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VEPACHEDU EDUCATIONAL FOUNDATION

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IP and Industry News

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Life of a Young Scientist in Americaⁱ and the Law of Diminishing Returns

The life of a postdoctoral researcher is never easy, filling an essential niche of cheap labor in the scientific pipeline, toiling in obscurity in a low-paying scientific apprenticeship that can stretch more than a decade. After spending 6 to 7 years on average earning a PhD, they invest more years of toiling in a senior scientist's laboratory as the final precursor to the dream of starting labs where they can explore their own scientific ideas. They believe that the long hours were worth it for they dream of a chance to launch an independent laboratory and do science that could expand human understanding of biology and disease.

Some of the smartest people in Boston, more than 8,000 postdocs, are caught up in this all-but-invisible web, mired in a biomedical underclass as federal funding for research has leveled off, leaving the supply of well-trained scientists outstripping demand; while the pursuit of research breakthroughs has also become reliant on them as a cheap source of labor for universities and industry.

After college, people who want to pursue MS or PhD degree enroll in graduate school. The vast majority of PhDs, then go on to do one or more postdoc positions, where they continue their toiling, often well into their late 30s, investing the prime of their life stuck in labs in low paying positions. Today, the NIH stipend ranges from \$42,000 a year for a fresh PhD graduate starting postdoc, up to \$55,272 for a seventh year. Salaries vary, but rarely reflect their level of education. The National Institutes of Health estimates that there are about 68,000 postdocs in the country. Often these supremely well-educated scientists are simply cheap laborers, not learning skills for the careers where they are more likely to find jobs — teaching, industry, government, nonprofit, or consulting.

In 1970, scientists typically received their first major federal funding when they were 34. In 2011, those

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lucky enough to get a coveted tenure-track faculty position and run their own labs, at an average age of 37, don't get the equivalent grant until nearly a decade later, at age 42.

The law of diminishing returns states, "when increasing amounts of one factor of production are employed in production along with a fixed amount of some other production factor, after some point, the resulting increases in output of product become smaller and smaller."

A simple example of the workings of the law of diminishing returns comes from the above highly qualified cheap labor. A high school dropout earns a living by working hard, and may earn at least about \$ 20,000 and up depending on the type of work and the state's minimum wage. If she graduates from high school, she would at least double her earnings. If she graduates from college, she improves further her earnings. While some college dropouts became billionaires, doing PhD may prove the law of diminishing returns, as evidenced by the above cheap labor and the charts below:

Accountant I, Entry Levelⁱⁱ: require a bachelor's degree in area of specialty and 0-2 years of experience in the field or in a related area.



Food Scientist with BS degree:



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Postdoctoral fellow, with a PhD degree, makes less than the entry level Accountant above. This is classic diminishing returns for higher education.

Postdoctoral Fellow Salaries

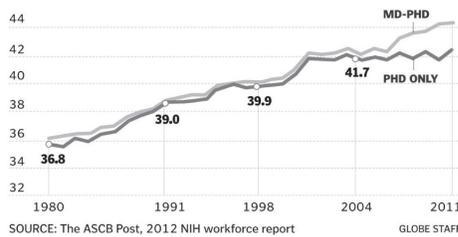
1,376 Salaries

Updated Oct 27, 2014



Average age of new investigators with PhD at initial R01 equivalent award*

*First major federal funding to support their own laboratories



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Source: The primary sources cited above, New York Times (NYT), Washington Post (WP), Mercury News, Bayarea.com, Chicago Tribune, USA Today, Intellihealthnews, Deccan Chronicle (DC), the Hindu, Hindustan Times, Times of India, AP, Reuters, AFP, womenfitness.net, about.com, mondaq.com, etc.

Om! Asatoma Sadgamaya, Tamasoma Jyotirgamaya, Mrityorma Amritamgamaya, Om Shantih, Shantih, Shantih!
(Aum! Lead the world from wrong path to the right path, from ignorance to knowledge, from mortality to immortality, and peace!)

ⁱ <http://www.bostonglobe.com/metro/2014/10/04/glut-postdoc-researchers-stirs-quiet-crisis-science/HWxyErX9RNIW17khv0MWTN/story.html>

ⁱⁱ [View Accountant I job description http://www.1.salary.com/Accountant-I-Salary.html](http://www.1.salary.com/Accountant-I-Salary.html)

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