



POSTDOCTORAL SCHOLARS

A postdoctoral scholar (“postdoc”) is an individual holding a doctoral degree who is engaged in a temporary period of mentored research and/or scholarly training for the purpose of acquiring the professional skills needed to pursue a career path of his or her choosing. Postdoctoral appointees can pursue basic, clinical or translational projects so long as their primary effort is devoted toward their own scholarship. Postdocs are essential to the scholarly mission of the mentor and host institution, and thus are expected to have the freedom to publish the results of their scholarship.

Characteristics of a Postdoctoral Appointment

The NPA believes that the following are essential to a proper postdoctoral experience:

- **Transition to career independence through the development of professional skills that enable the postdoc to actively pursue a career of his/her own choosing.**
- **Supervision by at least one senior scholar who actively promotes the postdoc’s professional development.**
- **An individual development plan (IDP) that incorporates equally the postdoc’s career and training goals and the mentor’s research goals.**
- **Pursuit of basic, clinical, or translational projects so long as effort is focused primarily on research.**
- **Publication of the results of the postdoc’s research and scholarship during their appointment.**
- **As the postdoctoral appointment is temporary by nature, the aggregate amount of time spent as a postdoc is recommended to not exceed five years.**
- **As postdocs are important members of the host institution’s community, appropriate levels of compensation, health care, and other benefits commensurate with their essential status should be afforded, independent of the postdoc’s source of funding.**

Facts and Data about Postdocs in the U.S.

- **In 2004, the median duration of time spent in a Ph.D. program was 8.0 years and the median age at time of receiving the degree was 33.3 years:¹**
 - *31.7 years in science and engineering*
 - *35.0 years in humanities*
 - *43.1 years in education*
 - *37.0 years in professional/other*

- **Recent Ph.D.s pursue postdoctoral positions out of necessity to promote their career development and improve employment opportunities; career outcomes are bolstered by acquiring additional research or related experiences, and publishing research results as a record of these achievements.**
 - In 2004, 35% of new recipients of doctorates from U.S. universities who had definite postgraduate commitments for employment or study planned to continue their studies as postdocs. This was more common for Ph.D.s in the life (67%) and physical sciences (56%) than in other fields.¹
 - In 2003, 30.7% of postdocs cited "postdoc position generally expected in field" as the primary reason for taking a postdoc position. "Other employment not available" was cited by 11.6% of postdocs; nearly one-third of engineering (31.2%) and geosciences (29.1%) postdocs cited this as the primary reason for taking a postdoc position.²
- **Postdocs receive their main source of funding from various sources:**¹
 - 46% cite a *college or university*
 - 33% cite the *US Government*
 - 6% cite *private foundations*
 - 3% cite *non-profit organizations other than private foundations*
 - 8% cite *some other kind of support*, including foreign governments
- **Postdocs are responsible for a large proportion of the research output of institutions:**
 - A survey of research articles in *Science* found that 43% of first authors were postdocs.³
 - A large number of grants to PIs are based on research done by postdocs in their labs; in addition, many postdocs are responsible for some or all of the actual writing of grants for the lab.⁴
- **Postdocs are routinely responsible for the training of undergraduate, graduate and medical students in research.**⁴
- **In the biological sciences, the average amount of time for holding a postdoctoral position was 3.8 years.**⁵
- **Fifty-eight percent of postdocs surveyed in 2003 were between the ages of 30-35.**⁶
- **In 2004 there were 45,434 postdocs working in US doctorate granting institutions**⁷
 - 28,980 in science fields
 - 12,587 in health fields
 - 3,867 in engineering fields
- **In 2001 69% of all postdocs in science, engineering, and health fields at academic institutions were male, 31% were female.**⁸
 - *Engineering* 85% male, 15% female
 - *Mathematics* 83% male, 17% female
 - *Biological Sciences* 62% male, 38% female

- *Psychology/Social Sciences* 51% male, 49% female
- Of the postdoc respondents in the Sigma Xi Survey, 58% are male.⁶
- **69% of all postdocs are married or otherwise partnered, and 34% have children.**⁶
- **In 2003, 7.4% of postdocs who obtained their doctorates in the US were underrepresented minorities.**⁷
- **In 2004, 57% of postdocs working in doctorate granting institutions were non-US citizens/temporary visa holders; 43% were US citizens/permanent residents.**⁷
- **The majority of postdocs will pursue, out of choice or necessity, non-academic careers:**
 - In 2003, employed S&E doctorates worked in the following sectors:⁹
 - *Universities and four-year colleges* 43.7%
 - *Other educational institutions* 3.4%
 - *Private for- or not-for-profit* 36.6%
 - *Government* 9.6%
 - *Self Employed* 6.1%
 - *Other* 0.6%
 - In 2003, among S&E doctorate degree holders who received their degree 4–6 years previously, 19.8% were in tenure-track or tenured positions at 4-year institutions of higher education. The rates for individuals in various degree fields is as follows:²
 - *Engineering* 16.3%
 - *Life Sciences* 18.0%
 - *Physical Sciences* 16.7%
 - *Social Sciences* 30.8%
 - The share of recent doctorate holders hired into full-time faculty positions fell from 74% to 44% from 1972 to 2003. At research universities the decline was from 60% to 31%. Conversely, the overall share of recent S&E doctorate holders who reported being in postdoc positions rose from 13% to 34% overall and from 22% to 48% at research universities.²
 - At research universities, faculty-level jobs lacking the possibility of tenure have risen from 55% of new hires in 1989 to 70% in 2003. The probability that a Ph.D. recipient under 35 will obtain a tenure-track job has fallen from 10% in 1993 to 7% in 2003.¹⁰
 - In response to the increasing difficulty of finding employment in traditional sectors, trainees and their mentors have looked to alternative careers, such as law, science writing, science policy, and secondary-school teaching.¹¹

References

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- ⁶ G. Davis. Doctors Without Orders: Highlights of the Sigma Xi Postdoc Survey. *American Scientist*: May-June Supplement, 93 (2005).
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- ¹⁰ B. L. Benderly. The Incredible Shrinking Tenure Track. *Science Careers* (2 July 2004).
http://sciencecareers.sciencemag.org/career_development/previous_issues/articles/3150/the_incredible_shrinking_tenure_track/
- ¹¹ National Research Council, Committee on Dimensions, Causes, and Implications of Recent Trends in the Careers of Life Scientists, *Trends in the Early Careers of Life Scientists* (National Academy Press, Washington, DC, 1998).