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Announcements

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9th Annual Fellows Scientific Conference
April 23 & 24
http://fellowshipoffice.niddk.nih.gov/retreat/

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The iNFORMER is looking for co-editors
Interested individuals should email: joseph.tiano@nih.gov

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Fellows Award for Research Excellence
Abstract submission: Feb. 14 – Mar 17
https://www.training.nih.gov/felcom/fare

Transitioning Successfully from Postdoc to Faculty
Mar 11, 2014 2:00 pm - 4:00 pm
https://www.training.nih.gov/events/view/_2/1185/Academics_Transitioning_Successfully_from_Postdoc_to_Faculty

Workplace Dynamics III: Conflict & Feedback
Mar 26, 2014 11:00 am - 1:00 pm
https://www.training.nih.gov/events/view/_2/1193/Workplace_Dynamics_III_Conflict__Feedback

9th Annual Fellows Scientific Conference

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April 23- 24, 2014

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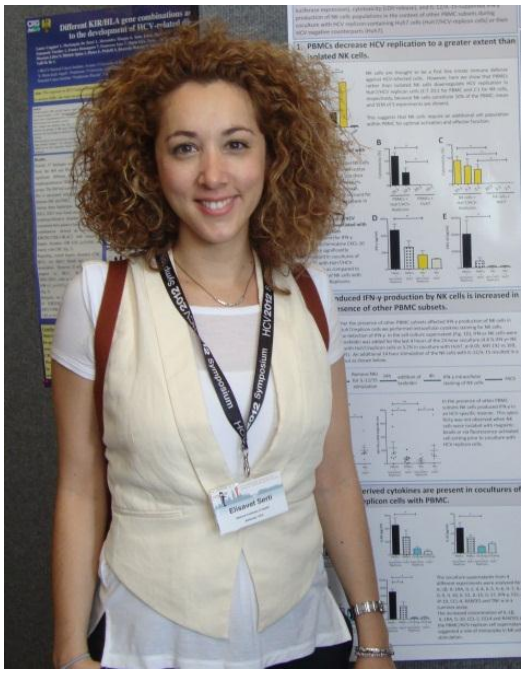
2013 Nancy Nossal Award Winners



Elisavet Serti (LDB)

Bo Xiong (LCDB)

Danielle Friend (DEOB)

Is there a shortage of PhDs?

By Joseph P. Tiano

Many businessmen and politicians believe that there is a shortage of skilled workers with postgraduate degrees in science, technology, engineering and math (STEM) fields. For example, a 2012 report by the President's Council of Advisors on Science and Technology states that "economic forecasts point to a need for producing, over the next decade, approximately 1 million more college graduates in STEM fields than expected under current assumptions." In 2011 Senator John Cornyn, TX, said "there is a scarcity of qualified people for many jobs, particularly those in high technology." Articles in the New York Times – *Why Science Majors Change Their Minds* – and the Washington Post – *How the private sector can help curb our engineering shortage* – echo those remarks. These assertions seem incorrect to many of us with advanced degrees in science.

Too many PhDs for academia

Most of the data points to an excess of highly skilled postgraduates with degrees in STEM education. The National Science Board's publication, *Science and Engineering Indicators 2008*, reports that the U.S produces three times as many STEM degrees as the economy can absorb, forcing STEM majors to take jobs in other sectors or remain in underpaid postdoc positions. Between 2006 and 2011 the percentage of doctoral recipients with a definite job or postdoc commitment decreased from 71.6% to 65.5%. The unemployment rate for STEM PhD holders is twice what it was a decade ago at 1.5% – but it is still much lower than the national average of 6.6 % (January 2014). The number of current PhDs drastically outnumbers the number of faculty openings in academia – the percentage of life sciences PhDs in a tenure track position 5-6 years post-graduation is around 15%, down from 25% in 1993 and 50% in 1975. In 1982 the U.S. was producing around 19,000 science and engineering (S&E) PhDs per year while the number of new faculty positions created per year was about 3,000 (about 6 times as many PhDs as faculty positions available). By 2011 the U.S. was producing 36,000 S&E PhDs per year while the number of yearly faculty positions created remained unchanged at 3,000 (a staggering 12 PhDs for every one faculty position). Coinciding with these numbers is the length of a postdoc training period, which has increased from an average of 1-2 years a decade ago to 3-4 years today (the average length to obtain a STEM PhD did not change at 6.8 years). Many PhDs are now doing multiple postdoc trainings totaling 7-10 years. Spending over 5 years in a postdoc position can in many instances decrease your chances of being hired by employers who view extended postdocs negatively. Another trend is the rise of underpaid nontenure-track and adjunct faculty positions in higher education, which make up a staggering 52% of higher education faculty compared to 27% for tenure-track faculty.

Even if a postdoc beats the 1:12 odds and lands a tenure-track faculty position it is still not a guarantee of a secure future. The average age of the first R01 grant in 2008 was 42, up from about 37 in 1980. The effects from a decade of stagnant research funding (purchasing power actually decreased 20-30% due to inflation), the recent government shutdown, and the financial hardships brought about from the sequester (the NIH lost $1.7 billion in FY2013 alone) are starting to manifest themselves. A study conducted by the American Society for Biochemistry and Molecular Biology (ASBMB) found that 20% of U.S. scientists are contemplating going overseas to continue their research. Whether these responses are real or not remains to be seen. If 20% of scientists do move overseas there may be enough job openings to accommodate the excess PhDs being produced – but there are other solutions.

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Too many PhDs for industry

Outside academia the numbers are better, but there is still an excess of graduates with STEM degrees. From 2007 to 2012 the U.S. global share of money spent on biomedical research declined from 51% to 45% while U.S. private industry research and development (R&D) declined from 50% to 42%. The 11 largest pharmaceutical companies have cut 36,000 jobs (4% decreases) globally between 2007 and 2012. This coincided with a decrease in R&D from $70 billion in 2009 to $68 billion in 2010. A 3% decrease in spending might not seem like a shock but it was the first-ever decline in pharmaceutical R&D following decades of increased spending. Analysts expect this trend to continue for the next few years. Over the last three years Pfizer, the world's largest pharmaceutical company, slashed its R&D budget by 20% and cut over 5,000 jobs (mostly scientists) and late last year Merck & Co. Inc. announced plans to cut costs and eliminate 8,500 jobs. In contrast, however, the smaller pharma companies and biotechs added 41,000 jobs during that same period, offsetting some of job losses by the largest pharma companies.

It isn't all just about the numbers

It would appear from these statistics that the shortage of skilled PhDs is a myth. However, it is more complicated than the number of PhDs being greater than the number of available jobs. The quality of PhD training is equally important – and some in the business arena believe current PhDs are inadequately trained for jobs outside academia.

In recognition of the discontinuity between PhD training and necessary non-academic job skills, in 2000 the Committee on Science, Engineering, and Public Policy (COSEPUP) released a document highlighting ten areas of PhD training that needed improving if PhD training is to keep up with the changing landscape of PhD's leaving academia. COSEPUP is currently in the process of revisiting those ten recommendations to determine how well they were implemented, to assess their effectiveness and to update them for 2014.

Is anything being done?

In 2007 The American Federation of Teachers (AFT) launched the Faculty and College Excellence Campaign (FACE) to counter the increase in adjunct faculty hiring and decrease in tenure-track faculty hiring. The FACE campaign is pushing for full pro-rata pay and benefits for contingent faculty and other instructional staff and for increased hiring of full-time tenure track faculty. The COSEPUP committee has recommended limiting PhD training to five years (the current average is 7 years) to allow students to begin their careers earlier. The NIH's Biomedical Research Workforce Working Group put forth two recommendations that they believe will decrease postdoc demand: raise the starting postdoc salary (currently around $39,000) to $42,500 tied to the consumer price index and limit NIH grad student funds to five years with a maximum of six. However, these are only policy recommendations and until they are actually implemented PhDs still face an uphill battle for employment. In a first-of-its-kind and potentially monumental move – depending on whether other universities follow suit – Johns Hopkins University recently announced plans to decrease graduate student enrollment by 25% over the next five years and use the money saved to increase graduate student stipends from ~$20,000 to $30,000 per year.

Immigration reform from an NIH fellow's perspective

By Umesh Wankhade

"It's not smart to invite some of the brightest minds from around the world to study here and then not let them start businesses here. We've sent them back to their home countries to start businesses and create jobs and invent new products someplace else."

- President Barrack Obama

We (visiting fellows) came to the U.S. – the 'land of the free and home of the brave' – to obtain a college degree and/or an advanced degree and to fulfill our dream of conducting research at premier laboratories and to make discoveries that may someday cure diabetes, cancer and other debilitating diseases. Some of us relied on American taxpayer money to obtain our education and most of us at one point or another have paid taxes to the U.S. government. However, it is particularly difficult putting that education to work in the United States. We are faced with the tedious process of applying for work visas and extensions.

Most of the international NIH visiting fellows are on some sort of visa – most likely an H-1B or J1. Although these visas have their benefits they are far from an optimal situation. For example, to qualify for an H-1B visa, visiting fellows must be a full time employee (FTE). During these tough economic times and flat NIH budget, obtaining FTE status is becoming increasingly more difficult. The J1 visa is offered to visiting fellows through special treaties with their respective countries and those fellows from a country that does not have a partnership with the U.S. may be ineligible for a J1 visa. Furthermore, J1 visas usually have a 2-year home residency requirement (212e), meaning the fellow must work in their native country for two years following their fellowship, thus making it very difficult for visiting fellows to continue working at the NIH or elsewhere in the U.S once their J1 visa expires.

The ultimate goal for many NIH fellows is to excel in their current research endeavor and to obtain better career opportunities in industry or academia than are available in their home country. To completely fulfill their dream NIH fellows will eventually need to become a permanent resident by acquiring a green card. However, the timeline for acquiring a green card is unaligned with the NIH's policy on postdoctoral fellowships and visiting fellowships. NIH fellowships are for a maximum of 5 years while it takes visiting fellows on an H-1B or J1 visa 10–15 years to obtain a green card from the moment of entry into the U.S. This time incongruity may discourage many talented individuals from remaining in the U.S. and contributing to the economy. The easier option may then be to return to work in competing economies such as China, India and Europe. Foreign workers understand the need for a strong immigration policy and are not suggesting that the U.S. issue a green card to all M.S. or Ph.D. graduates. They are asking that the U.S. consider alternate time frames for NIH graduates who can help grow the American economy by bringing novel ideas, making new discoveries and starting entrepreneurial businesses that create jobs and contribute tax dollars to the U.S. government.

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Countries like Australia, United Kingdom (UK) and Canada have established immigration policy centered on a skills-based points system. In Canada foreign workers receive lawful permanent residency immediately upon their arrival if they attain the required score/points based on their skills, credentials and education. Under this system foreign workers can obtain Canadian citizenship in as little as four years. The Australian immigration system is known worldwide for its liberal naturalization policy – 2 years of lawful presence is sufficient for Australian citizenship eligibility if minimum requirements are met. Candidates are evaluated based on their skills, work experience, age and spoken languages. In addition, Australia offers special incentive points for working families by considering the educational achievements and experiences of the candidate's spouse. The UK is similar to Australia and Canada with its immigration policy. In 2002, the UK adopted a program called the "Highly Skilled Migrant Program (HSMP)" which is based on a points system to attract highly educated and skilled workers by awarding them a work permit or entry visa. Points are accrued based on the candidate's qualifications, past earnings, age and experience. In addition, the UK also created a policy to attract intelligent and talented students by letting graduates of top-ranked business schools work in the UK for 12 months after completion of their education. UK candidates do not have to be employed to be admitted into the country with a visa.

It can take upwards of 10-15 years to obtain a green card in the U.S. Furthermore, each stage of the process has many requirements, some of which are repeated muliple times. However, new immigration reform has been proposed that roughly doubles the number of H-1B visas and alters the categorization of J1 visas from a "cultural exchange program" to a "work program" meaning they will be treated similarly to other working visas. The proposed bill adds an additional sixth category for employment-based green cards that is merit based. There are currently 5 types (EB-1 to EB-5) of employment-based green cards and the proposed bill would make available approximately as many merit-based green cards as there are currently available employment-based green cards. However, the availability of merit-based green cards would vary according to supply. Lastly, the proposed bill would apply a points system for awarding the merit-based green cards. With respect to a candidate's schooling they would receive 15 points for a Ph.D., 10 points for a master's and 5 points for a bachelor's degree. With respect to a candidate's job experience they would accrue 2-3 points (depending on the job level) per year of work in the U.S., 8-10 points (depending on the job level) for employment in a field related to their degree, 10 points for employment in a top-5 high-demand job and 10 points for entrepreneurs that create 2 or more jobs. In addition, points will be awarded for other attributes such as speaking fluent English (10 points), being between 18 and 37 years of age (4-8 points), having children or siblings that are U.S. citizens (10 points), being involved with their community (2 points) and whether they are from an underrepresented country (5 points).

In addition to adding a merit-based green card category, the proposed bill makes changes to a few of the current employment-based green card categories. Each year the U.S. awards 140,000 employment-based green cards and each country is limited to 7% (or 9,800) of the total regardless of its population size.

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Thus, there is a tremendous backlog of applications from populous countries (India, China). Many agree that the proposed bill eliminates this cap. The EB-1 green card covers individuals with "extraordinary ability," outstanding professors and business executives. Under the proposed bill, EB-1 applicants and PhD holders are excluded from the annual cap and thus have guaranteed access to an employment-based green card along with freeing up space for other candidates. The proposed bill also changes the allocation of EB-2 green cards. Most notably, those who have a master's degree in a science, technology, engineering or math (STEM) field, those who have graduated in the last 5 years and those who have a U.S. job offer will have first rights to EB-2 green cards (the job requirement can be waived if it is in the national interest). In addition, the proposed bill waives labor certification requirements for STEM advanced degree holders. Labor certification requires proving that no U.S. citizens could be found for the job.

The bill passed the Senate on 27th June 2013, the House has yet to take up the bill for debate.

Welcome New Fellows

Cheng-Chao Lin
Visiting Fellow, Taiwan
PhD, University of Rochester
Kidney Disease Branch (Germino) Bldg 10

Kara George Rosenker
IRTA
PhD, University of Pittsburgh
Laboratory of Bioorganic Chemistry (Appella) Bldg 8

John Dougherty
IRTA
PhD, Drexel University College of Medicine
Laboratory of Endocrinology and Receptor Biology (Gershengorn) Bldg 50

Maria Jaime
Visiting Fellow, Canada
PhD, University of Toronto
Laboratory of Cellular and Developmental Biology (Oliver) Bldg 50

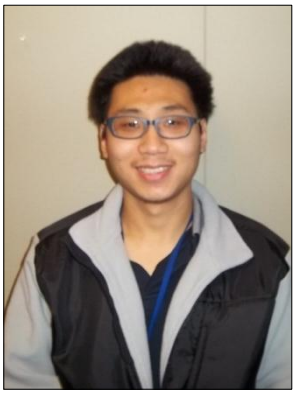
Irene Ramos Alvarez
Visiting Fellow, Spain
PhD, Universidad Autonoma De Madrid, Spain
Diabetes Disease Branch (Jensen) Bldg 10

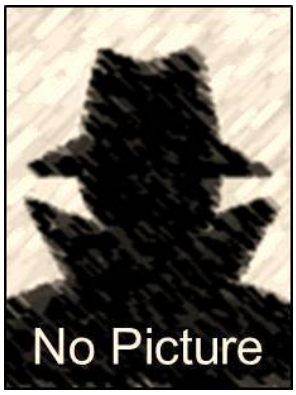
Wenwei Zheng
Visiting Fellow, China
PhD, Rice University
Laboratory of Chemical Physics (Best) Bldg 5

Melissa St. Amand
IRTA
PhD, University of Delaware
Biotech Core Lab (Shiloach) Bldg 14A

Soumya Roy Chowdhury
Visiting Fellow, India
PhD, Indian Institute of Science
Laboratory of Molecular Biology (Felsenfeld) Bldg 5

Welcome New Fellows





Siwei Qiu	Pierre- Christian	Sarah Inwood
IRTA	Visiting Fellow, France	IRTA Pre-doc
PhD, University of Utah		PhD, Johns Hopkins University
Laboratory of Biological Modeling (Chow) Bldg 12A	Diabetes Disease Branch (Levine) Bldg 10	Biotechnolgy Core Lab (Shiloach) Bldg 14