



# PROFESSIONALIZING THE POSTDOCTORAL EXPERIENCE



A FORUM PRESENTED BY

**SIGMA XI**  
THE SCIENTIFIC RESEARCH SOCIETY



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**“You learn of the problems postdocs experience in different institutions and, at the same time, you are brainstorming with viable solutions. So you feel empowered to deal with your specific problem at your institution.”**

*The views expressed in this report are not necessarily those of Sigma Xi, the National Postdoctoral Association or the funding institutions.*

**SIGMA XI**  
THE SCIENTIFIC RESEARCH SOCIETY

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### **Sigma Xi, The Scientific Research Society**

Founded in 1886, Sigma Xi has a membership of about 65,000 research scientists and engineers, with more than 500 chapters in North America and overseas. Over the years, more than 200 Sigma Xi members have received the Nobel Prize. Publisher of *American Scientist* magazine, the non-profit society sponsors a variety of programs that advance the health of the research enterprise.

[<http://www.sigmaxi.org>]

**National Postdoctoral Association** The National Postdoctoral Association (NPA) is a member-driven organization that provides a unique, national voice for postdoctoral scholars. The NPA is also a collaborative organization that seeks to work with all stakeholders to improve the postdoctoral experience in the United States. The mission of the NPA is to advance the U.S. research enterprise by maximizing the effectiveness of the research community and enhancing the quality of the postdoctoral experience for all participants.

[<http://www.nationalpostdoc.org/>]

# INTRODUCTION

In January 2006, Sigma Xi and the National Postdoctoral Association (NPA) held a two-day national forum entitled, “Professionalizing the Postdoctoral Experience” in Research Triangle Park, North Carolina, to promote action on findings from the landmark Sigma Xi Postdoc Survey at institutions that employ postdocs.

Funded by the Alfred P. Sloan Foundation, the Sigma Xi Postdoc Survey was designed to improve the training and research environments for postdocs by providing a better understanding of their experiences. Survey results are expected to enable research institutions to benchmark their policies and practices against those at peer institutions.

The survey gathered information from 7,600 postdocs at 46 American research institutions on such issues as pay, working hours, benefits and many other factors. A summary of survey highlights appeared in a special 16-page insert called *Doctors Without Orders* in the May-June 2005 issue of *American Scientist*, the magazine of Sigma Xi. Participating institutions were each sent a summary of responses from their postdocs. A more comprehensive survey report is in preparation.

Among other things, survey data suggest that administrative oversight and structured training can significantly enhance the quality of postdoctoral experiences and may bring about increased research productivity.

The Sigma Xi-NPA Postdoc Forum at the Sigma Xi Center was designed to facilitate the sharing of ideas and materials and to foster networking between postdocs, postdoc office personnel, funders of postdocs and policy makers. At the conference, more than 80 administrators and postdocs from around the country gathered to discuss the main survey findings and then worked together to address them. They came away with a better understanding of

**“I think what made this conference better than others I have attended...is that other institutions are now far enough along in establishing postdoc policies that I am learning from their successes and failures.”**

survey results at their own institutions and insights on implementing postdoc training and policies. Participants were also inspired by the forum to make plans for establishing new policies and programs, while also considering modifications and refinements to existing procedures and offerings.

Plenary sessions were devoted to case studies, leveraging existing resources and management and leadership training. Case studies focused on developing and implementing effective postdoc-related policies; effective training workshops, materials and ideas; and vulnerable populations, such as underrepresented minorities, women and international citizens.

In small group discussions, participants came to general consensus on some guiding principles for addressing a variety of issues, such as strategies for recruitment and retention of underrepresented minorities and women, individual development plans, regular evaluations, exit surveys, letters of appointment and authorship policies.

What follows is a summary of highlights from the Sigma Xi-NPA Postdoc Forum on Professionalizing the Postdoctoral Experience.

*As part of a separate initiative, Sigma Xi is developing an online repository for sharing postdoc policy documents and training materials.*

## SESSION I: OPENING REMARKS

### Managing Scientists, Scientific Management

Geoff Davis  
Principal Investigator  
Sigma Xi Postdoc Survey

Data from the Sigma Xi Postdoc Survey showed that “best practices” in the training of postdocs are not in fact very common. The goal for the Postdoc Forum is to encourage discussion and foster more widespread implementation of these practices.

At first we thought the reason behind the low reported rates of various postdoc policies was that people needed help crafting such policies for their campuses. The envisioned solution, then, was to help them do so. After talking to a lot of people, however, we discovered we were wrong. The problem, people told us, was not one of not knowing what to do; rather, the obstacle is in figuring out how to do it: how to get buy-in from cost-conscious administrators, reluctant faculty and overcommitted postdocs. Accordingly, the conference was refocused from formulating policies and programs to the next step: on getting these policies and programs implemented.

The issue of *how* to get better postdoc policies implemented begins with a discussion of *why* doing so is a worthwhile endeavor. The way one answers the question of “Why?” has a huge bearing on one’s prospects for success. Consider several possible answers to “Why?”:

- **“Postdocs deserve better.”** Postdocs work hard, so they should be paid more and receive better benefits. A number of essays/reports use this as their initial premise. The trouble is that that can be said of almost every group on a campus. There are many worthy causes competing for constrained resources.
- **“It is the Right Thing to do.”** The trouble with this argument is that it can be made about a lot of different things. In the absence of more substantial arguments, perfectly reasonable people can

have considerable disagreements over just what the right thing to do is. And “Do the Right Thing” is not a particularly compelling motivator.

- **“There is a CRISIS!”** There are several variants of this argument: “The U.S. is falling behind China/India/the EU/ fill-in-the blank,” “Postdocs are all miserable and will revolt (or worse, unionize),” and “The poor state of postdoctoral life will scare smart students into non-science careers.” The trouble with this approach is that in declaring a crisis, one has lots of company. A Google search for documents containing both of the words “crisis” and “education” yields 69 million results. Education appears to be particularly prone to crises: 40% of all documents containing the word “crisis” also contain the word “education.”

These particular crisis scenarios do not necessarily make a strong case for timely action because (1) they are abstract threats that may or may not occur some time in the future, and (2) they do not cause any immediate problems for the people who need convincing. In addition, the use of “crisis” as a justification places postdoc advocates in the awkward position of benefiting from failure (e.g. some reported disappointment that the Sigma Xi survey found that “only” 22% of postdocs were dissatisfied).

The arguments above are not without merit, but they do not make the strongest possible case for change. The biggest problem is that these arguments do not account for the interests of the parties who must be convinced to change. There is merit in utilizing a different approach during the conference, one described in the book, *Getting To Yes* (Fisher, Ury, and Patton: <http://www.amazon.com/gp/product/0140157352>). When advocating changes, think about how proposed changes impact the interests of all parties involved.

For example, look at postdoc productivity, something that all interested parties (postdocs, PIs and administrators) want. Think about the interests of the people involved, look at how proposed changes relate to those interests, anticipate potential obstacles and think about how to work around them.

As an aside, the reason that productivity matters is that small gains can accumulate over time. For example, small gains (< 5% per year) in worker

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productivity over the last century have resulted in a roughly sevenfold increase in worker output per hour. That increased productivity has led to huge increases in average wealth, which has enabled, among other things, widespread higher education and government funded scientific research.

To make claims about how various policies will affect productivity, one needs a better understanding of the factors that give rise to productivity in researchers. Peter Drucker's ideas have been influential in this area (<http://www.amazon.com/gp/product/0887309992>).

Drucker emphasized that to be productive, knowledge workers must have both autonomy and a say in what they should be held accountable for. Research/career plans for postdocs provide such a framework of accountability and responsibility, and indeed, Sigma Xi's survey data showed that postdocs with such plans were considerably more productive than those without.

Drucker believed that to gain maximal productivity from knowledge workers, employers should invest in them rather than trying to minimize their costs. Professional development activities represent such an investment, and again, the Sigma Xi survey data showed that postdocs' productivity increased with the amount of professional development they received.

Drucker claimed that external rewards such as salaries are not good motivators of knowledge workers, but that an absence of such rewards causes problems. Sigma Xi survey data found that the relationship between compensation and productivity was weak.

Drucker provided a framework for evaluating management practices: do practices eliminate barriers to postdocs getting their real tasks accomplished? In this light, many procedures make a great deal of sense. Authorship and intellectual policies can prevent time-consuming disputes – it is much better to be conducting research than to be fighting over credit. Orientations and detailed letters of appointment help postdocs get settled into their new jobs faster, leaving more time for research. Professional development opportunities give postdocs the skills to do their jobs more effectively, and better skills can mean higher quality output. Health insurance helps to keep postdocs and their families healthy so they can spend more time in the lab.

As a case in point, at Microsoft Research, employees receive on-campus flu shots, plus free sodas

and coffee, and an office ergonomics consultant set up everyone's office. These practices did not come about just because Microsoft is "nice." Flu shots can reduce sick days considerably; free coffee can eliminate a 20-minute trip to Starbucks and a comfortable office may mean that people are willing to spend more time there.

One must anticipate obstacles so one can be prepared to meet them. One possible objection is that the proposed measures simply won't work. A way to counter this is to acknowledge that success is uncertain, but that whether or not a proposal works is a testable hypothesis. One can propose a small-scale implementation as an experiment.

A second possible objection is that the measures provide only relative advantage of one university over others. What will happen when everyone implements such changes? To this, one might respond that universities are incredibly slow at adopting innovations. A study reported in the *Chronicle of Higher Education* a few years back found that the time between the first university adopting an innovation and half of all universities adopting it was on the order of 25 years. Leaders will gain advantages over their peers for many years.

A third possible objection is that the measures do not solve the "real" problem (too many postdocs, etc). To this, one might reply that the game is not zero-sum. In the short term, better skills training means access to new types of jobs. In the longer term, increased research productivity can lead to increased economic growth, which in turn can make greater resources available for the research enterprise.

In summary, the challenge is to come up with compelling reasons for the things you want to see happen; to consider the interests not just of postdocs, but also of PIs and administrators; and to anticipate obstacles and prepare for them.

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## SESSION II: CASE STUDIES

### *Sharon Milgram, University of North Carolina, Chapel Hill*

**D**r. Milgram provided a detailed account of the evolution of efforts at UNC to proactively address postdoctoral training issues. This included conducting a survey of postdoctoral scholars and widely disseminating the results in the form of a one-page summary. The initial efforts to address

training issues included both graduate students and postdocs. These early efforts resulted in the establishment of an office of postdoctoral affairs, with an annual budget of \$50,000 for programming and one full-time equivalent staff position, which comes from the vice chancellor for research. The justification for creating the office was multi-pronged: postdocs wanted to be a bigger part of the UNC community; postdocs were spending too much time organizing career events, etc. After the first year of operations, the vice chancellor appointed an advisory faculty board to the office, with input from postdocs and faculty on policies. The board disagreed on some issues, compromised on some items and eventually implemented a new set of policies. Future plans include expanding the office to include a second staff person and opening a career center staffed by multiple career counselors.

Dr. Milgram highlighted some of the critical considerations in establishing the office and addressing postdoctoral training issues. She noted that the survey and other mechanisms clearly pointed to the need for improvements relating to compensation and benefits. The office employed a strategy of deferring action on the most controversial issues until the office was firmly established and supported. Buy-in from the faculty was helpful, but financial support from the UNC leadership was critical. It was also important that the office be shielded from controversy, so it can focus on the big picture professional development programs and not policies. Postdocs should be involved in identifying their professional development needs, but organizing programs should not be their main responsibility. Postdocs now have an advisory board to the office, rather than struggling to maintain an independent association. This model seems to be working well so far.

### *Philip Clifford, Medical College of Wisconsin*

**D**r. Clifford provided a brief overview of the MCW training population, along with some details about the Office of Postdoctoral Education. The office was established in 2001 and is staffed by the associate dean and an administrative assistant, in consultation with a postdoctoral advisory committee. Dr. Clifford focused on the programmatic efforts of the office to engage and equip postdoctoral scholars for career success. The tools for engagement include: a letter of appointment; orientation materials; a welcome luncheon; a Web site; social/networking events that include families;

poster sessions; and providing food at most events. The programs have been successful in engaging postdocs, but less successful in engaging principal investigators. The tools for equipping postdocs include: the spotlight on science seminar series; skill workshops; travel awards to attend scientific meetings; the purchase and dissemination of career planning resources; and the hiring of a part-time career counselor who works jointly with the postdoc office and graduate school.

MCW has assessed the efficacy of the programs by seeking feedback through evaluation of specific events, soliciting input by e-mail, providing a feedback form on its Web site, holding a yearly town hall meeting and conducting an exit survey. The challenges associated with implementing these programs include: gaining the confidence of postdocs and limited resources in terms of both staff time and financial support. Dr. Clifford outlined opportunities for future success, including broader use of individual development plans, voluntary annual reviews and the provision of ombuds services/grievance procedures.

### *Debbie Swope, National Institute of Environmental Health Sciences*

**D**r. Swope provided an overview of the events leading up to the establishment of the Office of Fellows' Career Development in 2003. The evolution began with the founding of the NIEHS Trainees Assembly (NTA) in 1994. For seven years, the NTA provided an annual career fair for fellows and career development opportunities and was the only organization providing career development at the NIEHS. In 2002, the NTA prepared a petition and position description for a fellows' office that would be staffed by a scientist, assume many of the administrative responsibilities for NTA projects and would be the main source of career development training and information. The Office of Fellows' Career Development is housed within the Office of the Director, with one paid staff member and a small annual budget. The office interacts closely with the NTA, PIs and the Assembly of Scientists. The office provides career development seminars, workshops and networking opportunities to fellows at the NIEHS; supports the NTA's mission by providing assistance where needed; and assists with recruiting and orientation to incoming NIEHS fellows. The challenges associated with running the office include the need for: greater buy-in from PIs and fellows; more staff; greater inclusion in NIH training programs; and the ability to enforce postdoctoral training policies.

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## Moderator's Overview of the Case Studies

**D**r. Joan Lakoski noted some common themes that emerged from the three case studies:

- Refrain from asking postdocs to perform the administrative and logistical tasks, but definitely consult with them about content.
- Postdocs learn important skills from leading an association or organizing events: like running a meeting, setting an agenda, team-building, peer review (travel awards)

She observed that the postdoc offices have all developed from the vision of multiple stakeholders to organizations with professional staff support. This continuity is critical as postdocs are transitory. Securing financial support for these offices is also critical. Early success with small-scale programs makes it easier to get resources for programs on a larger scale.

## Summary of Group Discussion

**A** common theme expressed by the speakers was the challenge of engaging postdocs and PIs in the programmatic offerings, but also in complying with various policies. The issue of developing a national or institutional curriculum for postdoctoral training was also discussed as one possible mechanism for increasing the level of engagement. Another suggestion was the use of a competitive application process or other incentives for making participation in the programs feel more valuable and/or prestigious. It was observed by more than one participant that international postdocs are perhaps the most difficult to engage, and solutions for involving them more directly continue to elude us.

The issue of mental health for postdocs emerged as a critical topic that has not been given enough attention. Programs at Vanderbilt and UC Berkeley have sought to address this need more directly by providing counseling for postdocs, peer support and insurance coverage for mental health services. The issue of accountability among various stakeholders was also discussed. The relationship between the postdoc and the PI is not one of mutual accountability because postdocs do not exercise traditional labor/economic marketplace dynamics. Finally, it was noted that institutions that invest in postdoc offices and postdoctoral training receive dividends in the form of increased postdoc productivity.

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## SESSION III: LEVERAGING EXISTING RESOURCES

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*Melanie Sinche, University of  
North Carolina, Chapel Hill*

**M**s. Sinche provided a brief overview of the services that are provided through the UNC Postdoc Office, including career counseling and professional development programs, maintaining a database of current and former postdocs, conducting surveys and providing information through a Web site, newsletter listserv and other vehicles. The career and professional development programs include workshops, seminars, mini-courses, symposia and other events. In providing these programs and services, the office needs to leverage resources in the following four areas: ideas, expertise, speakers and financial support.

The postdoc office has access to both internal resources at UNC and external resources in the Chapel Hill region. Internal resources include: postdocs, faculty, student services units, support offices, research units and the various schools/colleges. Of particular note were the support offices such as the international office, LBGTQ office, the Center for Teaching and Learning, the office of sponsored research and the office of technology development. External resources available to the postdoc office include: local employers, universities/research institutes, research funding agencies, professional societies and research centers for industry. These external resources can be helpful in organizing regional events, providing speakers, sharing the expenses and perhaps even hiring your postdocs! Former postdocs are an excellent resource: the UNC exit survey is linked to a networking database for people looking for jobs. Former postdocs are also great speakers; and their experiences resonate with current postdocs.

In seeking to leverage existing resources available to the postdoc office, Ms. Sinche offered the following guidance:

- Start small with a core set of programs you can do well
- Consider everyone a potential collaborator
- Share your goals early and often with all constituencies

- Expect to be met with varying levels of enthusiasm
- Check references for and discuss goals with speakers
- Programs need not be expensive to be effective
- But recognize the very real expense of staff time

### *Lisbeth Hamer, North Carolina State University*

The mission of the Professional Science Master's in Microbial Biotechnology (MMB) is to provide state-of-the-art academic and professional training in science and business to meet the increasing need in the biotechnology and pharmaceutical industries for graduates with both competencies. Although the program is not designed for the training of post-doctoral scholars, many of the professional training elements of the program could be applied within the postdoctoral community. The MMB provides academic and professional training in science and business, while making use of "industry cases," internships, mentors and an advisory board. MMB leverages intellectual resources from leaders in local industries and at N.C. State University with an emphasis on academic scholarship, practical working knowledge, productivity, teamwork, entrepreneurship and ethics. Within N.C. State, the MMB leverages existing resources by forging alliances with multiple entities: the College of Management, the College of Agriculture & Life Sciences, the Biotechnology Program and N.C. State's Industry Partners. In seeking out industry alliances, the following steps should be considered:

- Define need
- Research industry inventory
- Contact potential partners
- Market alliance advantage
- Discuss project opportunities
- Show flexibility
- Obtain commitment and resources
- Resolve intellectual property matters
- Specify project plan, deliverables and format
- Execution of plan
- Collect feedback
- Nurture alliance

The "industry case studies" students learn about:

- Action and Context-oriented training
- Science and business knowledge
- Practical working knowledge
- Regulatory knowledge

- Good manufacturing practices
- Leadership
- Mentorship
- Supervisory experience
- Synergistic behavior
- Team building
- Conflict management
- Oral and written presentation skills
- Marketing skills
- Cross-cultural understanding
- Discipline
- Flexibility
- Expectation and ambiguity management

The challenges associated with implementing the MMB within N.C. State included the normal issues associated with establishing a new enterprise in a traditional environment where its value was not immediately appreciated. Other internal challenges included the need to develop tenure guidelines, provide sufficient financial resources and successful navigation of the departmental landscape. The challenges associated with leveraging external resources for the new MMB through industry alliances included the need for patience and flexibility, as industry is a rapidly changing environment and forming alliances can be a time-consuming endeavor.

### *Rashid Shaikh, New York Academy of Sciences*

Dr. Shaikh provided an overview of the academy's history and demographics, focusing in particular on its efforts to provide regional professional development programs for graduate students and postdoctoral scholars. The Science Alliance for Grad Students and Postdocs is a network of 3,500+ young scientists from 19 institutions in the New York metropolitan region. The goals of the alliance are to organize events focused on career and life issues, provide access to the academy's scientific resources (meetings, e-Briefings) and provide networking opportunities across institutions and sectors. To gain access to alliance programs, institutions pay for membership on behalf of their graduate students and postdocs and the NYAS organizes the events and e-Briefings. The advantages of the alliance model are multiple: it supplements and complements programs of area institutions; the planning work is performed by NYAS staff and the programs attract larger audiences than at single institutions; the events facilitate networking across various institutions and sectors; and the NYAS

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builds its membership. One particularly successful model has been the use of e-Briefings following various events. The e-Briefings provide an online bulleted summary, professionally prepared reports, searchable transcripts, graphics and sound, while allowing for open questions from page visitors.

The challenges associated with utilizing this model to leverage regional resources include: uneven coverage within institutions; leadership and delegation issues among multiple institutions; cost recovery for the events; and, finally, the collaborative model is not always appreciated.

## SESSION IV: MANAGEMENT AND LEADERSHIP TRAINING

### *Daniel Denecke, Council of Graduate Schools*

**D**r. Denecke provided an overview of Preparing Future Faculty (PFF), a national professional development program. Although primarily intended for graduate students, the program has been made available to postdoctoral scholars at some campuses. Many of the professional development topics covered within this program are appropriate for postdocs.

The program, conducted in four phases between 1993-2002 at more than 250 institutions/organizations, is premised on the following assumptions:

- Faculty roles and responsibilities are various and demanding in any context
- Ph.D.s pursue academic careers at a variety of types of institutions
- Different types of institutions define “academic practice” differently, and thus require different competencies, skills and sensitivities
- Collaboration and partnership are the best vehicles for change

The topical content of the programming is far ranging, focusing on teaching, academic practices, leadership skills, service, research, publishing, academic culture and politics, and obtaining tenure. The program was structured differently at each institution; some common components included:

- Workshops and Seminars
- Guest Lecture Series

- Credit Courses
- Supervised Internship (multiple mentors)
- Institutional and Departmentally-supported Informal Networking Opportunities (alumni, guest lectures, faculty, peer mentors, etc.)
- Incentives for Partner Faculty
- Graduate Student Administrative Assistance
- New Faculty Line (“Professor of the Practice”)

The challenges associated with implementing this program at the institutional level included gaining faculty buy-in and addressing concerns expressed about lengthening the time-to-degree. The solutions to these challenges were to place greater emphasis on research, to utilize a “Researcher-Champion,” to integrate the program into the institution through the use of certificate or credit courses, to document actual student completion rates and to be flexible regarding scheduling of programs.

The lessons learned from conducting the PFF program, based on external evaluators’ conclusions, were that each institution/organization must include the following essential elements:

- National Leadership and Recognition
- Exposure to Teaching, Service and Enhanced Research
- Formalized “Anticipatory Socialization” to the Profession
- Formal Structure for Interaction

In addition, the following program elements were of significant value:

- Clusters of Partnering Institutions
- Required Courses and Concepts
- Certificates
- Academic Internships
- Multiple (T, S and R) Mentors
- Steering Committees
- Campus Teaching and Learning Center Involvement

Based on evaluators’ comments, it is important to deliver these programs in such a way as to avoid:

- Setting up faculty for “burnout” or endangering “at risk” faculty
- Being labeled as a teaching-only program

- Taking unfair advantage of partner institutions and faculty
- Insufficient and insecure funding

Further information about this program may be found at [www.preparing-faculty.org](http://www.preparing-faculty.org) and in the Council of Graduate Schools handbook, *Preparing Future Faculty in the Sciences and Mathematics: A Guide for Change*.

## Keith Micoli, UAB Initiative for Life Sciences Entrepreneurship

Dr. Micoli provided an overview of the MBA for Scientists at UAB, which is an accelerated one-year program. The MBA for Scientists is a full-time, traditional MBA program with a twist. The curriculum is structured in a way that allows students to complete the program in one year and includes specialized courses in technology commercialization and entrepreneurship. The four major components of the Initiative for Life Sciences Entrepreneurship (ILSE) are: Academic Course Development, an Intern Program, Advanced Education Seminars and New Venture Development.

Some of the courses offered cover such topics as: From Idea to IPO: The Technology Venture, Entrepreneurship and Venture Capital, and Beyond the Bench: Case Studies in Biotechnology. The program also utilizes a team-centered, multi-disciplinary, hands-on approach that engages students in developing strategic plans. Components of the plans include:

1. Science/Health Problems
2. Substitute Products
3. The Innovation
4. Timeline to Commercialization
5. Business Model
6. Market Demand
7. Competitors/Licensee
8. Summary and Recommendations

The ILSE plans to establish a Scientific Advisory Board (SAB) and a Venture Advisory Board (VAB). The SAB will include senior faculty and investigators from UAB, and the VAB will include Birmingham venture capitalists and entrepreneurs.

More information on the program is available at [www.business.uab.edu](http://www.business.uab.edu).

## John Galland, University of California at Davis Laboratory Management Institute

Dr. Galland provided an overview of the new Institute for Postdoctoral Scholars, which is based on the following principles and objectives: a commitment to excellence in research; to resolve issues related to the complexities of doing research; to promote health and safety; ensure compliance with regulations; to prevent scientists from behaving badly; and to improve collaborative skills. The institute is patterned after the Burroughs Wellcome Fund/Howard Hughes Medical Institute Lab Management Program in which UC Davis (and many others) participated. The rationale for the institute is that researchers have devoted years of study to their scientific discipline, but have received little or no laboratory management training. This type of training can prevent:

- Research inefficiencies, litigation and other losses because of regulatory non-compliance that have resulted in annual penalties and lost opportunity costs of >\$100 million nationally.
- More than 20 national laboratories have had to suspend operations in recent years because of mismanagement

The institute built support for a Laboratory Management Program for Postdoctoral Scholars at UC Davis by communicating broadly, providing incentives, capitalizing on people's concerns and spotlighting innovators. Communication strategies included a survey of labs, letters to administrators and deans, traditional marketing activities, seeking input from various stakeholders outside UC Davis and meetings with mentors. Incentives for participating included: making participation in the program a competitive award for postdocs, their mentors and their colleges; providing a congratulatory letter to postdoc, mentor, department chair, associate deans of research and deans; and providing all training, instructional materials, food and a hat ceremony without cost to postdocs. To capitalize on people's concerns about risk, the institute highlighted news stories about misconduct, new regulations by funding agencies and trends in the job market. The institute emphasized that by providing an innovative program for postdocs, a core of faculty realized they would benefit too.

The institute consists of a two-day workshop, with a longer course to begin in the summer of 2006. It employs interactive sessions, including a role-

playing exercise utilizing actors performing “Lab Acts,” which demonstrate how to handle difficult situations in the lab. One important outcome of the institute has been student-developed laboratory manuals. The institute will provide letters of recommendation for postdocs, documenting their participation to help them in their job searches.

The institute is part of the strategic plan for lab management workforce training created by the UC Davis Office of Research. It includes:

- An Annual Program for Postdocs (underway)
- A Certificate Program in Research Laboratory Management (Begins Summer 2006)

- Graduate courses (under development)
  - Research Lab Management (Fall, 2006)
  - Responsible Conduct of Research
- Graduate Group in Research Management which will enable advanced degrees (MS; Ph.D) across departments (4 year horizon)
- A new job classification called “Laboratory Manager” available to those who have gone through UC Davis Extension Certificate Program in Research Lab Management (waiting approval)
- Outreach: Train-the-Trainer training, On- Off-site Seminars, Conferences, Workshops, and Instructional Materials (underway)

## DISCUSSION GROUP SUMMARIES

In small group sessions, forum participants discussed key issues in six areas of postdoc policy. The following are summaries of those discussions. Forum discussions included a variety of viewpoints, some based on anecdotal experiences. The highlights presented in this report do not necessarily represent a consensus of opinion.

### 1. ENTRANCES AND EXITS

*Orientation, standard letters of appointment, exit interviews, certificates of completion.*

#### Making the Case to Administrators

A few key points can help make the case to administrators that establishing a postdoc office or implementing postdoc entry-exit programming is good policy. Supporting data provided by the Sigma Xi Postdoc Survey underscores the need to address postdoc issues more effectively. It’s also a good strategy to identify peer institutions that are establishing or have established postdoc offices and entry-exit programming. Other institutions have found that actively addressing postdoc issues can be protective for both the institution and postdocs, and may even have “anti-unionization” or “anti-lawsuit” effects. **Remember to keep the initial proposal simple, flexible and direct.**

Outline the benefits of establishing entry-exit programming for postdocs. These include increased community building among postdocs, increased productivity, conflict prevention, encouraging early

reporting of issues and facilitation of intervention. Other benefits include giving postdocs a “face” and a “place” to go for information, to ask questions or express concerns. This is especially helpful for early integration of underrepresented populations. Establishing such postdoc practices increases the perception of institutional investment in postdocs, which in turn engenders postdoc loyalty and also aids in recruiting.

#### Offer Letters vs. Appointment Letters

Offer letters, often from the PI to the postdoc (not generally standardized), usually include information specific to the individual postdoc, such as: salary, start date, and anticipated length of appointment. Letters of appointment are often more generic and may be generated by HR, the main academic office (Provost, etc) or a postdoc office. Information may include institutional classification and a benefits package. Questions for each institution include: **What information should each type of letter contain? Should there be a standardized format?**

Information that would be helpful to postdocs, but often is not provided, includes the source of their funding; basic expectations for research productivity, teaching and service; and a concise restatement of the previously agreed upon start-up package (lab space, student assistants, access to support staff, etc.) These types of letters can help to avoid misunderstandings and clearly articulate a set of mutual expectations.

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## Orientation

Ideally orientation should contain information that is both general and postdoc-specific. An annual survey or other feedback mechanism would help ensure that the postdoc experience is productive. Placing orientation materials online may be very useful and effective. It would be helpful to give incoming and current postdocs a checklist of resources about which they can request information, such as childcare options, community organizations, religious affiliations, legal assistance, etc.

There were several suggestions for welcoming diverse populations with additional needs. Workshops specific to the needs of subpopulations of postdocs could be of particular benefit, giving them the chance, for example, to meet with an immigration lawyer/specialist or a tax consultant. One way to help postdocs at risk for isolation is to provide them an opportunity to find each other (“country buddies” for International Scholars or student/single parent support sessions). Orientation is a time-saver for postdocs that may lead to enhanced productivity.

## Tracking the Postdoc Population: Incoming, Outgoing, Alumni

It is important to develop a mechanism for early identification of postdocs, perhaps through HR data. A prerequisite for this is an accurate definition and consistent classification of postdocs. Some institutions link identification of entering postdocs to such routine transactions as activation of payroll and the issuance of ID cards. An annual confidential survey of all postdocs offers the advantage of not waiting until they have left or are about to depart to get feedback on their scientific experience, career plans, need for and access to professional development opportunities, postdoc/family balance issues and available supports.

Identifying outgoing postdocs prior to their departure is more difficult and may require extensive networking and ongoing communication between

the postdoc office/advisor and academic units. Tracking postdocs after they leave is also difficult but important, for a variety of reasons. Following the career trajectory of former postdocs can indicate how well your training programs are performing, and how competitive your postdocs are in the marketplace. Tracking allows networking/peer mentoring between current and former postdocs, and also provides a mechanism for asking postdocs about “giving back” to their previous institution (by participating as panelists and speakers, etc.). Alumni associations may be willing to track postdocs and maintain updated contact information on them as they do for institutional graduates. (University of Alberta and Vanderbilt are good models for tracking alumni).

Exit surveys can address a number of issues. They can inform internal programming by identifying gaps in support or services. They are helpful in tracking career outcomes and in identifying successful PIs or departments (acknowledge and reward?). This provides a way to identify and disseminate best practices. Exit surveys facilitate networking/peer mentoring between current and former postdocs (the UNC postdoc alumni database is a good model). Suggestions for increasing response rates: Track postdocs for exit surveys through institutional offices of immigration services (some institutions have 80-90 percent foreign national postdocs). Cal Tech conducts an exit interview when distributing final paychecks.

## Certificates of Completion

Certificates of completion are not routinely given at most institutions, but are often issued on request. This seems to be an issue for some postdocs, especially foreign nationals who are returning to their home countries to work.

## Entrances and Exits Additional Information

[PowerPoint Slides](#)

## Entrances and Exits Examples

**Vanderbilt University** For Vanderbilt's generic e-mail exit survey, postdocs answered closed-ended questions but did not respond to requests for comments (open-ended questions). When the survey was revised to include fewer open-ended questions, the response rate increased. [[susan.mcmillen@vanderbilt.edu](mailto:susan.mcmillen@vanderbilt.edu)]

**National Cancer Institute** NCI doesn't conduct an exit survey at this time, but an annual survey captures much of the same information. [[wiestj@mail.nih.gov](mailto:wiestj@mail.nih.gov)]

**University of Alberta** Offer letters are the official contract. Postdocs sign and return the letter to their supervisors. Once the supervisor receives it, a copy is sent to the Postdoctoral Fellows office. Postdocs complete a form on the Web and send it to the postdoc office, which then sends out a certificate of completion and a letter, along with an exit survey. All postdocs must register with the postdoc office when they first arrive. The office receives pay forms to approve, and always know when a postdoc is leaving the university. [[susan.buchsdruecker@ualberta.ca](mailto:susan.buchsdruecker@ualberta.ca)]

**Memorial Sloan-Kettering Cancer Center** MSK has a bimonthly orientation that lasts two hours. Available resources are outlined during the first hour. The second hour is a luncheon attended by the Research Fellow Advisory Group, new fellows, housing office, Life Initiative Office and the Office of Sponsored Projects. [[cruzd@mskcc.org](mailto:cruzd@mskcc.org)]

**The Scripps Research Institute** Scripps holds biweekly academic new hire orientations that are mandatory, during which the Society of Fellows and Postdoc Services Office each have 10 minutes to present information on career and other resources. Postdocs, PIs or administrators can request a postdoc completion certificate through an online form. The Postdoc Office prints these out and routes them to the appropriate offices for signatures. Scripps also administers a Web-based exit survey for departing postdocs. [[rwheeler@scripps.edu](mailto:rwheeler@scripps.edu)]

**National Institute of Environmental Health Sciences** An offer letter to incoming postdocs, signed by the Scientific Director of the Institute, states their start date, starting salary and duration of appointment. [[klotz@niehs.nih.gov](mailto:klotz@niehs.nih.gov)]

## 2. PLANS AND EVALUATIONS

*Guidelines for research/career plans and performance evaluations*

It was generally agreed that individual development plans and performance evaluations for postdocs are good policy. But many institutions don't have them, and those that do don't always enforce them. Some leave this aspect of training entirely up to the Principal Investigators, which can lead to widely varying approaches for mentoring, from little interaction to a very structured process. Career development and advising should be a daily occurrence, but some felt it best to formalize the process. Some institutions establish minimum training standards. Having individual plans without annual evaluation isn't particularly useful, and vice versa. There has to be both a self-assessment and a performance evaluation to make sure the self-assessment is realistic. A key issue is communication of expectations. Postdocs should know what their "instant disqualifications" are for their postdoc training. An individual plan can be of particular help for international postdocs and their unique circumstances.

One problem is that both faculty and postdocs sometimes resist individual plans and evaluations. Some faculty may view the process as a waste of time and a process that fundamentally changes the PI-postdoc relationship. "No one did this for me and I made it" and "If you're good, you don't need an individual plan" are among prevailing attitudes. Faculty want to check things off a list, not take the time to write things down, and some may even be fearful of committing an evaluation to paper. But individual plans followed up with annual evaluations are not only useful, they can protect faculty. Some institutions are making them mandatory. Enforcement has to fall to administrators – maybe even to the point that if an annual evaluation isn't turned in, the postdoc appointment is suspended until it is. If the National Institutes of Health required a career development program as part of grant applications that include postdocs, it wouldn't be terribly onerous, and would also make the PI answer the question "Do I want a postdoc or just another pair of hands?"

Many faculty think their students should become academic researchers, just like them, and don't acquaint them with any other career options. This is true even for those postdocs who want an academic career but not at a research university (for example,

those who want to teach at an undergraduate college). In consequence, a lot of universities are making new guidelines and definitions of postdocs that include the concept of “preparing for an academic research career.” But clearly it is becoming less and less possible for every postdoc to become a research professor. Many start out thinking they want academic careers, but change career paths, sometimes

## Plans and Evaluations Examples

**Vanderbilt University** Vanderbilt makes evaluation of mentoring part of conditions for tenured promotion. [[susan.mcmillen@vanderbilt.edu](mailto:susan.mcmillen@vanderbilt.edu)]

**Los Alamos National Laboratory** There are a number of ways to institutionalize an individual development plan. At LANL, it’s added as a standard part of offer letter/orientation and therefore isn’t seen as something extra. A postdoc mentoring handout that LANL includes with the offer letter emphasizes communication as key. There is a research plan at LANL and it is signed off. It could develop into an individual plan and be used to do annual evaluations. [[with@lanl.gov](mailto:with@lanl.gov)]

**St. Jude Children’s Research Hospital** At St. Jude, the regulatory body that oversees clinical research fellows requires evaluations. [[joan.chesney@stjude.org](mailto:joan.chesney@stjude.org)]

**University of North Carolina at Chapel Hill** One approach to evaluations at UNC involves the supervisor asking the postdoc to complete a form that lists three questions about the past year. They discuss it together, and the supervisor has a short form listing goals for the upcoming year that they both sign. [[sinche@unc.edu](mailto:sinche@unc.edu)]

**UC-Davis Lab Management Institute** Postdocs are told that it is in their best interest to make plans and then discuss them with their mentors. But there are no forms, no set format. It goes to the idea of building a trusting relationship. Planning and evaluation should go on all the time, and communication and trust is part of that evaluation. It should be a daily activity. One of the things the institute is trying to do is to improve communication skills so postdocs can be truthful and honest with their mentors about goals and expectations. [[jcgalland@ucdavis.edu](mailto:jcgalland@ucdavis.edu)]

out of necessity, since there aren’t enough academic positions to go around. This represents an inherent, underlying tension in the postdoc experience, something that thoughtful planning and evaluation can help address.

Some postdocs also think that plans and evaluations are not at all valuable. Some are concerned that if they don’t want to go into a research career, the PI will think they are less committed to the research. However, a lack of truthfulness about objectives can be a stumbling block in the postdoc/mentor relationship. Honesty about goals and expectations is important. It’s critical for postdocs to go through the planning process, because it’s about their own futures. Yet some are never told to develop a plan. It’s just expected that they will. Most postdocs don’t think that way. It’s day-to-day, experiment-to-experiment, and nobody knows at what point you finish being a postdoc, so it’s tough to make a plan. Postdocs don’t always receive training other than what it takes to do research; little or no management training, limited budget training... and other things that should be in an individual plan. Some postdoc offices have begun to provide these kinds of supplemental training experiences.

## Plans and Evaluations

**PowerPoint Slides**

# 3. CONFLICT PREVENTION AND MANAGEMENT

*Authorship policies, grievance procedures, misconduct definitions*

## Authorship Policies

There are often written policies in place on authorship issues, but sometimes a difficult issue may not be totally resolved by current policies. Some institutions have required workshops on ethical issues. It was observed that a large number of conflicts are due to poor communication and poor hiring practices.

## Grievance Procedures

Institutional mechanisms are usually in place to deal with various conflicts. Many institutions urge complainants to contact the Research Integrity Office first, rather than the journal, in order to keep allegations confidential. A Scientific Integrity Office and the Research Director might address more seri-

## Conflict Prevention and Management Examples

**American Society of Plant Biologists** ASPB authorship guidelines are posted online ([www.aspb.org](http://www.aspb.org)) for authors, reviewers and staff. Publishing involves occasionally handling authorship complaints, which are handled case by case. Complaints must be made in writing and handled by the executive director, who confers with the editor. If the charge is serious, it may be referred for formal procedure. They hope the parties involved will work out the conflict. Otherwise, the society president and board are involved as necessary. They may approach the institution if the charge is credible. If a charge is verified, all coauthors are sent a letter of reprimand and education. [[ctaylor@aspb.org](mailto:ctaylor@aspb.org)]

**The Johns Hopkins University School of Medicine** The dean for postdoctoral affairs hears all complaints and conflicts between postdocs and PIs and tries to resolve them case by case. Authorship complaints can be referred to the vice dean for faculty. Required workshops by faculty on research ethics are offered several times a year, at the end of which a Post-Knowledge Assessment is performed and participants receive a certificate. Charges of misconduct are handled by the vice dean for research following established policies, rules and guidelines. If a serious problem arises, the vice dean sets up a committee to look into the matter. [[atesfay1@jhmi.edu](mailto:atesfay1@jhmi.edu)]

**Burnham Institute for Medical Research** As a standing policy, Burnham requires monthly training for all new employees. The head of the Postdoc Office handles all complaints about authorship or misconduct involving postdocs. When warranted, a three-member committee is set up to investigate. Burnham has only had three or four such cases in 30 years. [[hhuynh@burnham.org](mailto:hhuynh@burnham.org)]

**University of Alberta** The university provides ethics guidelines for all postdocs through the Postdoc Office. An ombudsperson is available to meet with postdocs and Principal Investigators. New guidelines are being issued on discipline procedures. A dispute resolution procedure is written. Terminations are handled using the

discipline procedures. The chair and the PI have signed a letter of appointment, which is considered the official contract with the university. [[susan.buchsdruecker@ualberta.ca](mailto:susan.buchsdruecker@ualberta.ca)]

**National Institutes of Health** Online ethics courses are required for all new scientific staff and employees. Updates and seminars are also held. The NIH has an ombudsman to handle disputes, most of which concern authorship. There's a written grievance resolution procedure, and appeal to the director is possible. Human Resources doesn't handle these cases, because Fellows are not employees. Conflict avoidance is usually advised. The NIH will investigate patterns of discrimination. [[schwartj@od.nih.gov](mailto:schwartj@od.nih.gov)]

**Fred Hutchinson Cancer Research Center** Postdocs must attend six ethics workshops during their time at Hutchinson. Most postdocs just want their complaints to be heard, but they can be referred to the ombuds office. There's no postdoc office, but they have a Student-Postdoc Advisory Committee. [[kpeterso@fhcrc.org](mailto:kpeterso@fhcrc.org)]

**University of Colorado at Boulder** Each department and unit at UCB has misconduct grievance procedures and conflict resolution procedures. They are kept separate. Postdocs follow the same procedures as graduate students. When a conflict arises, the parties are urged to make a best effort to resolve it at the unit level. But cases can be referred to the Office of Research Integrity and Committee on Misconduct. [[lisa.hutton@Colorado.edu](mailto:lisa.hutton@Colorado.edu)]

**Dana-Farber Cancer Institute** DFCI uses Harvard University's standard procedures. Postdocs are now required to file a Conflict of Interest (COI) disclosure. Authorship disputes are impossible to "win." Postdocs need to consider the long-term consequences to their careers and future reference letters. It's best to resolve issues in the lab. Harvard policy is fairly good at laying out a mechanism. Postdocs need to establish authorship rights when they first join the lab. [[Christina\\_parker@dfci.harvard.edu](mailto:Christina_parker@dfci.harvard.edu)]

*Forum discussions included a variety of viewpoints, some based on anecdotal experiences. The highlights presented in this report do not necessarily represent a consensus of opinion.*

ous complaints. In some instances, the Academic Affairs Office takes the lead. Postdocs generally are not inclined to take complaints to Human Resources, due to concerns about a lack of confidentiality. Complaints of favoritism are sometimes leveled with regard to authorship issues, in which case at some institutions the matter is elevated to the department chair for resolution.

## Ombuds Office

An ombuds office, that is not part of the management team, can provide independence, neutrality and confidentiality when conflicts arise. The office can work with people to identify problems and solutions and facilitate conversation. In one instance, a postdoc was leaving the country and could not reach an agreement with the Principal Investigator over manuscript data. The ombuds office brought in a senior scientist to help revolve the dispute.

## Conflict Prevention and Management

PowerPoint Slides

# 4. GENERAL EMPLOYMENT PRACTICES

*Postdoc classification systems, international postdoc policies and resources, tax issues*

## Postdoc Classification

Not all institutions define what a postdoc is. There is little uniformity in postdoc titles. They go by various titles at different schools. There are two basic categories of postdocs: employees and non-employees, or Postdoc/Research Associates and Postdoc/Research Fellows. Often, in the case of non-employees, institutions provide supplements and/or pay for health insurance for them. Some schools make postdocs all employees or all students, or have some method of getting non-employees into the system so they will be eligible for benefits. It helps in developing classifications to get a good sense of the postdoc population. Figure out who they are and then decide how to classify them. Some postdocs are called senior fellow, some are instructors, and then they go on to become faculty. The title of Research Scholar might indicate someone working on a research grant. Consistency with titles is necessary, as well as tax treatments and benefits. Institutions have to come up with the definition of training and deal with it accordingly—if postdocs are considered only

trainees and not employees, it can lead to unexpected problems, such as ineligibility for unemployment insurance when terminated.

## Tax Issues

One institution is trying to get a letter of consent from the Internal Revenue Service to classify postdocs as “affiliated with the university for purposes of training.” That would create one program of benefits for all, and the university would get a refund of FICA taxes for the past five years. It is not clear-cut who the university should pay FICA taxes for and how to stay within the law and not make the university liable for back taxes. For foreign Fellows, there is less of a problem with U.S. taxes if the fellowship or grant is paid to the university and the university cuts the salary/stipend check.

## Setting Minimum Salaries

Some institutions adhere to the National Institutes of Health minimum stipend guidelines. Others set their own. Some have no minimum salary, which can lead to inconsistency across departments and schools, and in some instance salaries are egregiously low. Principal Investigators or the institution can supplement gaps in postdocs’ remuneration when tax and health care expenses are affecting their salaries.

## Foreign Postdocs

Researchers on H1-B and J1 visas present special problems. If a foreign postdoc got his/her Ph.D. in the U.S., then he/she is not eligible for J1 visa, and the spouse of an H1-B cannot work. Changes are necessary that will allow foreign postdocs easy reentry into the U.S. after international travel. One thing that can help is for international offices at research institutions to issue a letter of good standing for immigration officials. Ideally, institutions would employ an immigration specialist to advise foreign postdocs and all foreign scholars. Homeland Security rules prevent access to certain kinds of research and prevent some postdocs from leaving the U.S. because they are deemed “experts of value.” There’s also a problem in paying for an H1-B visa application. The postdocs usually pay for it themselves. But it takes months. Expediting the process costs about \$1,000. The PI or department can pay this. Universities need to be sensitive to the increased time for the issuance of visas. H1-B visas holders must be paid the same as their peers, but there’s a problem determining exactly who their peers are.

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## General Employment Practices Examples

**University of Colorado at Boulder** The University of Colorado at Boulder gives two months of bridging money when a postdoc's funding is discontinued. This is for soft-money faculty and postdocs. It helps as they're looking for other jobs or writing research proposals. [[lisa.hutton@Colorado.edu](mailto:lisa.hutton@Colorado.edu)]

## General Employment Practices

[PowerPoint Slides](#)

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## 5. POSTDOC OFFICES

*Establishing and maintaining funding*

Experience has shown that a Postdoc Association alone cannot sustain services for postdocs. Postdocs are too transitory. A Postdoc Office is needed to maintain continuity of training activities. Identifying a senior administrator (e.g., Vice Chancellor, Head of Institution, Provost) to champion the idea, while having a Postdoc Association or individual postdoc lead the initiative, can help ensure success in establishing a Postdoc Office. In a time of tight budgets, it takes more than passion and the argument about "what everyone else is doing." It takes senior level buy-in and funding.

In writing a Postdoc Office proposal, include the justification for it, job descriptions of staff, resources needed/provided and why a postdoc office benefits all stakeholders. External funding can provide some resources, but is unlikely to be stable enough to sustain an office. Private fundraising may be appropriate to fund specific programs/awards to postdocs. At some institutions, either the Research Office or the Provost provides all funds and staff for the Postdoc Office.

Some felt it best to affiliate a postdoc office with a neutral body (e.g., VP for Research) instead of reporting to only one dean. A neutral affiliation

may make it easier to get faculty participation. One participant felt that graduate schools generally do not have sufficient resources to serve postdocs appropriately. However, another maintained that since postdocs and graduate students share many common issues, it's only natural to affiliate postdoc offices with grad schools.

A Postdoc Office Advisory Group, comprised of junior and senior faculty, as well as postdocs, can help counteract possible faculty resistance. A senior administrator should appoint the advisors. Don't seek out only faculty volunteers; it's good to have some faculty skeptics in the group as well.

The Postdoc Association and postdocs can play a leading role in recommending new initiatives and should take the lead in implementation (e.g., identifying and hosting career panels, but not providing the administrative support). Postdoc involvement should be sought for everything from orientation materials to benefits to professional development.

When there is not a Postdoc Association on campus, it is especially important that postdocs have a voice in activities of a Postdoc Office. Postdocs should participate in developing handbooks, evaluation systems, exit interviews, but the Postdoc Office is the only group that can conduct exit interviews and postdoc surveys.

## Postdoc Offices Examples

One Postdoc Office funding method has been to set a tax or fee that's paid by department (**University of Pennsylvania** [[fwilkins@vet.upenn.edu](mailto:fwilkins@vet.upenn.edu)]) or visiting scholars (**University of California at Berkeley** [[samc@berkeley.edu](mailto:samc@berkeley.edu)]). At the **Scripps Research Institute** [[rnepomuc@scripps.edu](mailto:rnepomuc@scripps.edu)], the Postdoc Association receives the proceeds from an annual vendor fair.

## Postdoc Offices

[PowerPoint Slides](#)

## 6. ATTRACTING AND MAINTAINING A DIVERSE POSTDOC POPULATION

*Ethnicity, gender, sexual orientation, disabilities*

“Some institutions use diversity broadly to brush over the reality that they are doing poorly in attracting and retaining a diverse population. I want to see a more colorful group of graduate students and postdocs. For all of the going out and meeting people, it doesn’t seem like we are getting anywhere.”

## Recruitment

Institutional climate plays a major role in both recruitment and retention. Success comes with creating an inclusive environment early on. Institutions need to make an effort to reach out to minority populations. Two ways to do this are to partner with minority-serving institutions and to send recruiters to minority-serving professional society meetings (include a scientist and a staff person, and a graduate student or postdoc if possible). Talk to people, invite them to apply, invite them to come to your institution for a seminar, etc. Help students overcome self-doubt. Reach back earlier to high school and undergraduate school to get people interested in and connected to science careers. Get them in the pipeline. Training grants encourage a diverse applicant and trainee pool. These grants are supposed to be casting a wider net, actively recruiting a diverse population.

### Attracting and Maintaining a Diverse Postdoc Population Examples

**University of California at Berkeley** UC Berkeley’s Faculty Equity Program places 10 diverse postdocs/researchers across the UC campuses (the two-year award has both research and teaching components). Details are on Web site. [[samc@Berkeley.edu](mailto:samc@Berkeley.edu)]

**National Science Foundation** The NSF has offered an underrepresented minority (URM) fellowship for the past 10 years. It’s a two-year postdoc in biosciences. Showing evidence of career training is required for NSF grant renewal. “Career enhancement” period is one definition of a postdoc by NSF. [[ckimsey@nsf.gov](mailto:ckimsey@nsf.gov)]

**City of Hope** A monthly brown bag lunch held by The City of Hope for women scientists functions as both a networking and support group to help them deal with career and family issues, among other matters. [[jgoto@coh.org](mailto:jgoto@coh.org)]

**Memorial Sloan Kettering** The Office of Diversity was created at Memorial Sloan Kettering to address minority postdocs’ feeling of isolation. [[stevensl@mskcc.org](mailto:stevensl@mskcc.org)]

**National Institutes of Health** International Fellows at NIH are setting up alumni outposts

in their home countries to help orient other Fellows and new students as to the possibilities and experiences available in the U.S. This is being done in conjunction with a new grant at Fogarty International Center, through the Global Health Research Initiative Program (GRIP), that targets less-developed countries. Fellows going back to their home countries can apply. They must have a sponsor-collaborator at the NIH, with whom they will meet in person once or twice a year and work on projects. (PIs at NIH are now being reviewed on mentoring skills.) The research grants are about \$50K. [[schwartzj@od.nih.gov](mailto:schwartzj@od.nih.gov)]

**National Institutes of Health** NIH has a partnership with the University of North Carolina at Pembroke, primarily a Native American undergraduate institution, as a way to encourage students to succeed in science. [[schwartzj@od.nih.gov](mailto:schwartzj@od.nih.gov)]

**NIEHS Summers of Discovery** Hrabowski and Meyerhoff scholars are amazing. They can be brought in as interns or postdocs. Such partnerships are really important. Also, NSF has a program in Puerto Rico. An NIEHS Diversity Council holds monthly seminars at which postdocs make presentations. [[league@niehs.nih.gov](mailto:league@niehs.nih.gov)]

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## Retention

**M**entoring and institutional support are critical to retention of minorities. It's essential to have the involvement of and commitment to diversity by leadership. A number of institutions have found it useful to hold ongoing seminars and workshops sponsored by minority populations that appeal to the entire organization (cross-pollination) and training seminars in culture, conflict and mentoring. Co-mentoring programs ("PI plus") can also be effective. Other issues related to retention include assumption of ability (e.g., person has potential vs. is unprepared) and stereotype threat (inability to do well when in a group that is stereotyped as less able). Many minorities feel a sense of isolation and that they are "under a microscope"—that their failures and successes are magnified. We need to be sensitive to these issues. Effective mentoring and networking can play a major role in overcoming some of these obstacles. Various summer programs are available to help prepare postdocs, including the NPA Postdoc Preparation Institute (in collaboration with UT-El Paso and Howard University). These help address student preparedness and disparities in training between institutions.

**"The role of professional societies is really important...[in creating a diverse workforce in science and engineering].**

**Seeing your friends involved in peer-to-peer mentoring that's the power of advertising between individuals. For many of those in underrepresented minority (URM) groups, our institutions are intimidating by their very reputations. Simply believing they can apply is a real hurdle for some. Low self-esteem is a serious problem. Going to society meetings gives Principal Investigators and others the opportunity to tell URM grads they can and should apply!"**

## Attracting and Maintaining a Diverse Postdoc Population

**PowerPoint Slides**

## Diversity Resources

### **Alliance for Graduate Education and Professoriate**

<http://ehrweb.aaas.org/mge/>

### **American Association for Cancer Research**

<http://www.aacr.org/>

### **Annual Biomedical Research Conference for Minority Students**

<http://www.abrcms.org/index.html>

### **Federation of American Scientists for Experimental Biology**

<http://www.faseb.org/>

### **GEM Fellowship Programs**

[http://was.nd.edu/gem/gemwebapp/gem\\_00\\_000.htm](http://was.nd.edu/gem/gemwebapp/gem_00_000.htm)

### **JustGarcia/Hill**

<http://www.justgarciahill.org/jghdocs/index.asp>

### **Minority Scientists Network**

[http://sciencecareers.sciencemag.org/career\\_development/miscinet](http://sciencecareers.sciencemag.org/career_development/miscinet)

### **National Organization for the Professional Advancement of Black Chemists and Chemical Engineers**

<http://www.nobcche.org/>

### **National Society of Black Engineers**

<http://www.nsbe.org/>

### **National Society of Black Physicists**

<http://nsbp.org/cgi-bin/nsbp.cgi?page=home>

### **National Technical Association**

<http://www.ntaonline.org/>

### **Society for Advancement of Chicanos and Native Americans in Science**

<http://www.sacnas.org/>

### **Women in Academic Science and Engineering: A Guide to Maximizing Their Potential**

<http://www8.nationalacademies.org/cp/project-view.aspx?key=CSEP-Q-05-02-A>

# OUTCOMES: THE POST-FORUM SURVEY

Following the forum, participants were e-mailed a web-link to an online survey asking them for feedback on the forum, and also for information about their future plans. The survey was completed by 38 of 72 participants. Respondents were asked about their plans to establish new policies/practices or to modify existing ones as a result of what they had learned at the forum. Their responses to this question are summarized below:

Policy/Practice	Count	Percent
Orientations	18	47.4%
Letters of appointment	11	28.9%
Exit surveys	24	63.2%
Certificates of completion	4	10.5%
Authorship policies	1	2.6%
Grievance procedures	5	13.2%
Misconduct definitions	1	2.6%
Forms & Guidelines for research/ career plans	15	39.5%
Performance evaluations	12	31.6%
Postdoc classification systems	7	18.4%
International postdoc resources	6	15.8%
Tax issues	8	21.1%
Establishing and maintaining funding for a Postdoc Office	7	18.4%
Attracting and maintaining a diverse postdoc population	8	21.1%
Leadership/management training	14	36.8%

## Interpreting the Results

The survey did not ask respondents what policies were already in place, nor did it ask whether these policies/practices had been evaluated for efficacy. Therefore, some respondents who already have good policies and practices in place may not have felt any need to establish new or modify existing ones. Furthermore, there was no way to determine whether those with plans were more or less likely to complete the post-forum survey.

Sigma Xi and NPA plan to conduct a second post-forum survey at the six month mark to determine whether plans have been implemented and/or whether there has been any progress to date in working towards implementation. This survey will also ask whether there were any policies in place prior to the forum, so that the responses can be interpreted with greater accuracy.