

# Study recommends changes to postdoctoral science positions

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Federal research agencies, such as the National Science Foundation and National Institutes of Health, tout postdoctoral positions as valuable training for those pursuing for scientific careers.

However, a new study by Boston University and University of Kansas researchers has found that postdoc jobs don't yield a positive return in the labor market, and that these positions likely cost graduates roughly three years worth of salary in their first 15 years of their careers.

"Biomedical scientists require postdocs in order to do the work of science. However, the postdoc only prepares students for academic careers—jobs that are very difficult to come by," said Donna Ginther, KU professor of economics. "Ours is the first study to document the opportunity cost of taking a postdoc on the subsequent career outcomes of former postdocs. We show that the cost in terms of foregone earnings is very high. Most postdocs would be better off if they took jobs when they completed their degrees."

Ginther and co-author Shulamit Kahn, associate professor Boston University Questrom School of Business, had their findings "The impact of postdoctoral training on early careers in biomedicine" published Tuesday in the journal *Nature Biotechnology*.

The researchers said several of their findings challenge published assertions about recent trends in postdoctoral positions because their paper compared later careers of biomedical PhDs who had postdoc

experience and those who didn't. They examined biennial longitudinal data from the 1981 to 2013 waves of the National Science Foundation Survey of Doctorate Recipients matched to the 1980-2013 NSF Survey of Earned Doctorates.

They found of people who started in postdoc positions, the median annual starting salary during their first four years after earning their doctorate was \$44,724 in inflation-adjusted 2013 dollars, compared with \$73,662 for those who directly entered the workforce. And after controlling for all factors, the 10-year post-PhD salaries of those who started in a postdoc averaged \$12,002 lower than those who skipped postdocs.

"We find a substantial financial penalty for starting biomedical careers in a postdoc. Those differences accumulate," the researchers said.

Ginther said the findings could help universities, advisers and the postdocs themselves to address issues with those pursuing biomedical careers. Ginther and Kahn hope that this research will help biomedical PhDs make more informed choices by weighing the 20% chance of obtaining a tenure track job against the financial and personal sacrifices of the temporary postdoctoral positions. They also expressed the hope that academic advisers will learn about the availability of non-academic research jobs that do not require a postdoc.

"The current system of postdoctoral training benefits the postdocs' supervisors, mentors, their institutions, and funding agencies by providing them with highly educated labor willing to work long hours to produce cutting-edge science at low cost," the researchers said.

"Meanwhile, the present system entails significant foregone-income costs to individual PhDs and may discourage the best and brightest from pursuing careers in biomedical science in favor of alternatives like medicine and finance with shorter training periods and better pay."

The researchers suggest ways that universities and funding agencies could address these issues, including:

- Universities hiring staff research scientists to assist tenured faculty with their research instead of postdocs.
- Paying postdocs more to reduce the reliance of faculty on "cheap" labor.
- Instituting term limits on postdoc positions to encourage researchers to start in permanent positions rather than later.

"This may allow young researchers to direct their own research," they said, "perhaps in more creative directions."

**More information:** *Nature Biotechnology*, DOI: 10.1038/nbt.3766

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