



## **Quick Turn-Around List Assessment Survey for Individual-Based Lists**

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## Executive Summary

Key findings from the individual-based QT-LAS were, as follows:

- Eligibility of individuals on the list
  - The list for the scientific professional organization did not meet the minimum requirements of having at least 50% of the list members in postdoc positions. The lists from the establishment-based QT-LAS did meet this requirement; unfortunately most of these lists were extremely small in nature (more than one-half had less than 10 individuals).
- Quality of the contact information on the list and any other information provided
  - The list for the scientific professional organization provided a large number of useful variables that would help to identify and target specific segments of the postdoc population. Unfortunately, most records in this list had missing data for most of these auxiliary variables. Further this list was not able to provide email addresses.
  - The lists from the establishment-based QT-LAS did not provide any auxiliary information – just an email address.
- How many actual postdocs are in the list?
  - The list for the scientific professional organizations had 237 postdocs. The list did not provide information about postdoc status to be able to determine if the data verified the list.
  - The lists from the establishment-based QT-LAS had 142 postdocs. The data from the survey was consistent with the sample information.
- Distinguishing characteristics of postdocs
  - In the list for the scientific professional organizations and the lists from the establishment-based QT-LAS had 142 postdocs, definitional elements stating that their positions be “primarily for the purpose of research training”, “require work under a senior scholar,” and “require publication of research in scholarly journals” as defining characteristics of a postdoc. In the list for the scientific professional organizations, the criteria that best distinguish postdocs from non-postdocs are the position’s requirement of work under a senior scholar (50.1% difference) and the position’s primary purpose of providing research training (41.4% difference). There were not enough non-postdocs in lists from the establishment-based QT-LAS to do a comparison.

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# Quick Turn-Around List Assessment Survey for Individual-Based Lists

To better understand how postdoctoral (postdoc) experiences relate to educational and labor force outcomes, NSF/SRS is conducting the Postdoc Data Project (PDP). The PDP is a multi-year project with the overarching objective of determining the need for and the feasibility of gathering in-depth information on postdocs in the U.S. SRS currently collects limited aggregate data on postdocs through the Survey of Graduate Students and Postdoctorates in Science and Engineering (GSS) and the Survey of Doctorate Recipients (SDR), and limited data on intentions to take a postdoc through the Survey of Earned Doctorates (SED).

During Phase I of the PDP, which is now completed, NSF identified several gaps in data about postdocs, including the limited coverage of: (1) postdocs with foreign degrees, (2) postdocs with professional degrees, and (3) postdocs working in nonacademic establishments. A major part of the activities under Phase 2 of the project involve documenting and evaluating available lists that may improve coverage of these populations in NSF/SRS surveys. This activity, known as “the list assessment task,” is an important part of the larger PDP. The list assessment task utilizes data collection methodologies to evaluate contact information and screen for “postdoc eligibility” during sample development stage. The key is to use such methodologies in a quick turnaround fashion to assess strengths and weaknesses of a list for its contribution to a sampling frame – rather than fully focusing on the use of more traditional data management tools and screening for eligibility at the time of a data collection. This approach is particularly helpful in providing valuable information about lists with unknown characteristics for a difficult-to-identify population in a cost-effective way. The quick-turnaround list assessment surveys (QT-LAS) collect information to determine:

- Eligibility of individuals on the list;
- Quality of the contact information on the list and any other information provided, such as an indicator if the individual is a postdoc, degree information, etc.; and
- Whether the contact understood what we meant by “postdoc,” as a formidable challenge to NSF/SRS’s ability to expand postdoc survey coverage is determining and using a postdoc definition that produces reliable and accurate postdoc data across sectors.

This report documents the activities involved in assessing individual-based lists. The fundamental research questions were as follows:

- Does the list provide enough information and in a format that can be used for data collection?
- How many actual postdocs are in the list?
  - How consistent is the information in the database with the respondents’ answers (i.e., if they were listed as a postdoc, did the individual self-identify as a postdoc)?

- How can we distinguish postdocs from other earlier career scientists? That is, what elements of the postdoc definitions investigated during the background research tasks of the PDP Phase 2 project emerged for self-identified postdocs and “potential postdocs”? What position titles were provided for the postdocs and “potential postdocs”?
- What are some basic characteristics of a postdoc position?

The lists of individuals obtained during the early part of the PDP Phase 2 included: (1) a membership list from a large, well-known professional scientific organization; (2) a collection of lists of potential postdocs obtained through the establishment-based quick-turn list assessment survey; (3) a list of postdocs from a medium-sized mid-western state university; and (4) a list of postdocs from an engineering department from a large mid-western state competitive university.

For each of the lists, we evaluated: (1) the overall quality of the list and its suitability for data collection use; (2) the postdoc “hit rate”; that is, the proportion of individuals on the list that were postdocs; (3) postdoc definitions; that is, the elements of the postdoc definitions investigated during the background research tasks of the PDP Phase 2 project that distinguish self-identified postdocs and “potential postdocs”; and (4) basic characteristics of a postdoc position.

## **Methodology**

### ***List Acquisition***

The PDP acquired individual-based lists largely through personal contacts on the study and through the establishment-based quick turnaround list assessment survey (QT-LAS). In the summer of 2007, SSG collaborated with a large, nationally recognized scientific association to acquire a list of their members. An initial file was provided in August, 2007, and an updated file in November of 2007.

The PDP further acquired lists of postdocs from two participating institutions in the 2008 Southeast Michigan site visits: one list was a list of postdocs across academic disciplines (except at the medical school) at a medium-sized urban public university and a second list was a list of postdocs in the engineering department at a large public university. Attempts to obtain a list from the medical school at the same large public university were unsuccessful, as well as were attempts to obtain a list from a contact from Phase 1 of the PDP at another mid-western medium-sized public university. The PDP was unable to obtain a database from the Department of Homeland Security – for both SEVIS and for H-1B applications – despite ongoing, persistent attempts to negotiate a data-sharing agreement.

### ***Questionnaire***

The individual-based list assessment questionnaire was designed as a short interview, about 10 minutes in length, aimed at capturing: (1) information to determine the proportion of the list members who were postdocs; (2) data that informs postdoc definitional elements, similar to that collected for establishments; and (3) fundamental details about educational background, self-identification as a postdoc, organizations that the individual may belong to (who thus may be on other lists), and demographic information, including temporary visa status. The questionnaire further included a consent statement with all of the required Paperwork Reduction Act language. A copy of the programming specifications for the questionnaire is provided in Appendix A.

## Data Collection Methods

The survey utilized web-based methodology. The questionnaire was programmed in Illume software, using industry standards. For all lists except for the professional organization, sample members were invited to participate via an email communication that provided a basic rationale for the study, the survey URL, a unique password for entering the survey, information about the confidential and voluntary nature of the study, and technical support. Nonrespondents received up to three email reminder messages, spaced about 3-5 days apart. Data collection took place over a six-week period, beginning in late January. No incentives were offered.

The professional organization permitted mail contact only. Sample members were invited to participate via a letter that provided a basic rationale for the study, the survey URL, a unique password for entering the survey, information about the confidential and voluntary nature of the study, and technical support. Nonrespondents received one reminder letter, about two weeks later. Data collection took place over a six-week period, beginning in late January. Appendix B provides copies of the respondent communications.

In Table 1 below, we provide the final sample dispositions. We included the full list in data collection for all lists except for the professional organization: we selected 2,561 from a list of 13,777. More details about sample selection for the professional list are provided later in this report.

**Table 1. Sample List Dispositions**

List Name	Sample				Overall Responses			
	Start	Inelig.	Ref.	Final	Compl. Intervws	Partial Intervws	Response Rate	Comp Rate
Professional scientific organization	2,561	1	1	2,560	563	44	21.7%	92.5%
Establishment-based QT-LAS	337	0	0	337	159	22	53.7%	87.8%
Engineering school – large public university	125	0	0	125	38	7	36.0%	84.4%
Medium-sized public university	324	0	0	324	146	13	49.1%	91.8%
TOTAL	3,724	1	1	3,723	906	86	26.6%	91.3%

This report describes the findings for the professional scientific organization list and the lists from acquired from the establishment-based QT-LAS. The school-based lists have very limited usability for sampling frame building and limited generalizability for postdoc definitions.

## **Quick Turn-Around List Assessment Survey (QT-LAS): List from the professional scientific organization**

### ***List Characteristics***

The membership list for the professional scientific organization provided in November 2007 had 13,977 members. This sample was predominantly composed of scientists in the life sciences, a field that makes up a large share of the postdoc population. About one-quarter of the sample members were working or studying in health-related fields, 20% in cell and other small-scale biology, and another quarter in other life sciences. Physical scientists represent about 7% of the sample, engineers 4%, and social sciences and computers / math / statistics each represented about 2%. Field of study was missing for about 15% of the sample.

Nearly all of the list members (98.5%,  $n=13,977$ ) agreed to be contacted by mail, while less than 4% agreed to be contacted by e-mail. As a result, data collection efforts to contact this group relied on mail contact only.

More than 85% of the list members had sponsored memberships, with less than 1% of the list members having postdoc memberships sponsored by the NPA. Sponsored memberships were likely held by individuals whose dues were paid by an institution or group, including graduate students and other non-postdoc researchers.

In the membership list, 76% of the sample members lacked educational attainment data. Due to the high proportion of respondents who did not have a doctoral degree (nearly 60% of 13,977), we expect that the individuals missing educational attainment data are likely outside of our population of interest (non PhD/PhD-equivalent degreed individuals). The job function field also has high rates of item-missing data – over 80% in each sample.

### ***Sample***

While the list ( $N = 13,977$ ) contained a number of cases, and descriptive variables such as membership type, sector, highest degree earned, job function and discipline, the usefulness of this data to aid sample selection was called into question early on for two main reasons: high percentages of missing data, and data that, when analyzed in cross tabs, presented unexpected results. Most notably, those members listed as being individual postdocs, or those holding NPA memberships were listed as having only a bachelor's degree as their highest degree earned. When questioned about this information, the organization confirmed that individual members themselves are expected to update information on their individual characteristics on their own. That said, stratification by any of these variables was not recommended.

Sample members were selected based on the following criteria:

- (1) All US (based on postal address) individual and NPA postdocs ( $N = 1,496$ ) and
- (2) A matching simple random sample of all US sponsored postdocs, for a total sample of 2,938 members.

Further, in regards to contacting the sample, 377 selected sample members have opted in to receiving email, while the remaining 2,561 sample members have opted in to only receiving any notifications via US mail. Per the data use agreement SSG has with the professional organization, SSG only made contacts for those members opting in to mail communication.

## Respondents

Out of the 2,560 selected individuals in the professional scientific organization list, 563 completed an interview and 44 partially completed an interview (607 total respondents), for a response rate of 21.7%. The findings reported in this section focus on those respondents who fully completed the interview.

There were 237 respondents of the 563 (42.1%) who reported being a postdoc: nearly all – 236 of the 237 – were working for pay. Prior to launching the individual-based QT-LAS, the PDP set a “hit rate” criteria of 50%; that is, the list should have at least 50% of its members as postdocs to be considered as viable for sample frame contribution. The professional membership list did not meet this criterion.

Nearly two-thirds of the respondents ( $n = 333$ , 59.1%) were male and about 40% were female ( $n = 226$ , 40.1%). Focusing on just those respondents who self-identified as a postdoc, 63.7% ( $n=151$ ) were male, 35.2% ( $n = 83$ ) were female, and less than 1% ( $n = 3$ ) were unidentified.

Respondents ranged in age from 23-71 years, with a median age of 33 years. Focusing on just those respondents who self-identified as a postdoc, the average (median) age of postdoc was 34 years ( $n = 228$ ), with a range of 28-71 years.

Most of the respondents were U.S. citizens ( $n = 345$ , 61.3%). Focusing on just those respondents who self-identified as a postdoc, just under one-half reported that they were U.S. citizens ( $n = 107$ , 45.3%).

For those respondents who were not U.S. citizens, we asked about their visa status: 75.0% ( $n = 160$ ) were in the U.S. on a temporary visa and 24.9% ( $n = 53$ ) had a green card. Focusing on just those respondents who self-identified as a postdoc, 79.8% ( $n = 99$ ) were in the U.S. on a temporary visa and 20.2% ( $n = 25$ ) had a green card.

## Defining a Postdoc

The PDP used type of degree and time of degree as fundamental criteria for postdoc appointments. Question A1 asked respondents to report which degrees or diplomas they had received, and instructed respondents to select all that applied.

**Table 2. Percentage of Respondents with Bachelor’s, Master’s, Professional, and Doctoral Degrees**

Degrees Reported	% of Postdocs ( $n$ )	% of Non-Postdocs ( $n$ )
Bachelor’s degree (e.g., BA, AB, or BS)	58.2% (138)	54.7% (81)
Master’s degree (e.g., MA, MS, MBA, MSW, etc.)	37.1% (88)	37.2% (55)
Professional degree (e.g., MD, DDS, JD, DVM, etc.)	7.6% (18)	8.8% (13)
Doctoral degree (e.g. PhD, DrPH, EdD)	97.5% (231)	85.1% (126)

*Note: Total n: Postdocs (self-identified): 237, Non-postdocs (self-identified): 148.*

As shown in Table 2, 97.5% of postdocs reported having received doctoral degrees (as compared to 85.1% for non-postdocs), and 7.6% of postdocs reported having received professional degrees (as compared to 8.8% for non-postdocs). However, an examination of the responses revealed that the question was likely misinterpreted by many respondents. With 97.5% of postdocs reporting a doctoral degree but only 58.2% of these postdocs holding a PhD reported earning a bachelor’s degree. It is possible that many respondents interpreted the question as asking them to report their highest degree

earned (despite the on-screen instructions). In addition, another possible explanation for the discrepancy may lie with foreign respondents' perceptions of degrees from their home country below the doctoral level. To provide a more accurate analysis, a variable was computed representing the highest degree level selected by respondents. The results reported in Table 3 show that all respondents identifying themselves as postdocs reported having received either a professional or doctoral degree, with the same 97.5% from Table 2 reporting the doctorate as the highest degree earned.

**Table 3. Highest Degree Reported by Postdocs and Non-Postdocs**

Highest Degree Reported	% of Postdocs (n)	% of Non-Postdocs (n)
Bachelor's degree (e.g., BA, AB, or BS)	0% (0)	3.4% (5)
Master's degree (e.g., MA, MS, MBA, MSW, etc.)	0% (0)	7.4% (11)
Professional degree (e.g., MD, DDS, JD, DVM, etc.)	2.5% (6)	4.1% (6)
Doctoral degree (e.g. PhD, DrPH, EdD)	97.5% (231)	85.1% (126)
Total	100% (237)	100% (148)

Only 5.1% of postdocs (n=12 / 237) and 4.7% of non-postdocs (n=7 / 148) reported having received both doctoral and professional degrees. It is possible, however, that these percentages may be affected by any inclination to treat question A1 as a "highest degree earned" inquiry.

The PDP uses time since degree is a second fundamental postdoc definition criterion: postdocs, and early career researchers broadly, are bound within 10 years of receiving a doctorate or doctorate-equivalent degree. Out of 231 postdocs who reported earning a doctoral degree, 219 (94.8%) had received their most recent doctoral degree within the last ten years. In fact, more than one-half (n=135 / 231; 58.4%) had received their most recent doctoral degree within the last three years. For postdocs, the mean number of years since the most recent doctorate was 5.89 years, with a median of 4.0 years, and a ranged from 0 to 52 years. Only 21.4% of non-postdocs (27 of 126 respondents) reported earning their most recent doctorate within the last three years, and only 67.5% (85 of 126) reported earning this degree within the past ten years.

For the six postdocs who reported the professional degree as their highest earned, two reported seven years since the degree, and one each reported five, six, and eleven years since the degree, respectively.

Early in the PDP, there was some discussion that many academic institutions classify postdocs as students. We asked the respondents to indicate whether or not they were enrolled as students. Later in the questionnaire, we asked if they self-identified as a postdoc. Of 237 respondents self-identifying as a postdoc, only 5 (2.1%) reported being currently enrolled as a student. None of the non-postdoc respondents reported being enrolled as a student. 99.2% of postdocs (235 respondents, total n = 237) and 92.6% of non-postdocs (137 respondents, total n = 148) reported currently working for pay.

The current gaps in postdoc population coverage in the NSF/SRS data rest with foreign-degreed and professional degreed postdocs. Thus, we examined the proportion of foreign-degreed and professional-degreed postdocs among respondents in this professional scientific organization. Participants were asked to provide the country in which they had received their highest degree. We defined a US-degreed postdoc

as a postdoc who had received the most recent degree in the United States. A foreign-degreed postdoc was identically defined as having received the most recent, highest-level degree outside the United States.

Table 4 below display the proportions of US-degreed and foreign-degreed postdocs: 70.3% of postdocs (n=166/236) were classified as US-degreed, as compared to 76.5% of non-postdocs (n=101 / 132). The percent difference between postdocs and non-postdocs is calculated here and throughout this report as the percentage of postdocs minus the percentage of non-postdocs.

**Table 4. Percentage of US-Degreed and Foreign-Degreed Respondents**

Degree Status	% of Postdocs (n)	% of Non-Postdocs (n)	% Difference
US-degreed	70.3% (166)	76.5% (101)	-6.2%
Foreign-degreed	29.7% (70)	23.5% (31)	6.2%
Total	100% (236)	100% (132)	

Table 5 below displays the proportion of clinical researchers among postdocs and non-postdocs. Only 6.3% of postdocs (n=15 / 237) reported being a clinical researcher, fellow, or practitioner.

**Table 5. Percentage of Respondents Identifying as Clinical Researchers, Fellows, or Practitioners<sup>1</sup>**

Type	% of Postdocs (n)	% of Non-Postdocs (n)	% Difference
Clinical researcher	5.1% (12)	6.8% (10)	-1.7%
Clinical fellow	1.7% (4)	0.7% (1)	1.0%
Clinical practitioner	0.4% (1)	3.4% (5)	-3.0%

### ***Postdoc Definitional Elements***

We asked respondents to indicate formal requirements and expectations of their current positions. This section of the report addresses potential relationships between those elements and self-identification as a postdoc.

The questionnaire included seven definitional elements of a postdoc compiled from early qualitative work on the Postdoc Data Project (PDP). As shown in Table 6, over 90% of postdocs reported that the purpose of providing research training, the requirement of publication in scholarly journals, and the requirement of a PhD or equivalent doctorate degree were either formal requirements or expectations of their positions. The requirement of a PhD or equivalent doctorate degree is particularly striking, with 99.6% of postdocs reporting it as a formal requirement or expectation of their position. A recently awarded doctorate, though, was selected as a formal requirement or expectation only by 69.6% of postdocs.

The percent difference between postdocs and non-postdocs allowed us to examine the degree to which certain definitional elements differentiated the two groups of respondents. The two most distinguishing elements were the temporary nature of the position (48.9% difference) and the requirement of work under

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<sup>1</sup>Since respondents could self-identify within more than one of the clinical categories, the sum of the numbers of clinical researchers, fellows, and practitioners do not equal the total number of respondents reporting *any* of these statuses, as reported in the text.

a senior scholar (50.4% difference), with both characterizing postdoc positions more than non-postdoc positions. Two other elements—the position being for a defined period of time and the requirement that the doctorate was recently awarded—achieved at least a 40% difference between postdocs and non-postdocs.

**Table 6. Definitional Elements Selected as a Formal Requirement or Expectation among Postdocs and Non-Postdocs<sup>2</sup>**

<b>Definitional Element</b>	<b>% of Postdocs (n)</b>	<b>% of Non-Postdocs (n)</b>	<b>% Difference</b>
The position requires that you work under a senior scholar.	86.9% (206)	36.5% (54)	50.4%
The position is temporary.	84.0% (199)	35.1% (52)	48.9%
The position is for a defined period of time.	87.3% (207)	43.9% (65)	43.4%
The position requires that the doctorate was recently awarded.	69.6% (165)	26.4% (39)	43.2%
The position is primarily for the purpose of providing research training.	93.2% (221)	52.0% (77)	41.2%
The position required publication of research in scholarly journals.	96.6% (229)	67.6% (100)	29.0%
The position requires a PhD or an equivalent doctorate degree, such as an MD.	99.6% (236)	78.4% (116)	21.2%

Next, we examined the frequency with which postdocs and non-postdocs selected each of these same definitional elements specifically as a *formal requirement* of their positions, presented in Table 7. The most frequently selected requirement was that of a PhD or equivalent doctorate degree, with 97.0% of postdocs specifying this requirement. In addition, over 70% of postdocs specified as formal requirements of their positions that they be primarily for the purpose of research training, require work under a senior scholar, and require publication of research in scholarly journals. For these analyses, the criteria that best distinguish postdocs from non-postdocs are the position’s requirement of work under a senior scholar (50.1% difference) and the position’s primary purpose of providing research training (41.4% difference).

The smallest gap between the two groups resulted for the requirement that the doctorate be recently awarded; only 30.4% of postdocs and 7.4% of non-postdocs chose this option, revealing that is less frequently a definitional characteristic for each group than any other element.

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<sup>2</sup> Missing data ranged from 11 cases to 17 cases for various definitional elements. For simplicity, all percentages in this table and Table 7, as well as in the related text, are reported as percentages of the total number of postdocs ( $n=237$ ) and non-postdocs ( $n = 148$ ).

**Table 7. Definitional Elements Selected as a *Formal Requirement* among Postdocs and Non-Postdocs**

	<b>% of Postdocs (<i>n</i>)</b>	<b>% of Non-Postdocs (<i>n</i>)</b>	<b>% Difference</b>
The position requires that you work under a senior scholar.	71.7% (170)	21.6% (32)	50.1%
The position is primarily for the purpose of providing research training.	70.5% (167)	29.1% (43)	41.4%
The position required publication of research in scholarly journals.	71.7% (170)	41.2% (61)	30.5%
The position is temporary.	55.3% (131)	26.4% (39)	28.9%
The position requires a PhD or an equivalent doctorate degree, such as an MD.	97.0% (230)	71.6% (106)	25.4%
The position is for a defined period of time.	56.1% (133)	31.1% (46)	25.0%
The position requires that the doctorate was recently awarded.	30.4% (72)	7.4% (11)	23.0%

### ***Postdoc Positions***

This section of the report focuses on respondents who self-identified as postdocs ( $n = 237$ ). We asked about the tenure of their postdoc positions, the sectors of employment in which they worked, their salary and benefits, and information on funding types and sources for their positions.

*Years in postdoc.* The mean number of years that postdocs ( $n = 237$ ) reported having been in their positions was 2.87 years, and the median was two years. Responses ranged from a minimum of one year (71 respondents) to a maximum of 16 years (one respondent).

*Sector of employment.* The vast majority of postdocs, 84.4% (200 respondents, total  $n = 237$ ), reported being employed by an academic institution. 7.6% reported being employed by a non-academic, non-profit organization, and 5.9% by a government agency or institution. Only one respondent (0.4%) each reported being self employed or working for a for-profit company or organization, with the remaining 1.3% choosing “other.”

*Salary and benefits information.* Out of the 237 postdocs, 228 reported salary information for their current positions. Responses ranged from a minimum annual salary of \$9,000 before deductions to a maximum annual salary of \$300,000 before deductions. The mean annual salary before deductions was \$44,188.38, with the median being \$41,500. Table 8 presents the percentages of postdocs receiving various types of benefits from their positions (total  $n = 237$ ). The most frequently received benefit for postdocs was medical insurance, while the least frequently received was a retirement plan.

**Table 8. Benefits Received by Postdocs in Current Positions**

<b>Benefit type</b>	<b>% of Postdocs (<i>n</i>)</b>
Medical insurance	91.6% (217)
Paid vacation days	71.7% (170)
Paid sick days	69.2% (164)
Retirement plan	47.7% (113)

*Funding types and sources.* Respondents were asked to name the funding source(s) for their current positions. The most common funding source for the 234 postdocs responding to this question was a “grant, contract, or fellowship,” reported by 79.1% of these postdocs. Within this category, 47.4% of postdocs ( $n=234$ ) reported being funded by a National Institutes of Health research grant (not including a traineeship). The next most frequently reported type of grant, contract, or fellowship was a fellowship from a non-government funding agency, chosen by 20.5% of all postdocs ( $n=48$ ). Outside of this grant, contract or fellowship category, 45.7% of all postdocs ( $n=107$ ) reported receiving funds from the institutions, universities or companies that employ them. Table 9 provides a detailed breakdown of reported funding sources for postdocs’ current positions.

**Table 9. Funding Sources for Current Positions**

<b>Funding source</b>	<b>% of Postdocs (<i>n</i>)</b>
A grant, contract or fellowship	79.1% (185)
National Institutes of Health (NIH) research grant (not including a traineeship)	47.4% (111)
NIH National Research Service Award (NRSA)	10.7% (25)
NIH Intramural Funding	2.6% (6)
National Science Foundation (NSF) research grant	7.3% (17)
NSF fellowship	1.7% (4)
U.S. Department of Energy (DOE) grant	3.4% (8)
Other U.S. government grant	8.5% (20)
Government fellowship from another country	0.9% (2)
Fellowship from a non-government funding agency (e.g. a foundation, association, or disciplinary society)	20.5% (48)
Other	10.3% (19)
Funds from foreign government or entity	2.1% (5)
Funds from the institution, university, or company that employs you	45.7% (107)
Your own personal sources	3.0% (7)
Other	3.4% (8)
Don’t know	4.6% (11)

*Note: Total n = 234*

## Quick Turn-Around List Assessment Survey (QT-LAS): Lists from the establishment-based QT-LAS

### List Characteristics

One goal of the establishment-based QT-LAS was to learn if institutions would be able to provide a list of postdocs. A total of 84 establishments across the five lists that participated in the establishment-based QT-LAS said they would provide a list. There were 15 establishments (out of the 84) that followed through on the promise. All of the lists provided only name and email address, while five provided job title, and one provided nationality. Most lists were small: out of the 15 lists, five had three or fewer list members; one had just five list members, and two had just seven list members.

### Sample

Because most of the lists were very small – and all under 200 cases, we implemented the individual-based QT-LAS with the lists in their entirety.

### Respondents

Only 17 respondents identified as non-postdocs. For this reason, all results below are presented for postdocs. The *n* for all postdoc analyses is 142 unless otherwise specified.

### Defining a Postdoc

The PDP uses type of degree and time of degree as fundamental criteria for postdoc appointments. Question A1 asked respondents to report which degrees or diplomas they had received, and instructed respondents to select all that applied.

As shown in Table 10, 96.5% of postdocs (137 respondents, total *n* = 142) reported having received doctoral degrees, and 7.7% of postdocs (11 respondents) reported having received professional degrees. Again, though, an examination of these responses revealed a likely misinterpretation by many respondents who thought that the question asked for the highest degree earned. The observation that 96.5% of all postdocs reported earning a doctoral degree but only 51.4% of these same postdocs reported earning a bachelor's degree, for example, supports this likely misinterpretation. As with the professional scientific organization list assessment, it is also possible that foreign respondents' perceptions of degrees from their home country below the doctoral level affected the results.

**Table 10. Percentage of Postdocs with Bachelor's, Master's, Professional, and Doctoral Degrees.**

Degrees Reported	% of Postdocs ( <i>n</i> )
Bachelor's degree (e.g., BA, AB, or BS)	51.4% (73)
Master's degree (e.g., MA, MS, MBA, MSW, etc.)	30.3% (43)
Professional degree (e.g., MD, DDS, JD, DVM, etc.)	7.7% (11)
Doctoral degree (e.g. PhD, DrPH, EdD)	96.5% (137)

Only six postdocs reported having received both doctoral and professional degrees. As with the professional scientific organization list assessment, this count may be affected by the tendency of respondents to treat question A1 as asking for the single highest degree received.

The second fundamental criterion for the postdoc position used by the PDP, time since degree, was also evaluated through the questionnaire. Of 137 postdocs who reported earning a doctoral degree, 136 provided information about the year in which the degree was awarded. The vast majority of postdocs, 98.5% (134 respondents), had received their most recent doctorate within the last ten years, while 79 of the 136 (58.1%) reported having received their most recent doctorate within the past 0 – 3 years. For the five postdocs who reported a professional degree as their highest degree earned, only two had earned this degree within the past ten years; both reported earning the degree six years ago.

To investigate whether or not academic institutions classify postdocs as students, we asked respondents to indicate whether or not they were enrolled as such and, later in the questionnaire, if they self-identified as a postdoc. Only 1.4% of postdocs (2 / 142) indicated that they were also enrolled as students. Furthermore, we asked respondents to report whether or not they were currently working for pay; 97.2% of postdocs (138 / 142) reported that they were.

For this list, we again examined data for two current gaps in postdoc population coverage in the NSF/SRS data, resting with foreign-degreed and professional-degreed postdocs. Respondents were asked to provide the country in which they had received their highest degree; we defined a US-degreed postdoc as a postdoc who had received either all of his or her highest-level degrees, or the most recent degree if the locations specified differed, within the United States. A foreign-degreed postdoc was identically defined as having received at least the most recent, highest-level degree outside the United States. Table 12 displays the percentage of US-degreed and foreign-degreed respondents (total  $n = 141$ ). Overall, 66% of postdocs were classified as US-degreed.

**Table 12. Percentage of US-Degreed and Foreign-Degreed Postdocs**

Degree Status	% of Postdocs ( $n$ )
US-degreed	66.0% (93)
Foreign-degreed	34.0% (48)
Total	100.0% (141)

To address the second gap, resting with professional-degreed postdocs, we asked respondents if they identified as clinical researchers, clinical fellows, or clinical practitioners: 13.4% of postdocs (19 / 142) identified with at least one of these titles. Table 13 below displays the breakdown for each type of clinical position.

**Table 13. Percentage of Postdocs Identifying as Clinical Researchers, Fellows, or Practitioners<sup>3</sup>**

Type	% of Postdocs ( $n$ )
Clinical researcher	11.3% (16)
Clinical fellow	2.1% (3)
Clinical practitioner	0.0% (0)

<sup>3</sup> Since respondents could self-identify within more than one of the clinical categories, the sum of the numbers of clinical researchers, fellows, and practitioners do not equal the total number of respondents reporting *any* of these statuses, as reported in the text.

## Postdoc Definitional Elements

We asked respondents to indicate formal requirements and expectations of their current positions. This section of the report addresses potential relationships between those elements and self-identification as a postdoc for the individuals in the establishment-based QT-LAS lists.

The questionnaire included seven definitional elements of a postdoc compiled from early qualitative work on the Postdoc Data Project (PDP). As shown in Table 14, at least 80% of postdocs ( $n = 142$ ) reported six of the definitional elements as either a formal requirement or an expectation of the respondent's current position. Interestingly, the element which least characterized postdocs' positions was the requirement that the doctorate be recently awarded, with 67.6% of postdocs choosing this option.

In contrast, the requirement of a PhD or equivalent doctorate degree and the requirement of publication of research in scholarly journals characterized postdoc positions most frequently, with 99.3% and 98.4% of postdocs, respectively, choosing each as a formal requirement or expectation. In addition to these two definitional elements, "a defined period of time" was also highly characteristic of postdoc positions, with 91.5% of respondents reporting this requirement or expectation. Comparisons between rates of selection for postdocs and non-postdocs were not performed for the individuals in the establishment-based QT-LAS lists due to the extremely small number of non-postdocs identified among respondents.

**Table 14. Definitional Elements Selected as a Formal Requirement or Expectation among Postdocs<sup>4</sup>**

Definitional Element	% of Postdocs ( $n$ )
The position requires a PhD or an equivalent doctorate degree, such as an MD.	99.3% (141)
The position required publication of research in scholarly journals.	98.4% (140)
The position is for a defined period of time.	91.5% (130)
The position is primarily for the purpose of providing research training.	89.4% (127)
The position requires that you work under a senior scholar.	88.0% (125)
The position is temporary.	84.5% (120)
The position requires that the doctorate was recently awarded.	67.6% (96)

Next, we examined the frequency with which postdocs and non-postdocs selected each of these same definitional elements specifically as *formal requirements* of their positions, and these results are presented in Table 15. Again, the most frequently selected characteristic was that of a PhD or equivalent doctorate degree, with 98.6% of postdocs specifying this requirement; only one respondent from the first analysis of expectations *or* requirements defined the PhD as merely an expectation.

Few of the other definitional elements reached the same frequency of selection as in the first analysis, suggesting that many of the characteristics are often considered an expectation of a position but less so as a specified requirement. The primary purpose of providing research training and the requirement of work under a senior scholar both were specified as requirements by at least 70% of postdocs. Required publication of research in scholarly journals, specified by 98.4% of postdocs as a requirement and/or expectation, was specified as a *requirement* by only 66.9% of postdocs. In addition, the nature of the position as for a defined period of time, selected by 91.5% of postdocs as an expectation or requirement,

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<sup>4</sup> Missing data ranged from 2 cases to 6 cases for various definitional elements. For simplicity, all percentages in this table and Table 15, as well as in the related text, are reported as percentages of the total number of postdocs ( $n=142$ ).

was selected by only 52.8% as an explicit formal requirement. The requirement of a recently awarded doctorate was once again least specified, with only 29.6% of postdocs reporting this requirement.

**Table 15. Definitional Elements Selected as a *Formal Requirement* among Postdocs**

<b>Definitional Element</b>	<b>% of Postdocs (<i>n</i>)</b>
The position requires a PhD or an equivalent doctorate degree, such as an MD.	98.6% (140)
The position requires that you work under a senior scholar.	71.1% (101)
The position is primarily for the purpose of providing research training.	70.4% (100)
The position required publication of research in scholarly journals.	66.9% (95)
The position is for a defined period of time.	52.8% (75)
The position is temporary.	49.3% (70)
The position requires that the doctorate was recently awarded.	29.6% (42)

### ***Postdoc Positions***

This section of the report focuses on respondents who self-identified as postdocs ( $n = 142$ ). We asked about the tenure of their postdoc positions, the sectors of employment in which they worked, their salary and benefits, and information on funding types and sources for their positions.

*Years in postdoc.* The mean number of years that postdocs reported having been in their positions was 2.99 years, and the median was two years (total  $n = 141$ ). Responses ranged from a minimum of one year (41 respondents) to a maximum of 12 years (one respondent).

*Sector of employment.* Slightly more than one-half of the postdocs (54.2%; 77 / 142) reported being employed by a non-academic, non-profit organization, in contrast to the pattern of responses on the professional scientific organization’s list. Another 38.7% (55 respondents) reported being employed by an academic institution. The remaining 7.1% was split between for-profit companies or organizations (0.7%, one respondent), government agencies or institutions (2.8%, four respondents), and responses of “other” (3.5%, five respondents).

*Salary and benefits information.* Most – 138 of the 142 – postdocs reported salary in an open-ended question format. For these respondents, the mean annual salary before deductions was \$42,381.96; the median annual salary before deductions was \$43,000. Responses ranged from a minimum of \$0 to a maximum of \$60,000. Table 16 displays the percentages of postdocs receiving various benefits in their current positions (total  $n = 142$ ). As with the list from the professional scientific organization, medical insurance was the most commonly received benefit for postdocs; a retirement plan was the least commonly received.

**Table 16. Benefits Received by Postdocs in Current Positions**

<b>Benefit Type</b>	<b>% of Postdocs (<i>n</i>)</b>
Medical insurance	93.7% (133)
Paid vacation days	73.9% (105)
Paid sick days	70.4% (100)
Retirement plan	67.6% (96)

*Funding types and sources.* Respondents named the funding source(s) for their current positions, if any, as well as the source of the grant, contract or fellowship if this option was chosen. The most common funding source for the 141 postdocs who responded to the question about funding source was a “grant, contract, or fellowship,” with 83% of postdocs reporting funding from such a source. Within this category, 46.1% of the 141 postdocs specified that this grant, contract, or fellowship was a National Institutes of Health (NIH) research grant, and another 25.5% of the 141 postdocs specified that it was a fellowship from a non-government funding agency. Aside from this “grant, contract or fellowship” category, the second most frequently-reported funding source was “from the institution, university, or company” of employment (47.5%). A detailed breakdown of reported funding sources for postdocs’ current positions is displayed in Table 17.

**Table 17. Funding Sources for Current Positions**

<b>Funding Source</b>	<b>% of Postdocs (n)</b>
A grant, contract or fellowship	83.0% (117)
National Institutes of Health (NIH) research grant (not including a traineeship)	46.1% (65)
NIH National Research Service Award (NRSA)	10.6% (15)
NIH Intramural Funding	0.7% (1)
National Science Foundation (NSF) research grant	3.5% (5)
NSF fellowship	0.7% (1)
U.S. Department of Energy (DOE) grant	0.0% (0)
Other U.S. government grant	4.3% (6)
Government fellowship from another country	1.4% (2)
Fellowship from a non-government funding agency (e.g. a foundation, association, or disciplinary society)	25.5% (36)
Other	5.7% (8)
Funds from foreign government or entity	2.8% (4)
Funds from the institution, university, or company that employs you	47.5% (67)
Your own personal sources	0.0% (0)
Other	3.5% (5)
Don’t know	2.8% (4)

## Summary

This report documented the activities involved in assessing individual-based lists. In summary:

In terms of eligibility of individuals on the list, the list for the scientific professional organization did not meet the minimum requirements of having at least 50% of the list members in postdoc positions. The lists from the establishment-based QT-LAS did meet this requirement; unfortunately most of these lists were extremely small in nature (more than one-half had less than 10 individuals).

In terms of quality of the contact information on the list and any other information provided, the list for the scientific professional organization provided a large number of useful variables that would help to identify and target specific segments of the postdoc population. Unfortunately, most records in this list had missing data for most of these auxiliary variables. Further this list was not able to provide email addresses. The lists from the establishment-based QT-LAS did not provide any auxiliary information – just an email address.

We were interested in learning how many actual postdocs are in the list. The list for the scientific professional organizations had 237 postdocs. The list did not provide information about postdoc status to be able to determine if the data verified the list. The lists from the establishment-based QT-LAS had 142 postdocs. The data from the survey was consistent with the sample information.

Finally, the list assessment questionnaire provided some information to better understand distinguishing characteristics of postdocs from non-postdocs. In the list for the scientific professional organizations and the lists from the establishment-based QT-LAS had 142 postdocs, definitional elements stating that their positions be “primarily for the purpose of research training”, “require work under a senior scholar,” and “require publication of research in scholarly journals” as defining characteristics of a postdoc. In the list for the scientific professional organizations, the criteria that best distinguish postdocs from non-postdocs are the position’s requirement of work under a senior scholar (50.1% difference) and the position’s primary purpose of providing research training (41.4% difference). There were not enough non-postdocs in lists from the establishment-based QT-LAS to do a comparison.