Supplemental Material 3.

Career preferences of postdoctoral scholars at UCSF

In April 2008, we distributed a survey to postdoctoral scholars containing questions identical to those in the student survey (see Supplemental Material 1). We saw this as an opportunity to better understand the career interests and career development needs of postdoctoral scholars. While comparing postdoctoral and doctoral career preferences is instructive, we do so with the caveat that these two populations differ in striking ways. Compared to students, postdoctoral scholars at UCSF are selected based on widely varying standards, enter with broader training backgrounds, and represent a wide variety of nationalities.

Four hundred thirty-nine postdoctoral scholars responded to the survey (35% of the 1,260 postdoctoral scholars training at UCSF that month). This response rate is similar to that of other reputable postdoctoral surveys (Davis, 2005; Nally, 2002). Only respondents who identified their research area as basic/laboratory science were included in the analysis (n=354). Of these, respondents who reported that they had already accepted a job offer (n=26) were not included in the analysis. Therefore, in total, data from 328 respondents were analyzed. All of these respondents had six or fewer years of postdoctoral experience. (At UCSF, postdoctoral scholars who prefer to continue in their current laboratory for more than 6 years must transition to a staff or faculty research title.)

As expected, essentially all postdoctoral scholars (98.2%, n=322) were strongly considering careers in scientific research (i.e., in academia, industry, government). Postdoctoral scholars showed greater interest in research positions than did students, with 89.4% (n=271) saying they would choose a research career path. Nearly all research categories showed increased interest relative to students, with 53.8% (n=163) of postdoctoral respondents stating they would choose to be a PI in an academic setting, 6.6% (n=20) other research in academia, and 27.7% (n=84) a research-intensive position in biotech or pharma. Like students, postdoctoral scholars showed little interest in research career paths in government, with only 1.3% (n=4) selecting that career path as their top choice.

Postdoctoral scholars demonstrated less interest in non-research careers compared to students. 71.2% of students were strongly considering at least one non-research career path, while 43.6% (n=143) of postdoctoral scholars were strongly considering a non-research career path. A striking 33% of senior students chose a non-research career path as their top choice; however, only 10.6% (n=32) of UCSF postdoctoral scholars would choose a non-research career path.

Postdoctoral scholars were more confident in career choice than students, with 26.1% (n=85) of postdoctoral scholars being very confident in their current career choice. Interestingly, even at this later stage of training, many postdoctoral scholars expressed low confidence in career choice (36.5% (n=119) selected “still considering a range of options”). 18.9% (n=62) of postdoctoral scholars indicated that their career preference

had changed since beginning their postdoctoral training. However, whereas for students this type of change manifested itself as a trend away from becoming a PI at a research-intensive academic institution, aggregate postdoctoral data showed no trends of change across career categories as a function of time in postdoctoral experience.

Interestingly, 50% (n=16) of the postdoctoral scholars who would currently select a non-research career path reported that this was the same career preference they had upon entering their postdoctoral training. Further studies are needed to identify why a scientist would choose to pursue postdoctoral training even if they planned to follow a non-research career path.

The postdoctoral training period is the final research-intensive training step, intended to prepare scientists to become independent investigators. True to this intention, postdoctoral scholars have a strong preference for research-focused careers. More than half of the postdoctoral scholars at UCSF identified being a PI in an academic setting as their top career choice, with 44.6% (n=135) of postdoctoral scholars specifying becoming a PI at a research-intensive academic institution. However, this raises a critical concern: there are not enough faculty positions available to satisfy this demand. It is likely that many of these postdoctoral scholars will need to identify and perhaps follow a "Plan B" route. To help them do so, institutions should provide career services tailored to the specific needs of this elite group. More than 10 years ago, a career center was established at UCSF in recognition of this need, and has since been expanded to provide a wealth of professional development training as well as career exploration and career decision-

making assistance (http://career.ucsf.edu). The Federation of American Societies for Experimental Biology (FASEB) and National Postdoctoral Association (NPA) have highlighted these needs. As a result there has been a national trend toward improving mentoring practices for postdoctoral scholars, and creating institutional postdoctoral offices that offer some assistance in career development.

References

Davis, G. (2005) Doctors without orders. American Scientist *93* (3, supplement). http://postdoc.sigmaxi.org/results (accessed 24 January 2011).

Nally, T. L. (2002) Survey of surveys I: What postdoc association surveys tell us about postdoc working conditions. Science Career Magazine *June 21, 2002*. http://sciencecareers.sciencemag.org/career_magazine/previous_issues/articles/2002_06_21/noDOI.14480334383967315429 (accessed 24 January 2011).