

# Survey of NIH Tenure-track Investigators

*Report on Results*

April 24, 2007

<b>Executive Summary</b> .....	Page 2
<b>Report</b> .....	Page 5
<b>Appendix 1: Detailed Results</b> .....	Page 15
<b>Appendix 2: Survey Questions</b> .....	Page 43
<b>Appendix 3: Sample “Accomplishments” form</b> .....	Page 53

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## **Executive Summary**

This report summarizes results from the 2005 web-based survey of all current tenure-track investigators (TTIs) that addressed topics crucial for the success of TTIs at NIH. Of the 256 TTIs invited to complete the survey, 143 participated. Where appropriate, the results have been compared to those from a similar survey performed in 2001.

### **Mentoring**

72% reported mentorship by direct supervisor to be adequate and 55% have a scientific mentor other than lab/branch chief. The later is an increase from 2001, when 36% reported having a second mentor.

### **Performance Evaluation**

73% of TTIs have had a performance review and most of those are annual reviews performed by the direct supervisor or SD, with a written copy of the review received. However, relatively few respondents thought that the performance review contributed to their development as a scientist. These results are virtually unchanged since the 2001 survey. Suggestions for how to improve the quality of the review are attached (Appendix 3).

### **Mid-term Evaluation by Board of Scientific Counselors or Site Visit Team**

Most TTIs who have been at the NIH for at least 3-4 years have had a mid-term review. They received advance knowledge of review procedures and the review team, as well as feedback on their written report and oral presentation. However, 8% of TTIs who have been at NIH for more than 4 years report not yet having a mid-term review, 10% of respondents were not informed of the review team in advance and 12% reported receiving inadequate feedback from either the scientific director or the lab chief. Furthermore, 7% reported having no reviewer knowledgeable in their field present and 27% had no ad hoc reviewer in their field present at their review. These results are similar to the 2001 survey.

### **Personnel Resource Allocation**

100% of clinical research, 96% of basic science, 89% of clinical/basic, and 27% of the epidemiologist TTIs have two or more FTEs and non-FTEs allotted to them. 100% of clinical research, 88% of basic science, 89% of clinical/basic, and 30% of the epidemiologist TTIs have two or more post-docs. 19% of new TTIs waited a year or more for an FTE slot and 7% reported they waited a year or more for a non-FTE slot. The main problem was finding competent technicians (8% said they never were able to find an appropriate person). There was wide variation in access to subject recruitment, database and protocol management, programmers, and statistical assistance. These deficiencies were most prevalent among the clinical or clinical/basic science investigators, and not among the epidemiologists.

### **Budget**

Most TTIs reported having their own budget and CAN (93% and 92%, respectively). However, 17% did not have access to their budget immediately upon starting tenure track, 24% reported that money was taken out of their budgets unexpectedly and 25% reported that they did not have enough information to track their budget. 56% reported they were not involved in decisions regarding budget increases/decreases.

### **Office and Lab Space**

The majority of responding TTIs (92%) have a private office. Almost half (43%) of TTIs have >600 sq ft. This is a significant improvement from 2001 when only 25% had >600 sq ft. Only 2% received less space than promised. However, it is disturbing that 7% waited one year and 10% waited more than a year to receive laboratory space.

### **Life after Tenure-track**

89% of tenure-track investigators expect additional resources upon being tenured: these include a larger budget (97%); more lab space (92%); more personnel (97%); and more budgetary control (66%).

## Recommendations

To further improve the status of TTIs and increase their chances for successful careers at the NIH, the NIH Tenure-track Investigators Committee makes a series of recommendations based on the results of the 2005 survey. Our recommendations fall into two groups; some are new and others are drawn from aspects of the “Philosophy and Practices for Tenure Track Investigators” which have not yet been fully implemented (a reference to the appropriate section follows each):

### New Recommendations:

- Slots for FTE and non-FTE staff should be available immediately upon TTI appointment (E).
- Assistance is needed for hiring competent technicians (E).
- The ICs should provide budget reports to every TTI at least monthly (F).
- TTIs should prepare lists of annual “accomplishments” to facilitate the quality of the performance review (see Appendix 3) (C).
- Assistance with subject recruitment, database and protocol management, programming, and statistical analysis is particularly needed for clinical investigators (E).
- Funds to be used for general Lab/Branch costs should be negotiated with the SD upfront (F).
- Procedures should be developed to identify those TTIs who have not received a review within the first 4 years (D).

### Reiterated recommendations already in “Philosophy and Practices...”:

- Every Scientific Director should meet once a year with each TTI in their IC (B/C).
- Every TT Investigator should have a second mentor or mentoring committee (B).
- SDs should ensure that TTIs receive annual performance reviews from their supervisors (C).
- TTIs should receive a detailed written description of the BSC evaluation procedures and expectations. The review team should include at least two scientific experts, including an *ad hoc* reviewer if necessary (D).
- All TTIs should have their own CAN and budget that is negotiated with the Scientific Director. Budgets should be specified in the TT contract and monies made available immediately upon starting TT (F).
- A general mechanism for requesting expensive equipment should be established and shared with TTIs (F).
- TTIs should be given private offices and independent lab space, which should be available immediately on arrival at NIH (G).

## **Report on Results from NIH Tenure-track Investigators Committee Survey**

In 2001, the Tenure-Track Investigators Committee conducted a web-based survey of all current tenure-track investigators (TTIs), analyzed the results and presented them to the Scientific Directors (SDs). In response, the SDs drafted the “Philosophy and Practices for Tenure-Track Investigators”, a document found in the Intramural Research Sourcebook at <http://www1.nih.gov/sourcebook/> and attached. Four years later the Committee decided to update the survey, to determine progress and to address new areas of concern.

This report provides the results from the second web-based survey, conducted in the summer of 2005. 256 invitations were sent to TTIs to participate in the survey on Oct 31, 2005 with a follow-up on Nov 21 and a completion date of Nov 25, 2005. Survey respondents were informed that their individual responses would be confidential. Where appropriate, the results have been compared to those from the 2001 survey.

The results of this survey indicate substantial progress in some issues previously identified, however it also revealed other areas which have not improved substantially. The committee has prepared recommendations to address these areas as indicated below.

The current report has been divided into sections, corresponding to the areas that were addressed by the survey, and a copy of the survey is attached (Appendix 2). This report summarizes the salient results of the survey; detailed survey results, graphs, and analyses are presented in Appendix 1 and organized by the question number on the survey. Where relevant, we refer to the detailed analyses here by noting the questions with which they are associated.

### **A. General Section (Questions 1-3)**

This section contains descriptive data on the respondents. When possible, we also provide descriptive information that characterizes all of the TTIs at NIH to show how well the responders represent the target population. Of the 256 TTIs who were invited to complete the survey, 143 participated (56% response). The response relative to years on tenure-track ranged from 51% to 61% (Appendix 1, Q1), suggesting no bias by time on tenure-track among the responders. Those with an MD/PhD were most likely to complete the survey (97%) of those asked, compared to 55% of the PhDs and only 30% of those with MDs (Q2). The numbers and proportion responding among ICs are shown in the Table “Distribution of Respondents(Q3).

Of the respondents, 73% were men and 27% women, exactly the distribution among all TTIs; 42% were born in the US while 58% were born in other countries.

## **B. Mentoring (Questions 4-18)**

### **Background**

Tenure-track investigators can benefit substantially from mentorship in several distinct ways:

- 1) Scientific advice
- 2) Guidance for navigating the NIH administrative environment and tenure process.
- 3) Career guidance for becoming a leading investigator.
- 4) Advice for resolving conflicts and dealing with other managerial issues.
- 5) Balancing work/life responsibilities

The source(s) of this mentoring can be varied, especially because it is often difficult for a single mentor to fulfil all needs. This series of survey questions was designed to identify the quality and quantity of mentoring received by current tenure-track investigators. Associations between investigator demographics and mentoring were examined to identify any systematic needs for improvement. Numbers of publications while on tenure-track, and co-authorship by lab/branch chiefs and other senior investigators were also examined.

### **Highlights from the Survey**

**Finding:** 66% of respondents have direct meetings with the SD or deputy SD. *This number increased only modestly since the last survey despite a specific recommendation for annual meetings.* 70 % of those who met with their SD found the relationship to be helpful or very helpful to their progress, compared with none of the TTIs who did not have direct meetings (Appendix 1-Q8, Q9).

**Recommendation:** Every SD, or a deputy SD, should meet once a year with each of their investigators.

**Finding:** 72% of respondents found the level of mentorship and career guidance provided by their direct supervisor adequate (Appendix 1 - Q10). Similarly, 75% considered the relationship with their direct supervisor helpful to their progress (Appendix 1 - Q7). Thus, roughly one-fourth of respondents do not find the mentoring provided by their immediate

supervisor adequate or helpful. 55% of respondents have a scientific (second) mentor in addition to their lab/branch chief (Appendix 1 - Q14). *This number increased since the last survey, in which only 36% of TTIs had an additional mentor, but does not approach 100%.*

**Recommendation:** Encourage investigators to actively seek a second mentor. Because not every TTI will necessarily consider whether they want or need another mentor, the following procedure is proposed. After ~6-12 months on the tenure-track, when the nature of interactions with supervisor, colleagues, etc. becomes clearer, investigators should be asked to evaluate the extent of mentoring they are receiving. Adding an additional mentor who could meet with the TT once or twice a year to discuss the scientific progress and directions taken could be suggested. The additional mentor could be a Tenured Investigator with scientific interests in common with the TTI, a mentor chosen from a group of Tenured Investigators with experience on the Institute or Central Tenure Committee, or a small group (2-3) of Tenured Investigators.

## **C. Performance Evaluation (Questions 19-25)**

### **Background**

The years leading to a tenure decision at NIH are stressful and arduous but also critical times in a scientist's development. In general, TTIs will have only 1 BSC review before the essential, tenure-deciding one. It is thus imperative that TTIs are given interim feedback in other, complementary ways. An ideal opportunity is an annual review by the TTI's direct supervisor, who should be most familiar with his/her work and progress. However the 2001 survey of TTIs found that only 62% reported having had a performance review since arriving at NIH, with 52% reporting an annual review (oral, written, or both). 67% had their evaluation with their direct supervisor and 47% received a written report of their evaluation.

Prepared in response to that survey, the "Philosophy and Practices for Tenure Track Investigators" document suggests that "The Lab/Branch chief must do an annual written review of the progress of the TTI, discuss with the TTI, and forward to the Scientific Director" and that "The Scientific Director should meet on a regular basis with each TTI and review their progress at least annually." So, the question was whether these things are actually occurring.

## Highlights from the Survey

Findings: Results from the 2005 survey indicate that 73% of TTIs have had a performance review, and that most of those who've had a review do have annual reviews. Reviews are performed by the direct supervisor or SD in the overwhelming majority of cases and most TTIs also got written copies of the review (see detailed results). These numbers are roughly unchanged if first-year TTIs are excluded. However, relatively few respondents thought that the performance review contributed to their development as a scientist. The survey results are virtually unchanged since the 2001 survey, suggesting that the "Philosophy and Practices..." has not been uniformly implemented.

Recommendation: We recommend that the Scientific Directors take an active role in ensuring *annual* performance reviews by TTI supervisors. The SDs should require copies of these reports or verify with TTIs that such reviews have occurred, as recommended previously. In cases where the SD is the supervisor, the burden falls on that individual.

Recommendation: To facilitate improved rates and quality of performance evaluation, we also recommend that TTIs prepare lists of annual "accomplishments," as is already done in some institutes. These might include publications, seminars and talks, paper and grant reviews, and community activities and could serve as an opportunity to nucleate and focus discussion during the review. A sample template for such a self-evaluation is included in this report as Appendix 3. Other formats could also be useful, as long as they provide *substantive* and *personalized* feedback regarding the progress of the TTI toward tenure.

## **D. Mid-term Evaluation by Board of Scientific Counselors or Site Visit Team (Questions 26-39)**

### Background

The mid-term evaluation provides critical feedback to tenure track investigators and helps to prepare them for the tenure and promotion process at the NIH.

In the 'Philosophy and Practices for Tenure Track Investigators' document (2002), the NIH Board of Scientific Directors recognized that 'reviews of the TTI by the Institute's Board of Scientific Counsellors are critical and the TTI should receive advance information on this process and mentoring on the preparation of their presentations to the BSC. Verbatim critiques should be provided to the TTI after the review.'



The 2001 survey found that most TTIs received advance notification that a BSC review would occur, but 17% were not told the procedures to be followed and 11% did not know who the reviewers would be.

### **Highlights from the Survey**

**Findings: Mid-Term Conducted.** Most TTIs who have been at the NIH for 3-4 years have had a mid-term review, with some having had more than one review in this time period. However, a small percent of TTIs who have been at NIH for more than 4 years report not yet having a mid-term review (8%) (Q 26-29). These results are similar to the 2001 survey.

**Preparation for Mid-Term.** Most TTIs received advance knowledge of review procedures and the review team, as well as feedback on their written report and oral presentation. However, it is notable that 10% of respondents were not informed of the review team in advance (Q 30-34). This number is about the same as reported in the 2001 survey.

**Mid-Term Evaluation, Recommendations, and Feedback.** Some TTIs (7%) reported having no reviewer knowledgeable in their field present at the review. In addition, a substantial number of TTIs (26 %) had no ad hoc reviewer in their field present at their review. Having an ad hoc reviewer was significantly associated with having a knowledgeable reviewer in the field. Only 2% of those with an ad hoc reviewer reported having no knowledgeable reviewer, compared to 19% of those without an ad hoc reviewer. Most TTIs received written and/or verbal feedback after the mid-term evaluation, but 12 % reported receiving inadequate feedback of either type, from either the scientific director or the lab chief, although verbatim reports are explicitly recommended in the 'Philosophy and Practices for Tenure Track Investigators' document (Q 35-39).

**Recommendation:** Implement procedures to identify those who do not receive a review by 4 years.

**Recommendation:** Include in BSC review practices the stipulation that all TTIs are to have an ad hoc reviewer present for their mid-term review if there are not at least two BSC members knowledgeable in the science.

**Recommendation:** Provide TTIs with a written description of mid-term evaluation procedures and expectations, including the following: (a) a description of the information that should be provided to them prior to the review and who they should contact if they do not receive this

information, (b) a mechanism by which they can take corrective action if they do not have an ad hoc reviewer or a knowledgeable reviewer in their field scheduled for the mid-term review, and (c) a description of the feedback they are required to receive, and appropriate corrective action to take if such information is not received.

## **E. Personnel Resource Allocation (Questions 40-55)**

### **Background**

In the period before tenure, tenure-track scientists must have sufficient personnel or support staff to conduct their research. This support should be available upon beginning tenure track. In 2002, the SDs responded to the results of the 2001 survey that found a fairly wide disparity in assigning support personnel to tenure track investigators by specifying “For laboratory-based scientists, positions for a support person as well as fellows/students should be provided. For clinical investigators, infrastructure support will be provided in accordance with the Standards for Clinical Research Within the NIH IRP”.

The goal of the follow-up survey conducted in 2005 was to determine the level of research, statistical, and clerical support available to tenure track investigators. Assistance with and barriers to hiring technical staff and access to core facilities were also assessed.

### **Highlights from the Survey**

Findings: 100% of clinical research, 96% of basic science, 89% of clinical/basic, and 27% of the epidemiologist tenure track investigators have two or more FTEs and non-FTEs allotted to them (Appendix 1, Q40 to 41). 100% of clinical research, 88% of basic science, 89% of clinical/basic, and 30% of the epidemiologist tenure track investigators have two or more post-docs (Q42). 19% of new tenure track investigators waited a year or more for FTEs (8% said they never were able to get an FTE). 7% reported they waited a year or more for a non-FTE. (Q48 and Q49)

The allotted numbers of FTEs and non-FTEs generally appeared reasonable; however 12% of basic scientists and 11% of clinical/basic researchers have no or only one post-doc, which is low. Waiting a year or more for FTEs or non-FTE slots is too long.

**Recommendation:** No change to the number of FTE and non-FTE allotments is recommended, however the allotments should be available immediately upon entry to tenure-track. Laboratory-based investigators should have at least two post-docs.

**Findings:** When trying to hire a technician, 27 (19%) tenure track scientists reported they did not have the knowledge or the administrative support to hire one. 21% of the clinical and basic science researchers (excluding epidemiologists) reported not having support to hire a technician (Q45). This difficulty exhibited a difference by gender; 33% of female investigators reported lack of support compared to 18% of male investigators. Several barriers to hiring a technician (Q46) were reported (see Appendix 1 for details) but the main problem was finding competent technicians. 64% of the basic scientists said this was a moderate to large barrier.

**Recommendation:** Assistance with hiring competent technicians is needed.

**Findings:** There was wide variation in access to subject recruitment, database and protocol management, programmers, and statistical assistance (Q54). These deficiencies were most prevalent among the clinical or clinical/basic science investigators, and not among the epidemiologists. Among the clinical and clinical/basic group: 38% reported no assistance with database management, 57% reported no programming assistance, and 44% reported no statistical assistance. Among clinical researchers, 75% reported no assistance with protocol management. This compares to 50% among epidemiologists, 43% among basic and clinical researchers, and 31% among basic scientists. Protocol management assistance seems to be unavailable for clinical researchers.

**Recommendation:** Support for subject recruitment, database and protocol management, programmers, and statistical advice is particularly needed for clinical investigators.

## **F. Budget (Questions 56-64)**

### **Background**

In accordance with the “Philosophy and Practices for Tenure Track Investigators” document, tenure-track investigators should have independent resources and information to appropriately manage them.

This series of survey questions was designed to investigate budgetary issues for tenure-track investigators. Associations between investigator demographics and budgetary data were examined.

### **Highlights from the Survey**

**Findings:** 93% of TTIs surveyed have their own annual budget (Appendix 1, Q56). No significant change was noted from the survey done in 2001. 92% of TTIs surveyed have their own CAN number (Appendix 1, Q57). Most of those without their own annual budget (8 out of 10) or without their own CAN (9 out of 11) were in epidemiology, with the remaining two in the basic sciences.

19% of respondents said their annual budget was not specified in their TT contract (Appendix 1, Q56).

83% of respondents received their budget immediately, however 5% of respondents waited greater than 6 months (Appendix 1, Q56c).

**Recommendation:** As recommended previously, all investigators should have their own budget and CAN number. Budgets should be specified in the TT contract and monies available immediately upon starting TT.

**Findings:** There continues to be variability in the level of control over the budget, with 24% of respondents reporting that some portion of their budget is used to cover general costs (Appendix 1 Q58). Notably, this percentage has decreased from the 32% reported in the 2001 survey.

A majority of respondents (56%) said they are not involved in decisions regarding budget increases/decreases (Appendix 1, Q62). This is similar to the results from the 2001 survey. With regard to institute size, 61% of those from large, 51% of those from medium and 25% of those from small institutes were not involved in decisions regarding their budget.

24% of respondents said that money was taken out of their budgets unexpectedly (Appendix 1, Q63). This is an increase from the 2001 survey (15% of respondents).

**Recommendation:** As recommended previously, funds to be used for general costs should be negotiated with the SD upfront and limits should be set as to what percent of the TTI's budget can be taken.

Findings: 25% of respondents do not have enough information to track expenditures shown in the budget report and 37% of respondents do not have enough information to verify their budget (Appendix 1, Q59).

**Recommendation:** As recommended previously, the ICs should institute delivery of budget reports to every PI at least monthly with an itemized list of expenditures.

Findings: The majority of respondents (111 TTIs) said that the Scientific Director is involved in setting their budget, followed by Lab/Branch Chief (59), Section Chief (3), Institute Director (3) and others (4) (Appendix 1, Q60). The majority of respondents (110) said that the Scientific Director decides on increases/decreases in their budgets, followed by Lab/Branch Chief (55), Institute Director (4), Section Chief (3) and others (7) (Appendix 1, Q61).

There appears to be an increase in budgetary decision-making by the Scientific Directors relative to the Lab/Branch Chiefs (110 versus 55) in this survey when compared to the results of the 2001 survey (97 for Scientific Directors versus 75 for Lab/Branch Chiefs).

**Recommendation:** As recommended previously, each PI should negotiate their budget directly with the Scientific Director or SD-designate.

Findings: There is a great deal of variability in the mechanisms for requesting expensive equipment (Appendix 1, Q64).

**Recommendation:** A general mechanism should be put in place addressing how expensive equipment is requested and how decisions regarding its purchase are made. This information should be readily accessible to TTIs.

## **G. Office and Laboratory Space (questions 65-69)**

### **Background**

Having an appropriate amount of laboratory space available can be critical for the success of a TTI, particularly in laboratories where bench experiments are routinely performed or where sizable pieces of equipment are utilized. Having a private office provides an environment that facilitates focused and creative thinking, thoughtful analysis and fruitful one-on-one or small group discussions with laboratory members, colleagues, and collaborators. Associations between investigator demographics and office/laboratory space were examined to identify any systematic deficiencies.

## Highlights from the Survey

### Findings:

Private office. 92% of responding TTIs have a private office (Appendix 1, Q65a). This is an increase of 8% over the 2001 survey. No significant associations were observed with other factors.

Square feet of lab space. Close to half, 43% of responding TTIs have >600 sq ft., 35% have 300-600 sq ft. and 21% have less than 300 sq ft (Appendix 1, Q66a). *This reveals a significant increase in the number of TTIs with >600 sq ft of lab space since the 2001 survey when only 24.6% had >600 sq ft.*

Associations observed with laboratory space:

A. *Lab space & Research type.* Basic/clinical TTIs have the most space, followed by Basic, Clinical and Epi.

B. *Lab space & Institute size.* In small institutes 33% of respondents had >600 sq ft. and 53% of respondents had 300-600 sq ft. of space whereas medium and large institutes were skewed in the positive direction (44-47% have >600 sq ft. and 31-32% have 300-600 sq ft.).

Laboratory space promised. Only 2% (2 out of 98 respondents) received less space than promised (Appendix, Q66c).

When was laboratory space received? 7% waited one year and 10% waited more than a year to receive laboratory space (Appendix 1, Q66c).

Separate storage space. Only 26% of respondents have separate storage space (Appendix 1, Q68). *This reveals a 12% decrease since the 2001 survey when 38% had separate storage.*

**Recommendations:** We urge a continued commitment to provide TTIs with private offices and independent lab space. Lab space should be available immediately upon arrival at the NIH.