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LETTER

Effectively Facilitating the Collaboration between the Environmental Health Community in China and Overseas Scholars

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Abstract

This commentary discusses the difficulties facing US-based researchers in collaborating with Chinese research institutions, and proposes a potential solution led by non-government funding agencies.
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中国近年来的经济发展在带动整个社会进步的同时也带来了日益严重的环境污染。评估并管理由此产生的全社会范围的健康风险是中国政府急需解决的一个重要问题。在美国大学任职的华裔科学家是中美在环境健康领域合作的中坚力量，对培养中国科研人才，提高科研水平起着至关重要的作用。然而美国日益激烈的科研竞争以及大学对教授业绩的评价体制导致华裔科学家的工作很难被其所在的机构认可，客观上抑制了中美之间的交流。本文针对这种情况，建议以 CMB 为代表的基金会等组织对华裔科学家在中国的工作提供有限度的经费资助，从而保证华裔科学家在华的时间投入，从而有效推进双方的深入合作。

The rapid economic development and urbanization in China over the past three decades has lifted hundreds of millions of people out of poverty. As bringing food to the table becomes less and less of a concern, the general public starts to demand a higher standard of living. Severe air pollution, especially fine particulate matter ($PM_{2.5}$) pollution in China's urban centers is attracting national and international attention (Huang et al., 2014). People's awareness and concerns over the adverse health risks due to exposure to air pollution including $PM_{2.5}$ are growing daily. However, research based on the Chinese population has been serious lacking since a nationwide regulatory $PM_{2.5}$ monitoring network did not exist until the end of 2012. On the other hand, the $PM_{2.5}$ monitoring program in the US was initiated in 1993 and became mature by 2001 with over 1,000 monitors nationwide. The research on air pollution health effects in North America dates long before that (Pope and Dockery, 2006), and has cumulated a rich body of literature and an extensive knowledge base. Working with their Chinese counterparts, US researchers, especially those of Chinese origin with personal experience of severe air pollution, can potentially help address the urgent need to better understand the disease burden of urban air pollution in China. Although it is more common to see exchange students from China on US campus in recent years and short visits of US scholars to China, in-depth collaboration on cutting-edge projects with significant time commitment from both sides is still difficult.

To get a better understanding of the issue, we start with the composition of Chinese public health scholars in the US. Most of them are concentrated in three types of organizations: public

and private universities and research institutions, the private sector, and government agencies such as the National Institutes of Health and the Centers for Disease Control and Prevention. Civil servants in federal and state governments are often subject to various regulations limiting their commitment to research collaboration beyond their agency mandates. Researchers in the private sector may not have the freedom to work with Chinese partners unless such opportunities can bring profit to their employers. Members of academic faculty do have the flexibility to engage in long-term collaboration and capacity building with Chinese partners. However, a major hurdle lies in the path to active and effective China-US collaboration. This has to do with how major American universities evaluate the performance of their faculty.

Among the three aspects of faculty evaluation, research outweighs teaching and service in most cases. The two primary indicators of research performance, i.e., peer-reviewed publications and extramural funding, are closely connected. A research group cannot maintain its productivity without sufficient funding support. In addition, many schools of public health in the US are operated under the "soft money" business model, in which faculty salary is partially supported by research grants. For example, as a top-ranking program, the Rollins School of Public Health at Emory University expects its tenure-track faculty in Environmental Health to support 75% of their salary with external funding (percentages vary by department) in addition to supporting their students and research staff. In "hard money" schools such as the public universities with financial support from state governments, faculty members are responsible for their summer salary. However, many programs expect their faculty to bring in additional funding to support administrative staff. According to the NIH Data Book (NIH, 2015), the NIH appropriations in 1995 constant dollars have seen a 21% decrease from $21,080M in 2003 to $16,366M in 2015. The average success rate of all NIH research grants has slipped from its peak of 32% in 2000 to 19% in 2014 due to a shrinking budget and growing number of grant proposals. On one hand, capacity building in China through teaching and research is highly effective in developing a strong domestic research community, but it adds little value to a grant proposal submitted to US state and federal funding agencies. Funding from the Chinese government can only subsidize a small portion of research expenses, often in the form of domestic travel cost. Together, the work of an US-based scholar in China is typically viewed as voluntary as it benefits the individual scholar much more than his/her home institution. Consequently, such "personal interest" is rarely reflected positively in the scholar's performance evaluation. The increasingly competitive funding climate and discouragement from the university management generate a nontrivial pull on all university faculty with an active research portfolio from seriously collaborating with their Chinese counterparts.

On the other hand, although the Chinese government has dramatically increased its investments in programs to attract international talent, these programs do not serve active US-based experts effectively. For example, a well-known, high-profile expert recruitment program is the "1000 Talents Plan" started in 2008. It is designed mainly to attract high level scholars and entrepreneurs of Chinese heritage to work in the mainland. By early 2014, this program has attracted more than 4,000 people. Local government followed suit with similar programs to attract international scholars at various stages of their career to work in China. As David Zweig noted in a *New York Times* article on January 21, 2013, "Entrepreneurs are much more willing to move back permanently; the academics and scientists in the program prefer short term visits and are reluctant to sail to China with all their belongings." (http://www.nytimes.com/roomfordebate/2013/01/21/the-effects-of-chinas-push-for-

education/luring-back-the-chinese-who-study-abroad). Since the participants of these unilateral programs essentially trade their research program in the US for one in China, their work in China benefit their career in their home institutions very little.

A potential solution is through collaboration projects sponsored by non-government organizations with an interest in public health research, capacity building, and policy influence in China. For example, with the aims of advancing health in China and neighboring Asian countries through strengthening medical and public health research and education, the China Medical Board (CMB) is in a unique position to advance the collaboration between Chinese public health scholars and their American counterparts. It has provided hundreds of millions of dollars in grants and technical support to a selected group of medical universities across Asia for a century. CMB has established itself as the premier non-government funding agency in China in health science and policy with far-reaching influences. For the reasons explained above, CMB's current policy of not covering the salary of foreign investigators has a negative effect on attracting established international experts to form effective collaborations with CMB-affiliated Chinese institutions. A small change could go a long way. For example, the budget of 5% effort of a tenured associate professor at Emory is under $10K given the typical overhead rate of foundation grants. This is sufficient to make the university management acknowledge the work of the faculty member in China, to secure two weeks of his/her dedicated time on the project, and is completely manageable given the size of an average CMB grant in past eight years.

In summary, the evaluation process of faculty performance compounded by a tougher funding climate in the US is stifling the collaboration between environmental health researchers in China and the US. Its long-term impact is to slow China's effort to cultivate its work force in environmental health science and develop technologies and policies to combat its air pollution and the associated serious health burden on the society. Innovative funding vehicles from non-government foundations can provide a potential solution to stimulate such collaboration.

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