

FEDERAL DEMONSTRATION PARTNERSHIP

Redefining the Government University Research Partnership



A Forgotten Class of Scientists: Examining the Parental and Family Benefits Available to Research Trainees

**Prepared by the Federal Demonstration Partnership
Task Force on Parental and Family Leave for Research Trainees**

For more information about the FDP, please visit our website at <http://www.thefdp.org>

500 Fifth Street, NW, Washington DC 20001

Email: fdp@nas.edu

Phone: (202) 334-3994

Task Force Charge

The Federal Demonstration Partnership's Task Force on Parental and Family Leave for Research Trainees was charged with: (1) providing information that enables federal agencies and universities to remove barriers for young people to become the next generation of scientific researchers; and (2) providing information that can increase clarity and streamline processes for university administrators and federal agencies associated with parental and family leave for research trainees.

Task Force Members

Jennifer Wisdom, Columbia University (Chair) (Faculty)
Jason Carter, Michigan Technological University (Faculty)
Catherine Didion, National Academies (Non-profit)
Doug Doren, University of Delaware (Faculty)
Christa Johnson, Washington University in St. Louis (Administrator)
Sara Judd, University of Southern California (Administrator)
Bill Kobertz, University of Massachusetts Medical School (Faculty)
Michele Masucci, Temple University (Faculty)
James Trotter, Oregon Health & Science University (Administrator)
Pamela Webb, University of Minnesota (Administrator)

Report Reviewers

Kathleen Ehm, National Postdoctoral Association
Jean Feldman, National Science Foundation
Karie Frasch, University of California, Berkeley
Marc Goulden, University of California, Berkeley
Kelly Mack, National Science Foundation
Mary Ann Mason, University of California, Berkeley
Cathee Phillips, National Postdoctoral Association
Sara Rockwell, Yale University
Susan Sloan, Government-University-Industry Research Roundtable of the National Academies

Report Consultants

Ann George, Stanford University
Jennifer McCafferty, University of Miami
Denise McCartney, Washington University in St. Louis
Joshua Rosenbloom, University of Kansas
Liz Rulli, University of Notre Dame
Lily B. Secora, Columbia University
Merle Waxman, Yale University

Report Writer

Daisy Whittemore

With thanks,

Jennifer Wisdom, Chair, FDP Task Force on Parental and Family Leave for Research Trainees
Columbia University
jpw2129@columbia.edu
January 24, 2012

A Forgotten Class of Scientists¹: Examining the Parental and Family Benefits Available to Research Trainees

EXECUTIVE SUMMARY

Our nation's scientific progress relies upon a cadre of developing scientists and engineers at academic institutions, federal agencies, and private organizations across the country who fill critical roles in the research workforce. To further their careers, these research trainees rely on temporary placements — pre- and postdoctoral appointments — that do not consistently offer support and benefits afforded other researchers, including adequate parental and family leave. Trainees' benefits sometimes slip through the cracks between the federal funding agency and their academic institution of residence. This fragmented system contributes to a common perception that a research career is incompatible with having a family, further eroding the critical scientific workforce, particularly women.

The Federal Demonstration Partnership (FDP) Task Force on Parental and Family Leave for Research Trainees examined the status of federal and university policies related to parental and family leave for predoctoral and postdoctoral research trainees. The Task Force is a cooperative initiative of individuals from research universities and non-profits working collaboratively with federal agency officials to create a series of broadly adopted policies and procedures that promote a healthy and effective research infrastructure. To this end, this Task Force report:

- (1) Reviews existing federal regulations and policies related to parental and family leave benefits;
- (2) Describes the issues impacting parental and family leave benefits for research trainees;
- (3) Examines how academic institutions interpret policies with regard to predoctoral and postdoctoral research trainees and family and medical leave; and
- (4) Articulates a series of comprehensive next steps, including compiling recommendations from Federal agencies, researchers, academic institutions, and policy analysts to improve the implementation of family and medical leave for research trainees.

Background

Protecting employees from various forms of discrimination is an important role of federal and state governments. The potential impact of pregnancy and parenting on career development has been a focal point of legal scholars and lawmakers since the late 1960s, resulting in a series of laws and regulations, including the Pregnancy Discrimination Act, the Family and Medical Leave Act, Title IX, and the Office of Management and Budget Circular A-21. Family-friendly policies and benefits — including paid parental leave, short-term disability leave, unpaid extended family leave supported by the Family and Medical Leave Act, and paid or subsidized childcare — are becoming more commonplace across the U.S. Unfortunately for research trainees, however, receiving parental or family leave benefits is uncommon. According to researchers at the University of California at Berkeley, the paid maternity leave for academic populations at Association of American Universities member institutions, only 23 percent of postdoctoral researchers were entitled to at least six weeks of paid leave following childbirth. Only 13 percent of academic institutions offered paid leave to graduate researchers and some

academic institutions had an institutional cap on the number of individuals who could receive paid leave at a given academic institution.²

Straddling the Divide

Determining parental and family leave policies for any given research trainee can be a complicated dance between institutional policies and those required or allowed by funding agencies. There are three primary, interdependent factors in determining the benefits available: (1) the source of funding (individual training grants, institutional training grants, or research grants to their mentors, which have different implications for employee status and benefits); (2) the policies and benefits structure at their academic institution, that can sometimes result in postdoctoral researchers working side by side performing the same duties but with different benefits; and (3) the particular circumstances of the research trainee, including what they need, where they are in their career, and the research they are doing. The ranges in benefits include: fixed versus accrued sick leave, leaves of absence or accommodation, withdrawal and re-entry programs, and dependent care/childcare.

Steps Forward

Several efforts are underway to improve the situation for research trainees. The National Postdoctoral Association held a summit in 2010 addressing the postdoctoral stage of women's careers, the National Science Foundation Career-Life Balance Initiative was recently launched with a ten-year plan to provide greater flexibility to men and women in research careers, and the NIH Working Group on Women in Biomedical Careers addresses issues related to the entry, retention, and sustained advancement of women in all levels of scientific careers. At academic institutions across the nation, many people are working to better the experience for research trainees, and to assist them, their supervisors, and the various departments in navigating this complicated landscape. In many cases, task forces are forming, FAQs and policy papers are being written, and outreach is underway to inform faculty and research trainees of existing policies and options. In at least one case, postdoctoral researchers are banding together to make change. At the University of California, postdoctoral researchers successfully formed a union and ratified their first contract in 2010 to address hours, benefits, and wages.

This Task Force report describes findings from FDP member institution representatives and data from prior reports to provide a consolidated summary of recommendations for the equitable treatment of postdoctoral researchers and employees with regard to parental and family leave. These recommendations suggest (1) collaboration and partnerships; (2) further research into existing and efficacious programs and their costs; (3) policy reform, including a minimum baseline for all research trainees; (4) institutional climate change and support, including transparency, zero tolerance for discrimination, and mentoring programs; and (5) increased outreach and dissemination of clear policies at academic institutions and federal agencies.

The FDP and the Task Force on Parental and Family Leave for Research Trainees recognizes and joins the efforts made across the nation to support change to the existing systems and policies for research trainees in general, and with respect to family and parental leave policies.

A Forgotten Class of Scientists¹: Examining the Parental and Family Benefits Available to Research Trainees

A Report of the Federal Demonstration Partnership Task Force on Parental and Family Leave for Research Trainees

Scientific progress relies upon a cadre of developing scientists and engineers at academic institutions, federal agencies, and private organizations across the country who are critical to the advancement of science, accounting for “a great deal of the extraordinary productivity of the United States’ academic science and engineering enterprise.”³ These research trainees rely upon their pre- and postdoctoral research appointments and experience to expand their education, and ultimately, further their research careers and future tenure-track employment. As such, it is a mutually beneficial enterprise. Yet, as these young scientists are pursuing their academic ambitions, they are also involved in other important aspects of their lives. They are often raising families, or considering this possibility. They may be caring for other family members, such as aging parents. The ages for postdoctoral researchers cover a wide range, with the vast majority (over 70%) between 28 and 35. In 2003, more than two-thirds of postdoctoral researchers were married, and more than one-third had children.⁴

Despite the critical role research trainees fill in the nation’s advancement of science and the development of the research workforce, and the widely understood life stage that prevails for many of them, the existing policies and regulations that govern postdoctoral life do not consistently support adequate parental and family leave policies for them. Research trainees frequently straddle two systems—the federal funding agency and their academic institution of residence—and, as such, their benefits have been known to slip through the cracks. This fragmented system contributes to a common perception that a research career is incompatible with having a family, further eroding the critical scientific workforce. Developing scientists, particularly women, may not pursue research careers, or may postpone or abandon them in seeking work more supportive of their needs to balance work and family.⁵

This report from the FDP Task Force on Parental and Family Leave for Research Trainees provides an overview of federal and university policies for predoctoral and postdoctoral research trainees and assembles recommendations previously made to support a better experience for research trainees in the U.S.

Background

The Federal Demonstration Partnership’s Task Force on Parental and Family Leave for Research Trainees is examining the status of federal and university policies (including the Family and Medical Leave Act, Title IX, and Circular A-21) related to parental and family leave for predoctoral and postdoctoral research trainees. The Task Force hopes, through this effort, to identify areas of strength and weakness and use these findings as a springboard for the creation of broadly adopted policies and procedures that promote a healthy and effective research infrastructure.

The Federal Demonstration Partnership (FDP) is a unique forum for individuals from research universities and non-profits to work collaboratively with federal agency officials to improve the national research enterprise. The FDP is a cooperative initiative among ten federal agencies and 119 academic institutions that receive federal research funds with a primary purpose of reducing the administrative burden associated with research regulations and practices while continuing to ensure strong stewardship of federal funds. The Partnership is administered by the Government-University-Industry Research Roundtable (GUIRR) of the National Academies. Each academic institution has administrative, faculty and technical representation, who work closely with policy makers and scientific and administrative leaders of the involved federal agencies to streamline the administration of federally sponsored research. Federal Demonstration Partnership members from all sectors cooperate in identifying, testing, and implementing new, more effective ways of managing the more than \$15 billion in federal research grants. The goal of improving the productivity of research without compromising its stewardship has benefits for the entire nation.

This report reviews:

- (1) An overview of predoctoral and postdoctoral research training in the United States.
- (2) Federal regulations and policies related to parental and family leave benefits.
- (3) A description of issues impacting parental and family leave benefits for research trainees.
- (4) How academic institutions interpret policies with regard to predoctoral and postdoctoral research trainees and family and medical leave.
- (5) Next steps, including a comprehensive collection of recommendations from federal agencies, researchers, academic institutions, and policy analysts to improve the implementation of family and medical leave for research trainees.

Federal Policies

Protecting employees from various forms of discrimination is an important role of federal and state governments. The potential impact of pregnancy and parenting on career development has been a focal point of legal scholars and lawmakers since the late 1960s, culminating in a 1978 amendment to **Title VII** of the Civil Rights Act protecting employees from discrimination, known as the **Pregnancy Discrimination Act**, which added pregnancy to the list of protected statuses. Currently, there are several federal policies related to family and parental leave that are applied by federal agencies, states, and academic institutions in developing programs for academia, which include varying benefits for students, research trainees, and faculty.

Title IX of the Education Amendments of 1972 prohibits discrimination on the basis of gender in any educational program or activity receiving federal financial assistance. These regulations do require pregnancy leave but do not explicitly require academic institutions to have or disseminate a formal policy.⁶ Federal law prohibits educational institutions that receive financial assistance from federal agencies from discriminating against students due to pregnancy or parental status in their admissions or employment. How this law applies to particular postdoctoral researchers across the country varies widely, but an analysis by the

Center for American Progress suggests a reasonable argument could be made that institutions without a clear policy on pregnancy leave for postdoctoral researchers are out of compliance with Title IX.⁷

The Family and Medical Leave Act entitles eligible employees to as much as 12 weeks of unpaid leave with continuing benefits for family-related purposes, including pregnancy and maternity leave.⁸ It applies to employees who have worked for at least a year for a minimum number of hours.⁹ Many states also have their own laws allowing for unpaid family leave.¹⁰ There are two primary problems in applying the Family and Medical Leave Act to postdoctoral researchers as a group: Postdoctoral researchers are paid and classified differently based upon type of funding. Some receive stipends directly and do not have access to employee benefits of the academic institution. Others are paid salaries, often using grant monies to the academic institution, and may receive employee benefits, such as those granted by the Family and Medical Leave Act.¹¹ In addition, because postdoctoral fellowships or traineeships are generally temporary positions, the one-year work requirement is limiting for many researchers. Research trainees may need to look to other options to seek support for their family leave.¹²

The Office of Management and Budget (OMB) established **Circular A-21**,¹³ which helps define costs that the federal government can reimburse on sponsored projects and provides guidance regarding how institutions should treat direct expenses, indirect costs, or unallowable costs. Circular A-21 also contains a requirement for the consistent treatment of a single cost category within an institution, including those associated with benefits for employees, trainees, and staff within the same institutional classification. The application of Circular A-21 to postdoctoral researchers is therefore highly dependent on both university policies and individual federal agency program requirements. While Circular A-21 ensures consistency within individual institutional classifications, some individual federal agency program regulations might encourage academic institutions to create different classifications among postdoctoral researchers in order to comply with both Circular A-21 and agency requirements. In the National Research Service Award program, for example, recipients cannot be classified as employees of the academic institution (see below). In many cases, institutions have created two classifications to accommodate these rules: one postdoctoral researcher group comprises salaried employees with benefits, while the other group comprises non-employee trainees paid via stipends and not entitled to the same benefits as employees. In the absence of a university policy or federal rule requiring a single employment category for the postdoctoral researcher, institutions might be unintentionally fostering differential treatment among postdoctoral researchers in order to comply with both Circular A-21 and federal program rules. Universities could potentially reduce many disparities between postdoctoral researchers that arise from having different funding sources by ensuring equal benefits packages regardless of institutional classification.

Who are Research Trainees?

Research training placements are, by nature, temporary appointments. Predoctoral researchers on traineeships or fellowships are typically receiving training while they pursue their doctoral degrees. The work of postdoctoral researchers engaging in traineeships or fellowships

immediately follows completion of doctoral work, and generally ranges from 1-5 years, with an average duration of 3.8 years.¹⁴ There is an assumption that the training position is designed to transition the trainees to independent investigator status, and a limited time is allotted to these appointments. Further, these postdoctoral research appointments are often extremely competitive. Some postdoctoral researchers may be willing to forego benefits in order to be seen as more competitive, or they may fear that increased benefits may ultimately reduce the number of postdoctoral positions available.

Postdoctoral researchers are training positions funded in a variety of ways. Some are supported by individual training grants (such as a NIH F32) or an institutional training grants (such as a NIH T32) and are considered trainees and generally do not receive additional benefits to their stipend. Others are supported by their mentor's research grant or by another grant mechanism (such as by a private industry or foundation) and are generally considered employees, are taxed as such, and receive the benefits of other employees. The funding mechanism can determine how they are paid and their employment benefits. For example, by federal law, National Research Service Award trainees are not allowed to be employees of their academic institution because they are trainees and not "performing service" as required to be classified as an employee. These postdoctoral trainees must be paid a stipend (as opposed to a salary), which means that academic institutions are responsible for the costs of benefits to research trainees funded through this mechanism. National Research Service Award trainees also do not pay Federal Insurance Contribution Act (FICA), although reasons for this are varied, either because they are not classified as self-employed, or because National Research Service Award stipends have been determined to be "loans" against future service and therefore not considered taxable income.¹⁵

Although none of these rules prohibits trainees from receiving equitable benefits, it is not clear what reimbursement mechanisms would allow for reimbursement to the institution, as training grants through the National Research Service Award are currently limited to 8% indirect cost allowance, which does not cover the university's costs in either training or benefits. Some have suggested that Congressional intervention is needed, allowing National Research Service Award trainees to be considered employees

Predocotrinal researchers have received their bachelor degree are enrolled in a graduate program. Funding for these research trainees comes from various sources, and as with postdoctoral researchers, the type of funding can determine the benefits available.

Although all research trainees are potentially impacted by policies on family and medical leave, these policies generally impact women researchers more significantly. More women are choosing science and engineering majors at academic institutions across the U.S.¹⁶ Women make up a significant portion of the talent pool for research and are critical to the continued production of a competitive scientific workforce in the U.S.¹⁷ However, multiple data sources indicate that women are more likely than men to "leak out of the science pipeline" before obtaining a tenured position at an academic institution.¹⁸ The coincidence of the research training period with a woman's prime childbearing years is a particular concern, as it generally

impacts women more than men. As the age of tenure track positions and first time grant receipt increases, this overlap is becoming more prevalent.¹⁹

Several efforts are underway to improve this situation. In 2010, the National Postdoctoral Association held a National Summit on Gender and the Postdoctorate to examine the postdoctoral stage of women's careers and consider the key factors influencing their transition to independent investigator positions, including the implementation of family-friendly postdoctoral policies.²⁰ A panel on why women postdoctoral researchers leave the academic pipeline suggested the primary factor appears to be family formation, and pointed to the complications presented in having children during postdoctoral training as a significant hindrance. The recently launched “National Science Foundation Career-Life Balance Initiative” is a ten-year plan to provide greater flexibility to men and women in research careers. It recommends a series of best practices that the National Science Foundation plans to extend Foundation-wide, such as allowing researchers to delay the start of their grants for up to one year in order to care for a new child or other family obligations.²¹ In collaboration, the White House announced a series of efforts launched in September 2011 to engage and support women in the sciences. These include a partnership between the Association of Public and Land-Grant Universities and the Association of American Universities to work with the National Science Foundation to support more flexible work and learning environments for women. In addition, the Association for Women in Science is launching an initiative to identify and promote characteristics of the ideal research workplace. This report builds on these substantial efforts from the unique perspective of the federal-academic partnership of the Federal Demonstration Partnership.

Parental and Family Benefits

Family-friendly policies and benefits are becoming more commonplace across the U.S., sustaining a healthier and more productive balance of family life and work for men and women. They can include paid parental leave, short-term disability leave, unpaid extended family leave supported by the Family and Medical Leave Act,²² and paid or subsidized childcare. In the case of research trainees (and tenure track faculty), time may be an added pressure. These issues have come to the forefront for faculty regarding the tenure track process, and the time pressures associated with it, but they are also relevant to research trainees, who may have limited time within their appointments and the funding associated with them. Programs that permit delays are more conducive to families. In some cases, re-entry programs for developing scientists who have taken a hiatus to start a family may also be helpful.

Unfortunately, for research trainees, receiving parental or family leave benefits is uncommon. Researchers at the University of California at Berkeley surveyed the paid maternity leave for academic populations at Association of American Universities member institutions, revealing a wide range of coverage with only 23 percent of postdoctoral researchers entitled to at least six weeks of paid leave following childbirth. Only 13 percent of academic institutions offered paid leave to graduate researchers and some academic institutions had an institutional cap on the number of individuals who could receive paid leave at a given academic institution.²³

There are three primary elements that determine the parental and family benefits for a research trainee: (1) source and type of funding, including the research trainee's appointment classification; (2) the policies and benefits structure at their academic institution; and (3) the particular circumstance of the research trainee, including what they need, where they are in their career, and the research they are doing.

Source and Type of Funding

The federal policies guiding the financial support and benefit structures for research trainees are complicated, and have been interpreted in a variety of ways by federal funding entities, academic institutions, and private organizations. Federal funding agencies develop policies for their grantees based upon the type of funding trainees receive. In the recent past, efforts have been made for more family-friendly policies, including provisions for no-cost extensions, allowing part-time work, and supporting grant supplements for the birth, care, or adoption of a child.²⁴

There are a multiple federal agencies that provide funding for Science, Technology, Engineering, and Mathematics research trainees. The FDP Task Force reviewed the websites and spoke with staff of some of the primary funders, as well as consulted additional sources, to understand their policies and provide a sampling of the diversity amongst them.

The **National Institutes of Health (NIH)** is the largest source of funding of biological research in the U.S.²⁵ According to the National Institutes of Health Family-Friendly Initiatives,²⁶ their grant awards “allow for reimbursement of actual, allowable costs incurred for child care, parental leave, or additional technical support provided such costs are incurred under formally-established institutional policies that are consistently applied regardless of the source of support.” The most common postdoctoral fellowship funded by the National Institutes of Health, the National Research Service Award (NRSA), however, allows trainees to receive stipends for up to 8 weeks of parental leave “when those in comparable training positions at the grantee organization have access to this level of paid leave.” Unpaid family leave may be available, if approved. For the National Institutes of Health career development awards, awardees “may request adjustments to their appointment status or percent effort for personal or family situations such as parental leave, child care, elder care, medical conditions, or a disability.” They may request, for instance, to reduce the amount of hours worked from full (100%) time to three-quarters (75%) time for up to a year. Some awards from the National Institutes of Health also allow for what is known as an administrative supplement, in which case the PI can request additional funds due to unforeseen circumstances, including the parental or family leave needs of a research trainee.²⁷ However, there is no formal or publicized policy to guide these supplements.

The **National Science Foundation (NSF)** supports general science research, with parental leave policies that are generally handled on a case-by-case basis. The National Science Foundation must be notified in all cases of leaves of absence longer than three months. For leaves of up to three months, no approval is needed; if longer than three months, with intent to return, arrangements for oversight and continued research need to be approved. The National Science

Foundation provides options for their grantees in the case of the birth, care, or adoption of a child. For example, if the trainee knows in advance, she or he may defer funding for a year. The National Science Foundation also allows medical leave if the academic institution policies concur. With their recent initiative, these policies are subject to change.²⁸

For the **National Aeronautic and Space Administration (NASA)**, research fellows are not considered employees, and therefore, there are no employment-related benefits such as paid vacations, sick leave, or unemployment compensation. With approval, a fellow may be excused without cessation of his or her stipend for brief periods due to illness, personal emergencies, or other unforeseen circumstances. NASA will grant unpaid maternity leave approved by the advisor. The stipend will be suspended during this time and will be extended by the number of days of approved maternity leave upon return. Of note, the fellow must pay the full insurance premium while on maternity leave, that is, NASA's portion and the fellow's portion of the premium combined.

The Federal Demonstration Partnership also includes other federal agencies that fund postdoctoral researchers. Using the web to search their programs, the FDP Task Force found different approaches to parental and family leave policies and applications similarly based around particular program announcements, research area, location, or degree. For example, the Department of Defense funds postdoctoral research through a variety of mechanisms including young investigator and resident researcher programs within their military branches, such as the **Air Force Office of Scientific Research**, **Army Research Office**, and the **Army Medical Research and Materiel Command**. The **Office of Naval Research** and the **National Institutes of Health** consider parental and family leave a fringe benefit, included in the academic institution's benefits costs and regulated by the Circular A-21 to ensure equitable distribution. The **Agriculture Research Service** within the U.S. Department of Agriculture funds postdoctoral research associate positions as federal grade level employees, with salary and some benefits available after a year of appointment. Annual and sick leave can be earned and used.²⁹ The **Environmental Protection Agency** has postdoctoral programs that include federal benefits across their centers.³⁰ The FDP Task Force could find only limited information regarding the family and medical leave benefits for research trainees within the **Department of Homeland Security**. Finally, some research trainees are funded by their own research institution or through private means. In these cases, some of the federal regulations apply, and some do not.

Academic Institution Policies

The parental and family leave policies for research trainees at academic institutions are considerably varied, and often awash in confusion between institutional policies and those required or allowed by funding agencies. Many academic institutions are working to better the experience for research trainees, and to assist them, their supervisors, and the various departments in navigating this complicated landscape. In many cases, task forces are forming, FAQs and policy papers are being written, and outreach is underway to inform faculty and research trainees of existing policies and options.

In at least one case, postdoctoral researchers are banding together to make change. At the University of California, postdoctoral researchers successfully formed a union and ratified their first contract in 2010 to address hours, benefits, and wages.³¹ The contract with the International Union, United Automobile, Aerospace and Agricultural Implement Workers of America (UAW) and the University of California includes three categories of UC postdoctoral researchers: postdoctoral scholar-employees, postdoctoral scholar-fellows (who receive their stipend from a UC compensation system but are not employees), and the postdoctoral scholar-paid directs (who get their stipend directly without campus involvement and who are not employees). All postdoctoral scholars are required to be part of the union. All categories of postdoctoral scholars receive workers compensation, accidental death and disability, and short-term disability at no cost to them; depending on the negotiation with the faculty sponsor, the postdoctoral scholar may be responsible for the payment of the health insurance premium.

To get a better picture of the breadth of programs and policies across U.S. institutions the Federal Demonstration Partnership Task Force invited faculty representatives from its 119 member academic institutions (public and private) to respond to a series of questions on the parental and family leave policies at their academic institution for research trainees:

- What is the situation for federally funded research trainees related to parental and family leave?
- Do trainees have an option for parental and family leave? If so, how is it funded?
- Are the existing programs working? Are they consistent across schools and departments, and types of funding?
- Have there been any initiatives to address these issues? If so, what are goals, who has been involved, and what progress has been made?
- What barriers or challenges still need to be addressed?

While not necessarily a representative sampling of U.S. academic institutions, the 13 responses received are not surprising. Each institution is different. There appears to be little collaboration across academic institutions or with federal agencies to make active efforts to improve the process, although many institutions are independently addressing these issues. At the least, this is a case of wasted resources. It creates confusion and multiple interpretations of already complicated policies. For example, Title IX requires that institutions provide unpaid, job protected leave to birth mothers “for a reasonable period of time,” the absence of a formal policy could lead to the institution being in violation of Title IX if a postdoctoral scholar was informally granted less than what could be considered reasonable. One academic institution that responded to a survey conducted by the University of California at Berkeley indicated it does not provide unpaid leave to postdoctoral researcher birth mothers and six indicated that they did not know whether they did or not.³² Note that the absence of a formal policy requires postdoctoral researchers to negotiate for leave, which places an undue burden on them and is likely to create inequitable situations.

The following are issues identified by responses from Federal Demonstration Partnership academic institution members, which combine in some cases to create the perception of an unfriendly climate for researchers who have or want to have families.

Multiple Classifications

One of the major complicating factors for these parenting and family benefits are the position classifications required for access to them. According to the National Academies Committee on Women in Science, Engineering, and Medicine, at some institutions, postdoctoral researchers are not classified as students or as employees and therefore receive the benefits and protections of neither. Institutions are working with multiple classifications for research trainees based mostly upon type of grant monies received, which determine whether benefits are paid, partially paid, or unpaid. Postdoctoral researchers can work side-by-side performing the same duties but have different benefits.

A respondent from an academic institution in the Northwest indicated that because they are non-employees who are receiving stipends, postdoctoral researcher trainees on NIH T32 grants are not allowed to accrue sick and vacation leave, as postdoctoral researchers who are classified as employees do. Postdoctoral researchers on training grants cannot get the 60 days of paid parental leave allowed by National Institutes of Health, but are given up to 15 days of paid sick leave and 30 days of paid parental leave, provided they haven't used the sick leave. Any remainder of leave would be unpaid. In principle, the trainee's department could compensate them from general funds, but this was uncommon. Moreover, at this academic institution, the principal investigators were told that they must compensate trainees so those performing the same work have similar benefits. However, having no system to formally track accruals, and being prohibited from doing so, they have no mechanism to apply like benefits. This institution is attempting to clarify these issues with a formal trainee leave policy.

Often, predoctoral researchers, if they have access to any parental or family benefits at all, are required to be full time students in good academic standing. Since they have already graduated from an educational program, student benefits are usually not available to postdoctoral researchers, although one academic institution reported they require their postdoctoral researchers to enroll in at least one course per academic year so they will, under the academic institution policies, be eligible for student benefits.

One school in the Midwest established a Postdoctoral Education Policy for schools of arts and sciences, engineering, science, medicine, and social work. The policy includes a minimum benefits and leave package that applies to all postdoctoral researchers, regardless of funding source. A key part of the policy is the creation of school-specific, separate title classifications for postdoctoral researchers to distinguish them from students, faculty and staff. Additionally, individual schools established a minimum salary/stipend, uniform sick and vacation leave policies, and optional benefits packages that include disability and medical insurance.

Fixed versus Accrued Sick Leave

For employees, leave benefits at academic institutions are offered at a fixed amount or based upon ongoing accrual of sick leave hours. Given the temporary nature of postdoctoral research appointments, the accrual policies can be particularly challenging, as they do not allot enough work time to accrue sufficient leave to handle a typical parental leave situation. The fixed rates generally come at the start of a job, or after a short probationary period. Even the Family and

Medical Leave Act, for unpaid leave, has standards in place requiring a certain amount of time the employee has worked prior to being eligible for leave and the number of hours worked per week (e.g., at least 20 hours per week) for the benefits to be accessible. In some academic institutions, the university medical leave policy will supplement the Family and Medical Leave Act. One academic representative reported the institution is working to incentivize external training fellowships, such as T32s, and provide a step toward equity within the postdoctoral community, by using non-federal funds to supplement available benefits to provide a more competitive benefits package. At present, these are handled on a case-by-case basis.

Leave of Absence and Accommodation

Some universities allow trainees who want parental or family leave to take leaves of absence or make other accommodations to reduce their workload. Students may interrupt their study and forgo continued financial support during a leave of absence, which can be supported through short-term disability insurance in some institutions. According to the Pregnancy Discrimination Act of 1978, if an academic institution provides disability benefits for physical disability, they are required to also provide them for pregnancy and childbirth.³³ This may be a particularly useful approach to pregnancies with complications. Alternately, accommodation policies are intended to provide relief from full-time responsibilities while providing continuing financial support. Of course, if a trainee's effort is reduced on a federally funded project, compensation must be reduced as well.

Accommodation policies are often applied to extend the timeframe for research trainees to finish their work. Similar policies have been developed to extend the tenure clock for faculty who use parental and family leave during the tenure process. For example, one private academic institution on the West Coast has developed a parental accommodation policy for all graduate students, including those funded as predoctoral trainees in training grants. This policy permits pregnant graduate students to remain enrolled during the period around the birth of the child. The policy allows the mother an additional quarter to complete academic institution and program milestones and a two-quarter period of scheduling flexibility around papers, tests, and other coursework. Because the trainee remains enrolled, the academic institution anticipates federal funding will not be affected. If paid by a stipend, however, they will need to certify the trainee's effort on the project. This particular academic institution also registers postdoctoral researchers as non-matriculated, non-degree seeking students affording them similar benefits.

Withdrawal and Re-entry

Some students and postdoctoral researchers choose to terminate their training indefinitely or entirely upon the birth of a child. At most universities, predoctoral research trainees who withdraw in good standing may apply for readmission, and postdoctoral students may also be welcomed back, depending upon the length of time away and available funding. There are blossoming re-entry programs appearing around the U.S.,³⁴ particularly for women researchers to aid the transition back into the research realm following a break after the birth of a child. The National Institutes of Health Office of Research on Women's Health has established a re-entry supplement program for National Institutes of Health-funded postdoctoral researchers

who have taken time off to care for children or others and want to update their research skills and knowledge. These returning scientists are eligible to apply for supplements for full or part-time work in preparation for a career development award, a research award, or some other form of independent research support.³⁵

Safety Concerns

In some cases, exposure to chemicals, radiation, or other biological agents can pose a health risk for a developing fetus.³⁶ Academic institutions generally have policies for handling pregnancy, and often breastfeeding mothers, among faculty and staff,³⁷ including ways to have the work environment evaluated confidentially before notifying mentor and co-workers about the pregnancy.³⁸ A research trainee who needs to remove herself from the laboratory during the course of her pregnancy may need to negotiate disability leave or accommodations to protect her stipend, her position, or her benefits.³⁹ It is not clear what protections may be in place for trainees in this situation, as it appears to be managed informally on a case-by-case basis.

Infrastructure

Some academic institutions do not have appropriate mechanisms or infrastructure in place to support family or parental leave for research trainees, even when funding is made available. For example, a researcher at one medium-sized public, primarily undergraduate university in the Midwest received a grant from the National Institutes of Health that required a postdoctoral researcher. The academic institution had no defined postdoctoral positions. The administrators struggled with the possibilities of using a non-tenure track faculty position with benefits or a graduate research assistant, but both had legal or procedural issues. This academic institution is currently developing a postdoctoral trainee position, with policies and procedures, in consultation with a newly developed task force on family-friendly policies. Other universities that have regular research trainees also struggle with infrastructure issues in trying to provide family friendly policies for them. Many are working to make accommodations within their own systems.

Several academic institutions are taking steps to provide consistent family and parental leave for trainees. If an institution pays for parental leave for their own employees, then the costs of providing leave to comparable grants-funded employees is an allowable cost on federal grants and can be built into the calculation of fringe benefits or indirect costs. For example, a mid-sized, East Coast, land-grant university is developing a parental leave policy for all funded graduate students. Because the benefit is available to all students, whether supported by university or federal funds, the cost of parental leave for graduate research assistants can be charged as an indirect cost or fringe benefit to the grants that support them. The institution will establish a central fund that can provide a stipend to research trainees while on leave, without relying on direct charges to grants. A similar approach could be used to maintain total compensation for trainees with reduced workloads.

International Students

There are many international students participating in research training programs in the U.S. Of

the 48,000 postdoctoral researchers in the U.S. in 2005, 55 percent of these scholars were non-U.S. citizens.⁴⁰ Their status and access to parental and family benefits are generally handled differently from those of U.S. citizens, and with an alternate cast of officials and regulations, including the Department of Homeland Security.⁴¹ These additional regulations and issues, such as maintaining a valid work visa, further complicate the family and parental leave benefits. Further, international students are not usually eligible for state and federal benefits, such as student loans, or healthcare for children or low-income parents (for which American citizen trainees are eligible).

Dependent Care/Childcare

Determining whether research trainees have access to paid or subsidized childcare depends upon the classification of the trainee, and the benefits tied to that classification, as well as whether costs are covered by the funding agency. In the case of the National Science Foundation, if childcare expenses are included in the calculation of fringe benefits for employees, grant funds may be used to cover the expenses for postdoctoral researchers as well provided the benefit is available equally to all employees. However, it is rare that universities include childcare costs in calculations of fringe benefits. Administrators at one large private academic institution on the East Coast pointed to the availability and cost of childcare as one of the most significant issues facing postdoctoral researchers with small children. This particular academic institution has several childcare centers on site, but the wait lists for infants are very long, the cost is prohibitive for most research trainees and costs are not covered by trainees' benefit package. The respondent indicated the academic institution offers several scholarship programs to help with child care costs. Several large public universities have created emergency childcare programs for faculty and research trainees, to assist when regular childcare falls through, including in cases of illness.

Next Steps

A number of prior reports have addressed the family and parental leave issues facing institutions, public, and private funders of science, technology, engineering, and mathematics research trainees across the U.S. The potential avenues for intervention are wide, and most recognize the need for shared responsibility in making change, including federal agencies, universities, independent interest groups, and others. Academic institutions and federal funders must find ways to demonstrate the value that postdoctoral researchers bring to the scientific enterprise while balancing competing demands to move them forward in their careers, help them find funding, and manage benefits and taxation problems.

Several large-scale efforts are moving the issue forward. The recently released National Science Foundation Career-Life Balance Initiative,⁴² in partnership with the White House, provided a series of plans and recommendations for the future. Researchers at the University of California at Berkeley have surveyed existing programs, summarized findings, and suggested future steps in multiple publications.⁴³ The National Academies have various committees issuing reports with recommendations from different perspectives from enhancing the postdoctoral training experience⁴⁴ to fulfilling the potential of women in the sciences.⁴⁵ A legal analysis of issues related to medical leave benefits for research trainees at academic institutions has provided

recommendations to ensure academic institutions are not in violation of laws.⁴⁶ The NIH created the Working Group on Women in Biomedical Careers to consider issues related to the entry, retention, and sustained advancement of women in all levels of scientific careers. The Working Group collaborates with the NIH Institutes and Centers to promote tangible changes to institutional policies in the NIH intramural and extramural communities, several of which were included in this report.⁴⁷ Many universities have also completed their own independent analyses and developed next steps for change. For example, the University of Notre Dame Graduate School has published policies on creating a more family-friendly environment for graduate students and their childbirth and adoption accommodation policy for graduate students.⁴⁸ The potential avenues for intervention must recognize the need for shared responsibility among federal agencies and universities in making change.

The FDP Task Force has reviewed these prior reports and provides a consolidated summary of their recommendations. Recommendations, in general, suggest that in order to increase equity and maintain a pipeline of women in science, it would be appropriate to require, establish, document, and disseminate clear policies at both universities and federal agencies that provide equitable treatment for postdoctoral researchers and employees with regard to parental and family leave.

Communicate and Collaborate

- Forge partnerships across departments, universities, the federal government, and the private sector to research current practices, identify best practices, and reform existing policies and structures.⁴⁹
- Create a panel of innovators that includes representatives from universities and federal agencies to develop a national approach. For example, the panel could consider the possibilities and administrative challenges to mandating that postdoctoral researchers be provided equivalent benefit packages regardless of their status as employees or fellows.⁵⁰
- Collect and disseminate policy statements, frequently asked questions, and analyses of existing practices and methods for academic institutions to apply federal laws in a manner equitable to predoctoral and postdoctoral research trainees.⁵¹

Research

- Determine measures to evaluate the efficacy of existing programs and policies, seeking best practices with potential for evaluation and universal application.⁵²
- Support continued research to ensure current and future policies are effective and in compliance with federal regulations, such as OMB Circular A-21 and Title IX.⁵³
- Research costs of existing programs and policies nationwide, including the costs of not having clear policies.⁵⁴
- Consider an economic analysis to determine the cost to the U.S. scientific endeavor of losing potential scientists whose careers were averted because of perceptions or reality that careers in academic research are not consistent with having a family.⁵⁵
- Study the transition period from postdoctoral researcher to research career in academia, government, and industry to: (1) evaluate the lengthening of the

postdoctoral training period and its effects on women, in particular; and (2) examine the value of postdoctoral traineeships compared to postdoctoral employment on scientific success.⁵⁶

Reform Policy

- Consistent with National Research Council recommendations from 2000, the NIH should develop a mechanism for support under the National Research Service Award such that postdoctoral fellows receive the employee benefits of the institution in which they are located.⁵⁷
- NIH could consider an increase in the indirect cost rate on NRSA training grants and K awards from 8 percent to the negotiated rate currently applied to research grants, which would support universities in providing equitable benefits to trainees and employees.⁵⁸
- Promote a minimum baseline of family responsive policies for birth and adoption for all research trainees, such as adequate paid leave, such as that consistent with the Family and Medical Leave Act.⁵⁹
- Develop and require universal policies for research trainees, such as a childbirth accommodation policy, access to part time or shared work schedules, clock extensions, and re-entry fellowships.⁶⁰
- Consider accommodation policies for pregnant predoctoral and postdoctoral researchers in labs to allow for career progress during pregnancy if safety practices (e.g., potentially hazardous chemicals, radiation) removed them from lab work during their pregnancy. Accommodations covered by policies could include an extended period of funding, paid maternity leave, and conditions of their return to work.⁶¹
- Consider options for childcare benefits for trainees, both at home⁶² and as an allowable expense at conferences.⁶³
- Expand re-entry programs for women who have had a break in research service due to the birth or care of a child. The National Institutes of Health program may serve as a model for other federal agencies.⁶⁴

Change Climate

- Consistent with American Association of University Women's recommendations from 2009, align institutional practices and policies with the realities facing today's parents and families.⁶⁵
- Maintain zero tolerance policy for discriminatory and disparaging comments and behaviors from faculty, staff, and students.⁶⁶
- Establish and maintain transparency in promotion procedures and expectations for trainees.⁶⁷

Increase Outreach and Dissemination

- Actively highlight, advertise, and support family accommodation policies and guidelines for all research trainees.⁶⁸
- Highlight to predoctoral and postdoctoral researchers the availability of resources to assist them, including the National Postdoctoral Association's "A Postdoc's Guide to

Pregnancy and Maternity Leave,” which provides practical considerations, including a timeline, for research trainees to keep their research underway (available at <http://www.nationalpostdoc.org/publications/563-maternity-guide>); the National Postdoctoral Advance program’s companion guide on paternity and adoption leave (available at www.nationalpostdoc.org/advance), and U.S. Department of Labor’s comparison of federal and state medical leave laws (available at www.dol.gov/whd/state/fmla/index.htm).

- Publicize the availability of family friendly policies to increase the future research workforce.⁶⁹

Provide Support

- Provide a part-time or full-time campus-wide family advocate for graduate student and research trainee parents who would be available for counsel on the policies and programs available.⁷⁰
- Support principal investigators with clear information on what is available to the research trainee and during their period of absence, such as rules for no-cost extensions and supplemental funds for temporary employees to continue research.⁷¹
- Initiate mentoring programs, with incentives for improved mentoring.^{72,73}
- Create standard procedures for grievances.⁷²

Conclusions

The existing parental and family leave policies for research trainees result in a series of losses: potential researchers may not pursue research careers, or they may postpone or abandon them midstream; research institutions may lose their productive workforce; the pace of science and discovery may be reduced; and the nation may compromise its competitive advantage scientific research. On the economic side alone, it is a case of wasted resources, and potential scientists lost at some point in the pipeline. But as many have become increasingly aware, it is more than a matter of economics. It amounts to fostering and mentoring individuals, and paving the way for the next generation of scientists and engineers, as well as for the future of scientific research.

The FDP Task Force recognizes the efforts made across the nation to support change to the existing systems and policies. We hope this report can be used to expand upon these rising tides to improve the experiences for research trainees in general, and with respect to family and parental leave policies.

References

- ¹ McCue, G.E. (2011). Start a family or become a professor: Parental leave policies for postdoctoral fellows training for academic careers in the sciences. *Wisconsin Journal of Law, Gender Society*, 26, 109-139. Retrieved from http://hosted.law.wisc.edu/wjlg/issuues/2011_spring/mccue.pdf.
- ² Goulden M., Frasch K., Mason M.A., & the Center for American Progress. (2009, November). *Staying competitive: Patching America's leaky pipeline in the sciences*. Retrieved October 15, 2011, from http://www.americanprogress.org/issues/2009/11/women_and_sciences.html.
- ³ National Academy of Sciences, National Academy of Engineering, Institute of Medicine. (2000). *Enhancing the postdoctoral experience for scientists and engineers: A guide for postdoctoral scholars, advisers, institutions, funding organizations, and disciplinary societies*. Washington, DC: National Academies Press. Retrieved from <http://www.nap.edu/openbook.php?isbn=0309069963>.
- ⁴ Sigma Xi. (2005, May-June). Doctors without orders: Highlights of the Sigma Xi postdoc survey. Special supplement to *American Scientist*. Retrieved from <http://www.sigmaxi.org/postdoc/highlights.pdf>. And National Postdoctoral Association. (2009). *Fact sheet on U.S. postdoctoral stipends*. Retrieved October 15, 2011, from <http://www.nationalpostdoc.org/publications>.
- ⁵ Committee on Gender Differences in the Careers of Science, Engineering, and Mathematics Faculty; Committee on Women in Science, Engineering, and Medicine; Committee on National Statistics; National Research Council. (2010). *Gender differences at critical transitions in the careers of science, engineering, and mathematics faculty*. Washington, DC: National Academies Press. Retrieved from http://books.nap.edu/catalog.php?record_id=12062. Also, Mavriplis C., Heller R., Beil C., Dam K., Yassinskaya N., Shaw M., & Sorensen C. (2010). Mind the gap: Women in STEM career breaks. *Journal of Technology, Management, and Innovation*, 5 (1), 140-151. Retrieved on October 26, 2011, from <http://www.scielo.cl/pdf/jotmi/v5n1/art11.pdf>. And, Mason, M.A. & Goulden, M. (2002, November-December). Do babies matter: The effect of family formation on the lifelong careers of academic men and women. *Academe*, 88(6), 21-27. Retrieved from <http://www.aup.org/AAUP/pubsres/academe/2002/ND/Feat/Maso.htm>.
- ⁶ Goulden M., Frasch K., Mason M.A., & the Center for American Progress. (2009, November). *Staying competitive: Patching America's leaky pipeline in the sciences*. Retrieved October 15, 2011, from http://www.americanprogress.org/issues/2009/11/women_and_sciences.html.
- ⁷ Goulden M., Frasch K., Mason M.A., & the Center for American Progress. (2009, November). *Staying competitive: Patching America's leaky pipeline in the sciences*. Retrieved October 15, 2011, from http://www.americanprogress.org/issues/2009/11/women_and_sciences.html.

-
- ⁸ U.S. Department of Labor. (2009, January 16). *Revised final regulations under the family and medical leave act*. Washington, DC: U.S. Department of Labor. Retrieved October 17, 2011, from <http://www.dol.gov/whd/fmla/finalrule.htm>.
- ⁹ McCue, G.E. (2011). Start a family or become a professor: Parental leave policies for postdoctoral fellows training for academic careers in the sciences. *Wisconsin Journal of Law, Gender Society*, 26, 109-139. Retrieved from http://hosted.law.wisc.edu/wjlg/issues/2011_spring/mccue.pdf.
- ¹⁰ U.S. Department of Labor. (2009, January 16). *Federal versus state family and medical leave laws*. Washington, DC: U.S. Department of Labor. Retrieved October 15, 2011, from www.dol.gov/whd/state/fmla/index.htm.
- ¹¹ McCue, G.E. (2011). Start a family or become a professor: Parental leave policies for postdoctoral fellows training for academic careers in the sciences. *Wisconsin Journal of Law, Gender Society*, 26, 109-139. Retrieved from http://hosted.law.wisc.edu/wjlg/issues/2011_spring/mccue.pdf.
- ¹² McCue, G.E. (2011). Start a family or become a professor: Parental leave policies for postdoctoral fellows training for academic careers in the sciences. *Wisconsin Journal of Law, Gender Society*, 26, 109-139. Retrieved from http://hosted.law.wisc.edu/wjlg/issues/2011_spring/mccue.pdf.
- ¹³ Office of Management and Budget. (2004, May 10, revised) *Circular A-21: To the heads or executive departments and establishments*. Washington, DC: The White House. Retrieved October 15, 2011, from http://www.whitehouse.gov/omb/circulars_a021_2004
- ¹⁴ Davis G. (2006). Improving the postdoctoral experience: An empirical approach. In R. Freeman & D. Goroff (Eds.), *The science and engineering workforce in the United States*. Chicago, IL: NBER/University of Chicago Press. Retrieved draft copy October 17, 2011, from http://www.nber.org/~sewp/Davis_SurveyAnalysis20060201.pdf.
- ¹⁵ Although intricate details of taxation and IRS laws are beyond the scope of this report, a good reference to the issues can be found at http://sciencecareers.sciencemag.org/career_development/previous_issues/articles/2100/postdocs_and_the_law_part_3_are_postdocs_employees/
- ¹⁶ National Academy of Sciences, National Academy of Engineering, Institute of Medicine. (2006). *Beyond bias and barriers: Fulfilling the potential of women in academic science and engineering*. Washington, DC: National Academies Press. Retrieved from <http://www.nap.edu/catalog/11741.html>.

-
- ¹⁷Goulden M., Frasch K., Mason M.A., & the Center for American Progress. (2009, November). *Staying competitive: Patching America's leaky pipeline in the sciences*. Retrieved October 15, 2011, from http://www.americanprogress.org/issues/2009/11/women_and_sciences.html.
- ¹⁸Goulden M., Frasch K., Mason M.A., & the Center for American Progress. (2009, November). *Staying competitive: Patching America's leaky pipeline in the sciences*. Retrieved October 15, 2011, from http://www.americanprogress.org/issues/2009/11/women_and_sciences.html. Also, Committee on Gender Differences in the Careers of Science, Engineering, and Mathematics Faculty; Committee on Women in Science, Engineering, and Medicine; Committee on National Statistics; National Research Council. (2010). *Gender differences at critical transitions in the careers of science, engineering, and mathematics faculty*. Washington, DC: National Academies Press. Retrieved from http://books.nap.edu/catalog.php?record_id=12062.
- ¹⁹Goulden, M., Mason, M.A., & Frasch, K. (2011, November). Keeping women in the science pipeline. *Annals of the American Academy of Political and Social Science* 638 (1), 141-162. Retrieved October 17, 2011, from http://www.law.berkeley.edu/files/Keeping_Women_in_the_Science_Pipeline-sloan.pdf.
- ²⁰Flint K. (2010, March) *NPA holds first ever summit on postdoc women's career advancement*. Washington, DC: National Postdoctoral Association. Retrieved October 17, 2011, from <http://www.nationalpostdoc.org/advance/405-summit-overview>.
- ²¹Office of the Press Secretary, the White House. (2011, September 26). *President Obama honors outstanding early-career scientists* (press release). Washington, DC: The White House. Retrieved October 15, 2011, from <http://www.whitehouse.gov/the-press-office/2011/09/26/president-obama-honors-outstanding-early-career-scientists>.
- ²²Ehm K.F & Linnemann A. *A postdoc's guide to pregnancy and maternity leave*. Washington, DC: National Postdoctoral Association. Retrieved October 15, 2011, from <http://www.nationalpostdoc.org/publications/family-friendly>.
- ²³Goulden M., Frasch K., Mason M.A., & the Center for American Progress. (2009, November). *Staying competitive: Patching America's leaky pipeline in the sciences*. Retrieved October 15, 2011, from http://www.americanprogress.org/issues/2009/11/women_and_sciences.html.
- ²⁴Goulden M., Frasch K., Mason M.A., & the Center for American Progress. (2009, November). *Staying competitive: Patching America's leaky pipeline in the sciences*. Retrieved October 15, 2011, from http://www.americanprogress.org/issues/2009/11/women_and_sciences.html.
- ²⁵McCue, G.E. (2011). Start a family or become a professor: Parental leave policies for postdoctoral fellows training for academic careers in the sciences. *Wisconsin Journal of Law*,

Gender Society, 26, 109-139. Retrieved from http://hosted.law.wisc.edu/wjlg/issues/2011_spring/mccue.pdf.

- ²⁶Office of Extramural Research, National Institutes of Health. (2011, June 7). *NIH Family-friendly initiatives*. Bethesda, MD: National Institutes of Health. Retrieved October 15, 2011, from http://grants.nih.gov/grants/family_friendly.htm.
- ²⁷Office of Extramural Research, National Institutes of Health. (2011, June 1). *Frequently Asked Questions: Policies related to parental leave and child care*. Bethesda, MD: National Institutes of Health. Retrieved October 15, 2011, from http://grants.nih.gov/training/faq_childcare.htm.
- ²⁸Office of the Press Secretary, the White House. (2011, Sept 26). *The White House and the National Science Foundation announce new workplace flexibility policies to support America's scientists and their families*. Washington, DC: The White House. Retrieved October 17, 2011, from <http://www.whitehouse.gov/the-press-office/2011/09/26/white-house-and-national-science-foundation-announce-new-workplace-flexi>.
- ²⁹ Agriculture Research Service, U.S. Department of Agriculture. (2009, October 22). Human resources: Postdoctoral research associate positions. Beltsville, MD: U.S. Department of Agriculture. Retrieved October 25, 2011, from <http://www.afm.ars.usda.gov/hrd/jobs/postdocs/pd962.html>.
- ³⁰U.S. Environmental Protection Agency. Postdoctoral research program. Washington, DC: U.S. Environmental Protection Agency. Retrieved October 25, 2011, from <http://cfpub.epa.gov/ordpd/>.
- ³¹ Bowden, R. (2011, April 1). Are long working hours inevitable for postdocs? *Naturejobs: A Nature.com blog*. Retrieved on October 25, 2011, from <http://blogs.nature.com/naturejobs/2011/04/01/are-long-working-hours-inevitable-for-postdocs>.
- ³²Goulden M., Frasc K., Mason M.A., & the Center for American Progress. (2009, November). *Staying competitive: Patching America's leaky pipeline in the sciences*. Retrieved October 15, 2011, from http://www.americanprogress.org/issues/2009/11/women_and_sciences.html.
- ³³ American Association of University Professors. (2001, May). Statement of principles on family responsibilities and academic work. Washington, DC: American Association of University Professors. Retrieved on October 26, 2011, from <http://www.aaup.org/AAUP/pubsres/policydocs/contents/workfam-stmt.htm>.
- ³⁴Powell K. (2011, June). Back to the Bench: Grants and fellowship programmes can lessen the shock of re-entry for researchers who have taken a career break. *Nature* 474 ,115-117.

Retrieved from <http://www.nature.com/nature/journal/v474/n7349/full/nj7349-115a.html>. Includes list of resources.

- ³⁵ Office of Research on Women's Health, National Institutes of Health. (2008) The ORWH reentry program: Supplements to promote reentry into biomedical and behavioral research careers. Bethesda, MD: National Institutes of Health. Retrieved October 15, 2011, from http://orwh.od.nih.gov/pubs/reentry_factsheet.pdf.
- ³⁶ National Institute for Occupational Safety and Health. (1999, February). *The Effects of Workplace Hazards on Female Reproductive Health*. Atlanta, GA: Centers for Disease Control and Prevention. Retrieved October 17, 2011 from <http://www.cdc.gov/niosh/docs/99-104/default.html>.
- ³⁷ For example: (1) The Graduate School, University of Notre Dame. (2011). *Policy for pregnant graduate students in labs (to be incorporated into mandatory safety training)*. Notre Dame, IN: University of Notre Dame. Retrieved October 17, 2011, from http://graduateschool.nd.edu/assets/40609/policy_for_pregnant_students_in_labs.pdf; (2) Office of Research, Environmental Health and Safety, University of California, San Francisco. *FAQ-Pregnant Workers/Trainees in the Research Laboratory Setting*. San Francisco, CA: University of California. Retrieved October 17, 2011 from <http://or.ucsf.edu/ehs/9399-DSY/11389>.
- ³⁸ Prestridge K. (2002, January). *Pregnancy, maternity leave, and child care experiences at Los Alamos National Laboratory*. Los Alamos, NM: Los Alamos National Laboratory. Retrieved October 17, 2011, from <http://nlnwse.org/lawis/LAUR-02-0087.html>.
- ³⁹ Ehm K.F & Linnemann A. *A postdoc's guide to pregnancy and maternity leave*. Washington, DC: National Postdoctoral Association. Retrieved October 15, 2011, from <http://www.nationalpostdoc.org/publications/family-friendly>.
- ⁴⁰ National Postdoctoral Association. (2009). *Fact Sheet on U.S. postdoctoral stipends*. Washington, DC: National Postdoctoral Association. Retrieved October 15, 2011, from <http://www.nationalpostdoc.org/policy/briefing-room/stipends>.
- ⁴¹ National Postdoctoral Association. *International postdoc resources, including an International postdoc survival guide*. Washington, DC: National Postdoctoral Association. Retrieved October 17, 2011, from <http://www.nationalpostdoc.org/publications/international-postdoc-resources>.
- ⁴² Office of the Press Secretary, the White House. (2011, Sept 26). *The White House and the National Science Foundation announce new workplace flexibility policies to support America's scientists and their families*. Washington, DC: The White House. Retrieved October 17, 2011,

from <http://www.whitehouse.gov/the-press-office/2011/09/26/white-house-and-national-science-foundation-announce-new-workplace-flexi>.

- ⁴³Goulden M., Frasch K., Mason M.A., & the Center for American Progress. (2009, November). *Staying competitive: Patching America's leaky pipeline in the sciences*. Retrieved October 15, 2011, from http://www.americanprogress.org/issues/2009/11/women_and_sciences.html and Goulden, M., Mason, M.A., & Frasch, K. (2011, November). Keeping women in the science pipeline. *Annals of the American Academy of Political and Social Science* 638 (1), 141-162. Retrieved October 17, 2011, from http://www.law.berkeley.edu/files/Keeping_Women_in_the_Science_Pipeline-sloan.pdf.
- ⁴⁴ National Academy of Sciences, National Academy of Engineering, Institute of Medicine. (2000). *Enhancing the postdoctoral experience for scientists and engineers: A guide for postdoctoral scholars, advisers, institutions, funding organizations, and disciplinary societies*. Washington, DC: National Academies Press. Retrieved from <http://www.nap.edu/openbook.php?isbn=0309069963>.
- ⁴⁵ National Academy of Sciences, National Academy of Engineering, Institute of Medicine. (2006). *Beyond bias and barriers: Fulfilling the potential of women in academic science and engineering*. Washington, DC: National Academies Press. Retrieved October 17, 2011, from <http://www.nap.edu/catalog/11741.html>.
- ⁴⁶ McCue, G.E. (2011). Start a family or become a professor: Parental leave policies for postdoctoral fellows training for academic careers in the sciences. *Wisconsin Journal of Law, Gender Society*, 26, 109-139. Retrieved from http://hosted.law.wisc.edu/wjlg/issues/2011_spring/mccue.pdf.
- ⁴⁷ National Institutes of Health (2011). *Women in Biometrical Careers*. Retrieved December 15, 2011, from <http://www.womeninscience.nih.gov>
- ⁴⁸ Stirling, G.E. & the Graduate School, University of Notre Dame. (2011). *Family support*, includes two documents: *Creating a more family-friendly environment for graduate students* and *Grad school childbirth and adoption accommodation policy*. Notre Dame, IN: University of Notre Dame. Retrieved October 17, 2011, from <http://graduateschool.nd.edu/graduate-student-life/family-support/>.
- ⁴⁹ Goulden M., Frasch K., Mason M.A., & the Center for American Progress. (2009, November). *Staying competitive: Patching America's leaky pipeline in the sciences*. Retrieved October 15, 2011, from http://www.americanprogress.org/issues/2009/11/women_and_sciences.html.
- ⁵⁰ Mason, M.A., Goulden, M., & Frasch, K. (2010, April 21). *Coming together: Keeping women scientists in the pipeline*. Retrieved conference discussion synopsis October 17, 2011, from <http://www.law.berkeley.edu/7922.htm>.

-
- ⁵¹ Mason, M.A., Goulden, M., & Frasch, K. (2010, April 21). *Coming together: Keeping women scientists in the pipeline*. Retrieved conference discussion synopsis October 17, 2011, from <http://www.law.berkeley.edu/7922.htm>.
- ⁵² Davis, G. (2009). Improving the Postdoctoral Experience: An Empirical Approach. In R. Freeman and D. Goroff (Eds.), *Science and Engineering Careers in the United States*, Chicago, IL: NBER/University of Chicago Press, 100-101. Retrieved October 17, 2011, from http://www.nber.org/~sewp/Davis_SurveyAnalysis20060201.pdf.
- ⁵³ Goulden M., Frasch K., Mason M.A., & the Center for American Progress. (2009, November). *Staying competitive: Patching America's leaky pipeline in the sciences*. Retrieved October 15, 2011, from http://www.americanprogress.org/issues/2009/11/women_and_sciences.html.
- ⁵⁴ Mason, M.A., Goulden, M., & Frasch, K. (2010, April 21). *Coming together: Keeping women scientists in the pipeline*. Retrieved conference discussion synopsis October 17, 2011, from <http://www.law.berkeley.edu/7922.htm>.
- ⁵⁵ Mason, M.A., Goulden, M., & Frasch, K. (2010, April 21). *Coming together: Keeping women scientists in the pipeline*. Retrieved conference discussion synopsis October 17, 2011, from <http://www.law.berkeley.edu/7922.htm>.
- ⁵⁶ Committee on Gender Differences in the Careers of Science, Engineering, and Mathematics Faculty; Committee on Women in Science, Engineering, and Medicine; Committee on National Statistics; National Research Council. (2010). *Gender differences at critical transitions in the careers of science, engineering, and mathematics faculty*. Washington, DC: National Academies Press. Retrieved from http://books.nap.edu/catalog.php?record_id=12062. Also, National Postdoctoral Association. (2009) *NPA agenda for change*. Washington, DC: National Postdoctoral Association. Retrieved on October 17, 2011 from <http://www.nationalpostdoc.org/policy/institutional-policies/agenda-for-change>.
- ⁵⁷ National Research Council (2000). Addressing the Nation's Changing Needs for Social and Behavioral Scientists. Washington, DC: National Academies Press. Retrieved from: http://grants.nih.gov/training/nas_report/
- ⁵⁸ Committee to Study the National Needs for Biomedical, Behavioral, and Clinical Research Personnel; National Research Council. (2011). "Crosscutting issues." From chapter two in *Research Training in the Biomedical, Behavioral, and Clinical Research Sciences* (Washington, DC: National Academies Press). Retrieved from http://www.nap.edu/openbook.php?record_id=12983&page=21.
- ⁵⁹ Goulden M., Frasch K., Mason M.A., & the Center for American Progress. (2009, November). *Staying competitive: Patching America's leaky pipeline in the sciences*. Retrieved October 15,

2011, from http://www.americanprogress.org/issues/2009/11/women_and_sciences.html. Also, Mason, M.A., Goulden, M., & Frasch, K. (2010, April 21). *Coming together: Keeping women scientists in the pipeline*. Retrieved conference discussion synopsis October 17, 2011, from <http://www.law.berkeley.edu/7922.htm>.

⁶⁰ National Postdoctoral Association. (2009) *NPA agenda for change*. Washington, DC: National Postdoctoral Association. Retrieved on October 17, 2011 from <http://www.nationalpostdoc.org/policy/institutional-policies/agenda-for-change>.

⁶¹ Stirling, G.E. & the Graduate School, University of Notre Dame. (2011). *Family support*, includes two documents: *Creating a more family-friendly environment for graduate students* and *Grad school childbirth and adoption accommodation policy*. Notre Dame, IN: University of Notre Dame. Retrieved October 17, 2011, from <http://graduateschool.nd.edu/graduate-student-life/family-support/>.

⁶² Pain, E. (2006). Pregnancy and the Lab. *Science Careers*. Retrieved November 2, 2011 from: http://sciencecareers.sciencemag.org/career_development/previous_issues/articles/2006_04_07/pregnancy_and_the_lab_feature_index/%28parent%29/68.

⁶³ Stirling, G.E. & the Graduate School, University of Notre Dame. (2011). *Family support*, includes two documents: *Creating a more family-friendly environment for graduate students* and *Grad school childbirth and adoption accommodation policy*. Notre Dame, IN: University of Notre Dame. Retrieved October 17, 2011, from <http://graduateschool.nd.edu/graduate-student-life/family-support/>.

⁶⁴ Office of Research on Women's Health, National Institutes of Health. (2008) The ORWH reentry program: Supplements to promote reentry into biomedical and behavioral research careers. Bethesda, MD: National Institutes of Health. Retrieved October 15, 2011, from http://orwh.od.nih.gov/pubs/reentry_factsheet.pdf. Also, National Postdoctoral Association. (2009) *NPA agenda for change*. Washington, DC: National Postdoctoral Association. Retrieved on October 17, 2011 from <http://www.nationalpostdoc.org/policy/institutional-policies/agenda-for-change>.

⁶⁵ Ann O'Leary and Karen Kornbluh (October 2009). *Family-friendly for all families: Workers and caregivers need government policies that reflect today's realities*. Washington, DC: American Association of University Women. Retrieved October 17, 2011, from http://www.aauw.org/act/issue_advocacy/upload/womansnationPolicyRecs_FamilyFriendly.pdf.

⁶⁶ National Academy of Sciences, National Academy of Engineering, Institute of Medicine. (2006). *Beyond bias and barriers: Fulfilling the potential of women in academic science and engineering*. Washington, DC: National Academies Press. Retrieved October 17, 2011, from

<http://www.nap.edu/catalog/11741.html>. Also, McCue, G.E. (2011). Start a family or become a professor: Parental leave policies for postdoctoral fellows training for academic careers in the sciences. *Wisconsin Journal of Law, Gender Society*, 26, 109-139. Retrieved from http://hosted.law.wisc.edu/wjlg/issues/2011_spring/mccue.pdf.

⁶⁷ Committee on Gender Differences in the Careers of Science, Engineering, and Mathematics Faculty; Committee on Women in Science, Engineering, and Medicine; Committee on National Statistics; National Research Council. (2010). *Gender differences at critical transitions in the careers of science, engineering, and mathematics faculty*. Washington, DC: National Academies Press. Retrieved from http://books.nap.edu/catalog.php?record_id=12062.

⁶⁸ Office of the Press Secretary, the White House. (2011, Sept 26). *The White House and the National Science Foundation announce new workplace flexibility policies to support America's scientists and their families*. Washington, DC: The White House. Retrieved October 17, 2011, from <http://www.whitehouse.gov/the-press-office/2011/09/26/white-house-and-national-science-foundation-announce-new-workplace-flexi>.

⁶⁹ Office of the Press Secretary, the White House. (2011, Sept 26). *The White House and the National Science Foundation announce new workplace flexibility policies to support America's scientists and their families*. Washington, DC: The White House. Retrieved October 17, 2011, from <http://www.whitehouse.gov/the-press-office/2011/09/26/white-house-and-national-science-foundation-announce-new-workplace-flexi>.

⁷⁰ Stirling, G.E. & the Graduate School, University of Notre Dame. (2011). *Family support*, includes two documents: *Creating a more family-friendly environment for graduate students* and *Grad school childbirth and adoption accommodation policy*. Notre Dame, IN: University of Notre Dame. Retrieved October 17, 2011, from <http://graduateschool.nd.edu/graduate-student-life/family-support/>.

⁷¹ Goulden M., Frasch K., Mason M.A., & the Center for American Progress. (2009, November). *Staying competitive: Patching America's leaky pipeline in the sciences*. Retrieved October 15, 2011, from http://www.americanprogress.org/issues/2009/11/women_and_sciences.html. Also, Mason, M.A., Goulden, M., & Frasch, K. (2010, April 21). *Coming together: Keeping women scientists in the pipeline*. Retrieved conference discussion synopsis October 17, 2011, from <http://www.law.berkeley.edu/7922.htm>.

⁷² Committee on Gender Differences in the Careers of Science, Engineering, and Mathematics Faculty; Committee on Women in Science, Engineering, and Medicine; Committee on National Statistics; National Research Council. (2010). *Gender differences at critical transitions in the careers of science, engineering, and mathematics faculty*. Washington, DC: National Academies Press. Retrieved from http://books.nap.edu/catalog.php?record_id=12062. Also, National Academy of Sciences, National Academy of Engineering, Institute of Medicine. (2000). *Enhancing the postdoctoral experience for scientists and engineers: A guide for*

postdoctoral scholars, advisers, institutions, funding organizations, and disciplinary societies. Washington, DC: National Academies Press. Retrieved from <http://www.nap.edu/openbook.php?isbn=0309069963>. Also, National Postdoctoral Association. (2009) *NPA agenda for change*. Washington, DC: National Postdoctoral Association. Retrieved on October 17, 2011 from <http://www.nationalpostdoc.org/policy/institutional-policies/agenda-for-change>.

⁷³ Kosoko-Lasaki, O., Sonnino R. E., Voytko, M.L. (2006, September). Mentoring for women and underrepresented minority faculty and students: experience at two institutions of higher education. *Journal of the National Medical Association* 98(9): 1449–1459.