National Postdoctoral Association
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Policy Recommendations to the National Institutes of Health

"Postdocs are central to this nation's global leadership in science and engineering…It is largely they who account for the extraordinary productivity of science and engineering research in the United States."

--National Academy of Sciences, Committee on Science, Engineering and Public Policy[1]

"Problems stem from the diversity of funding sources and policies within agencies, and the relatively weak institutional control exerted over personnel policies for these positions"

--John Marburger, Director of the Office of Science and Technology Policy[2]

EXECUTIVE SUMMARY

For a number of years the United States has benefited from profound advances in biomedical research. The continued excellence of this robust research infrastructure relies on attracting and maintaining highly motivated and talented postdoctoral researchers who comprise a critical part of the scientific workforce. Nonetheless, today's postdoctoral appointee faces challenges that hinder their full participation in the research enterprise.

As the largest funding source for postdoctoral researchers in the United States, the NIH plays a critical role in shaping the nature and extent of the training of our young scientists. In this document, we propose three key areas where the NPA believes the NIH can promote substantive improvements to the postdoctoral experience:

- Increase and enhance support for transitioning postdocs to scientific independence
- Provide leadership in ensuring adequate compensation for postdocs
- Clarify NIH regulations that influence postdoctoral classification at funded institutions

We urge the NIH to continue working closely and transparently with all interested stakeholders in addressing these recommendations, particularly with postdoctoral researchers whose experiences are at the heart of these issues.

[1] From "Enhancing the Postdoctoral Experience for Scientists and Engineers", Committee on Science, Engineering and Public Policy, National Academy of Sciences, 2000.
[2] Remarks from a keynote presentation given at the 2nd National Postdoc Network meeting, 20 April, 2002. http://www.ostp.gov/html/02_04_24_3.html

The Role of the National Postdoctoral Association

The National Postdoctoral Association (NPA) is a membership-driven, non-for-profit advocacy organization that provides a unique national voice for postdoctoral researchers from all disciplines. Founded in 2002, the NPA is funded by a grant from the Alfred P. Sloan Foundation and supported by the American Association for the Advancement of Science (AAAS). The NPA seeks to work collaboratively with all stakeholders to advocate for improvements in the postdoctoral experience.

The National Postdoctoral Association (NPA) defines a "postdoc" (postdoctoral researcher or scholar) as an individual holding a Ph.D. or equivalent doctorate (e.g. MD, DVM) in an appropriate field, appointed to pursue full-time research and/or scholarship under the direction of a faculty member. The postdoctoral appointment is not a permanent position, and is undertaken for purpose of further developing professional skills that will benefit the postdoctoral scholar in pursuing the career path of his/her choice.

What distinguishes the NPA from other professional associations or agencies with an interest in postdoctoral affairs is that, first and foremost, the NPA speaks for and represents postdocs. The NPA seeks to achieve its goals by working closely and collaboratively with federal and private funding agencies, professional associations, university administrators and faculty, and postdocs to focus attention on finding a workable framework for positive change in the postdoctoral experience.

NPA PROPOSALS FOR CONSIDERATION BY THE NATIONAL INSTITUTES OF HEALTH

❖ Support and Enhance the Transition to Scientific Independence

Broad Goals

- To create a more ***independent, entrepreneurial*** postdoctoral experience
- To foster the development of ***independent research programs*** by postdocs
- To provide a solid means of support for the postdoc ***transition to independence***
- To provide a means for institutions to ***identify promising, accomplished individuals*** at an early stage in their careers
- To ***increase*** the population of scientists less than 40 years old who are ***competitive applicants for NIH grants***

The transition from postdoctoral researcher to independent scientist is perhaps the most difficult step in the career of a research scientist. Recent data indicate that this transition has become more difficult in recent years. The population of postdoctoral researchers in the biomedical sciences has grown rapidly in recent years, more than doubling from 1981-1998, without a

corresponding increase in tenure-track faculty positions.[3] Postdocs find it increasingly difficult to secure permanent positions without a source of independent funding, but are often prevented by institutional restrictions from applying for R01-type funding. This prolonged training period is already adversely affecting the biomedical research enterprise of the United States because fewer of America's best graduates are electing to pursue careers in science.[4]

To address this emergent need, we propose the establishment of a new extramural NIH career-transition granting mechanism based upon the strengths of the current K-series awards and the career development/transition awards of the Burroughs Wellcome Fund[5] and National Multiple Sclerosis Society[6]. Our intent for these transitional awards is to identify the highest-quality scientists while they are still postdoctoral fellows, and to give them the financial and scientific independence to develop new projects in anticipation of their obtaining fully independent positions. The expansion of this innovative model of postdoctoral training will require a substantial effort on the parts of postdocs themselves, the institutions that employ them, and the agencies that fund research.

Award Characteristics

- Award would be structured to ensure independence and portability
- Applicants will have less than 5 years of postdoctoral experience (target is 2-4 years)
- Award has two phases: a 2-year mentored training phase at a laboratory of the recipient's choosing, and a 3-year independent phase in a tenure or research track position
- Recipients receive salary, funds to cover the typical components of fringe, and $25K per year in research costs for the first phase of the award
- Recipients receive up to $100,000 per year to support personnel and research costs for the second phase of the award
- Recipients are encouraged to apply for R01 funding during the independent phase of the award

The NIH currently funds a series of career transition awards, including the K08 and K22 programs. These address specific perceived needs: the K08 is intended to attract physicians into the research enterprise; the K22 is currently reserved primarily for intramural NIH fellows. Some institutes, such as the NHGRI, have further narrowed the qualifications for their K22 programs. The NPA believes that the NIH should continue to offer these carefully designed career development and transition awards, but to extend the eligibility requirements to postdocs in the broader extramural community.

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[3] Addressing the Nation's Changing Needs for Biomedical and Behavioral Scientists, National Research Council, 2000, Table G-4.

[4] Freeman et al., "Careers and Rewards in Biosciences: the disconnect between scientific progress and career progression", American Society for Cell Biology, 2001; Freeman et al., "Careers: Competition and Careers in Biosciences", Science 294: 2293-294, 2001; Teitelbaum, M.S., "The US Science and Engineering Workforce: An Unconventional Portrait", presented at GUIRR Summit, 2002, http://www.phds.org/reading/guirr2002/teitelbaum.php

[5] http://www.bwfund.org/programs/biomedical_sciences/career_background.html

[6] http://www.nationalmssociety.org/Research-CareerTransition.asp

Our proposed mechanism offers a greater degree of portability than existing K22s, and extends this model of transition awards to postdocs in the extramural community covered by all NIH institutes. The funding levels proposed will be naturally tailored to scientific needs, but are consistent with successful career transition award programs administered by private foundations, such as the Burroughs-Wellcome Fund and the National Multiple Sclerosis Society. The issues of high degree of portability and sufficient, appropriate support are important in ensuring the successful transition from postdoctoral researcher to independent scientist.

Benefits of Proposed Award Program

- Provides a much-needed mechanism to promote the transition to independent scientist
- Creates a fair and competitive funding environment for postdocs that is separate from mechanisms that support established investigators
- Creates an atmosphere in which the postdoctoral researchers are rewarded for making measurable contributions to the research enterprise[7]
- Retains the successful "investigator-initiated science" model, and fosters and renews it by encouraging and supporting young investigators
- Infuses new ideas, and will likely increase the number of high risk/high reward projects
- Addresses the issue of the increasing age of first-time NIH grant recipients[8]

Conclusion

The establishment of a career transition award mechanism for extramural postdoctoral researchers will require changes to some aspects of the administrative structure of the NIH and its institutes. The NPA recognizes that the current fiscal climate makes financial support of this program challenging. The NPA believes that our proposal has compelling benefits for the NIH, and will address directly several troubling trends. Our proposal benefits the recipient as well; it places greater responsibility on the postdoc for the development of his or her career, and in so doing accomplishes the fundamental goal of a postdoctoral position: the training of young scientists to become active, productive, independent contributors to the American research enterprise.

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[7] Director's Roadmap seeks to underscore the importance of support, encouragement and mentoring of young investigators (http://www.nih.gov/news/NIH-Record/09_17_2002/story01.htm)

[8] In 2001, 3212 grants were given to PI's age 60 and older versus 881 grants given to PI's age 36 or younger. From 1980 to 2001, the percentage of competing NIH grants to investigators age 35 and under has dropped from 23% to 3.8% (Data from NIH Office of Extramural Research, http://grants1.nih.gov/grants/award/trends/prininv.htm).

❖ Provide Leadership toward Ensuring Adequate Compensation for Postdocs

What is appropriate compensation for postdocs?

Postdocs are not only trainees, but are also fundamental contributors to the research enterprise in the US and as such deserve to be compensated accordingly.[9] In addition, due to the lengthened training periods associated with graduate school and postdoctoral appointments, the average age of postdocs has increased substantially.[10] There is widespread agreement that current compensation levels are too low. The NIH has pledged to raise Kirschstein-NRSA stipends by 10-12% per year to a starting level of $45,000, and to maintain the real value of these stipend levels with annual cost of living adjustments.[11] However, it is not clear how the existing stipend levels and recommendations for increased levels have been determined, nor is it known how stipends will be adjusted in the future to remain competitive and appropriate. Therefore, the NPA suggests that the NIH develop a rationale salary scale based on a comprehensive workforce analysis, for instance through working with the NRC's Committee on National Needs for Biomedical and Behavioral Scientists.

The majority of NIH-funded postdocs are supported on R01 grants awarded to principal investigators. We believe compensation levels for postdocs funded by this mechanism should keep pace with changes in Kirschstein-NRSA funding levels. Although final control regarding compensation levels for R01-funded postdocs lies with institutions and principal investigators (PIs), the Kirschstein-NRSA salary scale is the de facto standard for postdoc compensation, and many institutions currently base their "minimum" levels for all postdocs on Kirschstein-NRSA levels. However, significant adjustments to Kirschstein-NRSA stipends will be made over the next few years, with the result that even institutions and PIs who wish to keep compensation levels of their R01-funded postdocs on par with NRSA levels will find it increasing difficult to do so. The NIH should consider supplementation of salaries of R01-funded postdocs as a mechanism to ensure that institutions and PIs have adequate funds to do this. The present modular system makes it impossible for the NIH to determine levels of individual postdoc salaries paid off particular R01s, but annual supplementation of R01s by the amount of annual increases to NRSA stipends (for example) will ensure that institutions and PIs have the funds to pay this population of postdocs appropriately. The NIH should also make clear the expectation that this supplement be used for this purpose.

Specific compensation recommendations

- We applaud the NIH for pledging to increase Kirschstein-NRSA levels to $45,000 for starting postdocs, and encourage the NIH to ***remain committed*** to a 10-12% increase per year towards that goal.

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[9] Enhancing the Postdoctoral Experience, Committee on Science, Engineering and Public Policy, National Academies of Science, 2000.
[10] Ibid; Freeman et al., "Careers: Competition and Careers in Biosciences", Science 294: 2293-294, 2001
[11] Recommendations found within "NIH Statement in Response to NAS Report", http://grants1.nih.gov/grants/guide/notice-files/NOT-OD-01-027.html

- We recommend that the NIH initiate a ***comprehensive workforce and economic analysis*** to generate a ***rational salary scale*** for postdocs that adequately reflects their expertise and contributions to the scientific enterprise.
- We recommend that the NIH implement a process to ***regularly review and adjust*** stipend levels that includes annual adjustments based on inflation.
- We recommend that the NIH institute program policy that ***postdocs funded by R01 grants should receive compensation that is at least equivalent to Kirschstein-NRSA-funded postdocs,*** and begin yearly supplements to R01 grants to provide this support.

❖ Clarify NIH Regulations that Influence Postdoctoral Classification

Two classes of postdoctoral researchers

The status of postdoctoral researchers has received significant attention over the past few years, and while change is happening – notably in the University of California system and elsewhere[12] - there is much to be done. The classification issue revolves around the discrepancy in status and benefits between postdoctoral researchers supported on training grants, who receive stipends (TRAINEES), and postdoctoral researchers supported by R01 grants, who receive W2-reported salaries and are therefore eligible for employee-like benefits and protections (EMPLOYEES).

Being a Kirschstein-NRSA trainee has both advantages and disadvantages in comparison to an R01-funded postdoctoral employee. A Kirschstein-NRSA award brings prestige and a level of portability. Obtaining a Kirschstein-NRSA award is evidence of the ability to prepare an effective, fundable research proposal, and a trainee can move the award to a different institution or investigator under certain constraints. The disadvantages are in the status and availability of fringe benefits. Kirschstein-NRSA trainees receive a stipend plus an annual $5500.00 institutional allowance. The institutional allowance is intended to cover research training expenses, travel, and usually pays for benefits normally included as components of fringe benefits (e.g., health insurance) of postdoctoral employees.

Most postdoctoral researchers are funded on R01 grants, and fringe benefits are usually included explicitly in the budget (PHS 398 Instructions) at a rate of 25% (or an appropriate rate for the participating institution). R01 budgets also commonly include travel for the postdoc. This can create a significant discrepancy in take home pay and benefits coverage for these two classes of postdoctoral researchers. This discrepancy is further amplified if the postdoc has a spouse and/or child(ren)[13], which is an increasingly common demographic for the postdoctoral population.[14]

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[12] Sreenivasan A, "Case Studies for Change: The University of California and the Whitehead Institute", Science NextWave, 2003 (http://nextwave.sciencemag.org/cgi/content/full/2003/04/15/4)

[13] e.g., health insurance for a postdoc with a spouse and one child at the University of California Davis is $8400/year.

[14] In 2000, 65% of postdocs were married and 40% had at least one child (from a presentation by R. Freeman, NBER/Sloan Scientific Workforce meeting, Harvard Univeristy, 2002; Data from Survey of Doctoral Recipients and NSF Survey of Graduate Students and Postdocs).

Because postdoctoral researchers funded by these two mechanisms perform essentially the same function, it is our view that these differences in compensation appear artificial, and that the discrepancies are unfair to the Kirschstein-NRSA trainee. We would like to work closely with the NIH to attempt to remedy these seemingly arbitrary inequalities, which we believe can be greatly reduced and eventually eliminated through a series of short-term and long-term objectives.

Broad Objectives

Short term

- To facilitate the ***equalization in benefits received by postdocs*** regardless of classification and funding source
- To research and determine the ***appropriate classification status*** for postdoctoral researchers in the framework of the current research enterprise
- To establish a mechanism to ***track a broad array of aspects*** of all postdoctoral appointments, including those funded by R01s, and ensure that this data is ***easily and universally accessible***

Strategic

- To alter guidelines, regulations and legislation necessary to ***implement an appropriate unified classification scheme*** for all postdocs

Short term objectives

The NPA recommends that changes be considered to mitigate inconsistencies between the trainee and employee classifications of postdoctoral researchers. There are examples of institutions developing programs that meet this goal, most notably the University of California, Vanderbilt University and the Whitehead Institute for Biomedical Research, which have implemented a number of measures to effectively offset differences in postdoctoral benefits depending on funding source.

We suggest the following non-legislated changes to the individual Kirschstein-NRSA program:

- The individual Kirschstein-NRSA budget should be increased to include up to 25% that may be used to pay for the normal components of fringe benefits (to the extent allowable by law), along with the stipend.
- The NIH should clarify that postdoctoral trainees are allowed to use Kirschstein-NRSA funds to participate in investment programs that are fiscally comparable to the retirement programs available to postdoctoral employees at the host institution.
- The $5500.00 annual institutional allowance (travel and professional development expenses) can be decreased to $4000.00 annually, and is to be used exclusively for those purposes, not for benefits.

Concurrently, host institutions should be strongly encouraged to offer access to benefits for postdoctoral trainees equivalent in nature to those for postdoctoral employees. Certain

institutions are pioneering the provision of equivalent benefits to non-employee postdocs.[15] The NPA would be willing to collect information from these institutions and disseminate best-practice guidelines to facilitate the widespread application of innovative solutions to these problems.

This two-pronged approach - increasing the Kirschstein-NRSA budget to include money to purchase the normal components of fringe benefits and a strong recommendation that participating institutions allow postdoctoral trainees to purchase these benefits - will help resolve the significant inequities in benefits between the two classes of postdoctoral researchers.

Tracking postdoctoral researchers

Currently there is no comprehensive mechanism in place to count or track all NIH-funded postdocs. The 2000 NAS National Needs Report[16] and the response of the NIH to that report[17] highlight the importance of such a system. The NPA enthusiastically supports the current efforts of the NIH to develop an automated data-gathering system for NIH-sponsored researchers (i.e., X-train), and we would welcome the opportunity to work with the NIH to develop specific criteria for tracking the progress and careers of postdoctoral researchers in order to gather a broader array of relevant data. In addition we urge the NIH to make as much of this data as possible easily accessible to the public, so that all parties currently struggling with how to serve the needs of the postdoc population can utilize this vital information. This data will allow the NIH and other major funding agencies to achieve the following:

- Determine any differences in outcomes of R01 and Kirschstein-NRSA-funded postdocs
- Provide proper oversight of all postdocs trained with NIH funds
- Track the disposition of funds awarded on R01s
- Gauge the effects of new policies on the postdoc population

Strategic goals

The research enterprise in the US has changed dramatically in recent years, with a consequent boom in the number and need for postdoctoral researchers to carry out the research initiatives promulgated by the NIH in response to societies' needs. The reality of the present day scientific atmosphere is that postdocs conduct a significant portion of the scientific research effort, yet constitute a largely unregulated workforce commonly not subject to basic employee protections. The historical outcome for a postdoctoral researcher - a tenure-track position in academia - has largely given way to temporary, sequential research associate positions. However, the present issues surrounding classification and status are detrimental to postdocs and their research, and causing promising young scientists to leave – or never enter – careers in science.

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[15] Haak, L. "Strategies to Benefit Postdocs: A Guide to Best Practices", Science NextWave Postdoc Network article, June 2002 (http://nextwave.sciencemag.org/cgi/content/full/2002/06/05/7)
[16] Addressing the Nation's Changing Needs for Biomedical and Behavioral Scientists, National Research Council, 2000.
[17] "NIH Statement in Response to NAS Report", http://grants1.nih.gov/grants/guide/notice-files/NOT-OD-01-027.html

Therefore, it is the long-term recommendation of the NPA that the NIH conduct a study to determine the role of the postdoctoral researcher, and to thus recommend a classification system or re-designation of the roles of these scholars appropriate to their status, education levels and work performance.

CONCLUSION

In this document we have highlighted three key areas that must be addressed immediately to ensure that biomedical science will continue to attract and *retain* the best and brightest students in the US. While no one can question the success of the US research enterprise to date, neither can one fail to appreciate the current dubious state of the postdoctoral component of the system. Until this is addressed, talented young scientists in this country will continue to be undervalued and underutilized, resulting in an increasing exodus of these young minds to other fields. These recommendations are the first steps towards the development of a research culture that truly encourages and enables dedicated young individuals to pursue their passion for science. What then could we achieve?

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