation the number of available days in these categories will decrease accordingly.

Termination for Cause

The existing University-wide Postdoc Policy stipulates that the mentor can only terminate postdoctoral appointments with three months written notice. This protects the postdoc from unfair dismissal. However, rare circumstances may arise where immediate dismissal is appropriate. The following addition to the postdoctoral policy as it applies to School of Medicine postdoctoral appointees has been adopted:

Gross violations of postdoctoral obligations as indicated in the *Policy for Postdoctoral Appointees in the Physical, Biological, and Health Sciences and in Engineering* (Almanac 1996) may be grounds for immediate dismissal. Such situations must be reviewed with the School of Medicine OPP. Other University administrative offices will be consulted as necessary.

Recommended Postdoctoral Notice of Resignation

In the event that a postdoc resigns prior to the end of his or her appointment, it is appropriate and professional to provide as much notice as possible prior to leaving the laboratory. This time period should allow the postdoc to successfully complete or transition any ongoing projects. We strongly recommend that all School of Medicine postdoctoral appointees follow the following guideline:

When a postdoctoral appointee chooses to resign from his or her position prior to the end of the appointment period as indicated in his or her postdoctoral appointment letter, it is expected that he or she will provide at least one month's notice. Upon leaving the laboratory, a postdoc has an obligation to leave the original notebooks, data and reagents in a state that will allow continuation of the project and ensures compliance with the Intellectual Property Policy and other relevant policies of the University.

Postdoctoral Training Program

The School of Medicine has now accepted these recommendations for an intramural postdoctoral training program. During the approval process, many of the program elements were introduced formally or on a pilot scale. Visit the OPP website's *Training* page to see the status of program initiatives.

Program Goals

First and foremost, the OPP Advisory Committee recommends that the postdoctoral experience is a professional *training* experience irrespective of the source of support for the postdoc. Similar recommendations were made in the AAU, NRC and GREAT reports on postdoctoral education. Although federal regulations indicate that postdoctoral researchers supported by RO1's are "fee -for service" for tax purposes, in reality there is no difference between the experience of these individuals and that of those funded by NRSA or private foundation awards. This position is supported by Dr. Walter Schaffer, Director of the Office of Research Training, the National Institutes of Health, and by the National Cancer Institute.

The OPP Advisory Committee endorses the concept that the goal of the training is to *prepare* individuals to follow scientific careers that draw on their unique, in-depth education and expertise in the biomedical sciences. This includes acknowledging that current career and job market trends indicate that these scientific careers may not be in academia. At the same time, we acknowledge that the primary responsibility for a successful training experience lies with the postdoc. This program outline presupposes that postdocs demonstrate high levels of productivity, initiative, and commitment to research excellence. Therefore, part of the responsibility that the School of Medicine has in supporting its postdocs is to tailor the experience to meet the individualized needs of its appointees. To this end, the goals of the postdoctoral program are to:

1. Provide advanced research training beyond the doctoral degree.
2. Prepare individuals to follow scientific careers in academia, industry, government or other careers that require expertise in biomedical science.

Mentor Obligations

The OPP Advisory Committee recognizes that the postdoctoral experience is a unique “apprenticeship” between mentor and trainee. Although the obligations of the postdoctoral appointee are well defined in the existing University Policy, mentor obligations are not. The OPP Advisory Committee embraces the concepts of mentorship outlined in the GREAT report which recommends that mentorship go beyond ensuring that quality research is performed and published. The mentor must also have a vested interest in the career development of the individual and must help prepare him or her for the next step in his or her career. Therefore, it was determined that mentor’s responsibilities include the following:

1. Develop a mutually established and definable named project.
2. Encourage presentation of the postdoc's work internally and externally with due recognition.
3. Provide career guidance and set realistic career goals. (see below)
4. Meet regularly to discuss project/career progression.
5. Provide a formal annual review of project/career progress.
6. Apprise themselves of all University policies regarding postdoctoral appointments.
7. Inform postdocs of all mandatory training sessions.

Career Development Guidelines

Mentors should encourage postdocs to:

1. Manage their own project, which should lead to a first author publication.
2. Learn chosen scientific discipline/field.
3. Learn technical skills.
4. Learn ancillary skills, e.g. writing, public speaking, networking, etc.
5. Present scientific work both inside and outside the University.
6. Write up research work for publication.
7. Apply for extramural support, e.g. NRSA postdoctoral fellowships, career development awards, private foundation fellowships, etc.

8. Participate in the review of journal articles and other manuscripts.

Elements of the Postdoctoral Training Program

See the Appendix-
Postdoctoral Training
Template.

All postdocs come to the School of Medicine to work with an elected mentor on a specific problem in order to become experts in their chosen field. However, the OPP Advisory Committee has identified Core and Optional Elements that should be incorporated into the postdoctoral training experience if these individuals are to be successfully prepared for their career. Core Elements are restricted to mandatory training sessions (e.g., Bioethics, radiation safety and chemical hygiene training) and elements deemed “essential” to all postdoctoral training. Current NRSA guidelines stipulate that Responsible Conduct of Research training is mandatory for all postdoc trainees and the University also requires safety related training. In addition, the Advisory Committee recommended that it was essential that all postdocs give a public seminar on the research they have performed and develop competency in scientific writing. Public speaking and writing skills are fundamental to being a successful scientist. Postdocs deficient in these skills should be encouraged to take the optional elements of the program (see below). A list of the core elements recommended by the OPP Advisory Committee and accepted by the School of Medicine is given below:

CORE

ELEMENTS

1. Bioethics Training
2. Chemical Hygiene, Environmental Health and Radiation Safety Training
3. Research Animal Policies, Practices, and Procedures Training⁶
4. Human Subject Research Training⁶
5. Public Seminar on Research
6. Competency in Scientific Writing
7. Regular Attendance at Seminars

Optional elements recommended by the OPP Advisory Committee include participation in research success skills training, continuing education opportunities, career guidance programs, and career development opportunities. Participation in these elements requires time outside the laboratory and it is the responsibility of the postdoc to schedule this time with their mentor. It is the responsibility of the mentor to provide appropriate time for the postdoc to attend these sessions provided that the postdoc is meeting his or her research obligations to the laboratory. The GREAT report, and a

⁶ Individuals not conducting animal or human subject research are exempt from this training.

number of our own School of Medicine postdocs, emphasized that these opportunities are expected by postdocs in lieu of compensation.

The OPP Advisory Committee identified specific research skills as parts of a key skill set for succeeding in an independent research career. These “Research Success” skills include how to write a scientific article and grant, how to handle peer review, and how to establish and manage a laboratory including its finances and resources. Continuing education involves participation in course work that will complement the research experience of the postdoc, participation and presenting at scientific conferences or training in specialized techniques not offered by the mentor’s laboratory. While the advisory committee strongly recommends that proper career guidance be given to postdocs, the mentor may be unable to provide this guidance if the career path chosen is outside the traditional academic route. Because of this need the OPP ran a highly successful pilot Career Workshop Series Spring 2000 and has established a formal relationship with the University’s Career Services Office. The Advisory Committee has recommended that the Career Workshop Series and seminars offered by Career Services be optional elements of the training program.

The AAU Report, NRC report and AAAS statistics validate the fact that only a small percentage of postdocs obtain tenure track faculty positions. These career trends indicate that additional career development opportunities should be provided to prepare postdocs who elect to follow other career objectives. Depending on an individual’s career goals, temporary, part-time, internships or apprenticeships in business management, intellectual property, scientific writing, or science teaching may be appropriate. There is also a need to create and identify awards which provide stipend and tuition for postdocs to pursue other advanced degrees e.g., M.BA or M.Ed. in order to prepare them for careers in business or science education respectively.

A list of the Optional Elements recommended by the OPP Advisory Committee and accepted by the School of Medicine is given below.

OPTIONAL
ELEMENTS

For a more detailed description of these elements see the Appendix- Postdoctoral Training Template.

1. Research Success Skills
 - Peer Review
 - Scientific Writing
 - Grant Writing/Obtaining Grant Funding
 - Public Speaking
 - Establishing/Managing a Lab
2. Continuing Education
 - Coursework
 - Conference Attendance
 - Specialized Technique Training

3. Career Guidance

Career Workshops
Career Advising and Programming
Biomedical Career Fair

4. Career Development Opportunities (i.e. Internships in technology transfer, business planning, or Bioethics; Teaching opportunities, etc.)

Summary

The Future of the School of Medicine's Postdoc Program

The postdoctoral appointment in the School of Medicine is a temporary, advanced professional training experience which should prepare individuals for their first permanent position in academia, industry or government. Obtaining permanent positions can be fiercely competitive and as an educational institution we must ensure that our postdocs are appropriately prepared. Establishing an intramural postdoctoral training program that is nationally and internationally recognized for the quality and professionalism of its trainees will provide enormous benefit to this institution. These benefits include the ability to recruit the best graduates to our postdoctoral programs at a time when it is increasingly difficult to attract the top candidates. These “stars of the future” will enrich our current research, mentor our future leaders, and bring prestige to Penn.



Postdoctoral Training Template

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>Training is mandatory as indicated by current PHS guidelines and should be commensurate with current NIH Responsible Conduct of Research requirements. A variety of formats including lecture series, small group discussions, workshops, and conferences address Bioethics issues.</p>

	<p>The following training programs are required by the Occupational Safety & 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"> ?? Intro to Lab Safety (Chemical Hygiene) ?? Laboratory Safety-Annual Update ?? Intro to Occupational Exposure to Bloodborne Pathogens ?? Laboratory Safety-Bloodborne Pathogens Annual Update ?? HIV/HBV Training ?? Hazard Communications ?? Laser Safety <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>Orientation to Animal Research University Laboratory Animal Research</p>	<p>This half day workshop must be completed upon arrival or as needed for postdocs working with laboratory animals.</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.</p>
	<p>Postdocs should present a talk on their current research during a departmental seminar, research retreat, or local or national conference before the completion of their postdoc training.</p>
	<p>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.</p>
	<p>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.</p>

Optional Elements

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.

Research Success Skills

The following skills have been identified as important skills for succeeding in an independent research position.

Program Element	Description
Peer Review Postdocs must understand the process of peer review and take it into account when preparing scientific papers, articles and grants reviewed by peers.	Peer Review will be addressed in the Office of Postdoctoral Programs Research Success Skills Series-a group of lectures that will be offered every other year.
Scientific Writing Postdocs should learn how to prepare articles, abstracts, poster presentations, and review articles.	Scientific Writing will be addressed in the Office of Postdoctoral Programs Research Success Skills Series-a group of lectures that will be offered every other year.
Grant Writing/Obtaining Grant Funding 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.	This ½ day program is run once annually (usually Fall) and reviews funding opportunities and grant preparation strategies.
Public Speaking 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.	Public Speaking will be addressed in the Office of Postdoctoral Programs Research Success Skills Series-a group of lectures that will be offered every other year.

<p>Establishing/Managing a Lab</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"> -Fiscal Management -Hiring/Managing Lab Personnel -Networking/Collaboration 	<p>How to establish and manage a laboratory will be addressed in the Office of Postdoctoral Programs Research Success Skills Series-a group of lectures that will be offered every other year.</p>
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Continuing Education

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.

Program Element	Description
<p>Coursework Opportunities</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>	<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>
<p>Conference Participation</p> <p>Conferences provide an opportunity to learn contemporary topics in a specific field, network with colleagues, and present research for peer review.</p>	<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>
<p>Specialized Technique Training</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>	<p>Technical skills that are critical for performing specific research may be identified by the Mentor.</p>

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.

Program Elements	Description
<p>Career Workshops</p> <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>The Office of 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 career experiences of individuals working in academia, industry, or alternative fields.</p>
<p>Career Advising and Programming</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>Biomedical Career Fair</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 late Spring 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>

Career Development Opportunities

Additional experience in scientific writing, business management, intellectual property, teaching, etc. may be necessary for the postdoc to attain his or her career goals.

Program Elements	Description
<p>Career Development Opportunities</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>