

China's 'bittersweet' Nobel Prize dream

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In 2015, Youyou Tu became China's first Nobel laureate in science for her contribution to the development of antimalarial drug artemisinin. This honor is a dream come true for many generations of Chinese people. However, amid the overwhelming excitement, there is growing anxiety and criticism among the scientific community over China's current research establishment—for its lack of major innovative achievement, and poor capability in cultivating innovative talents, and in identifying and supporting original research with potential scientific breakthrough. Then, will there be more Nobel winners from China soon?

There is a general perception that Chinese scientists often excel better working alone rather than in a collaborative environment. This is ironic because the traditional Chinese culture emphasizes collectivism over individualism, and the development of the artemisinin as an antimalarial drug resulted from a large national project organized by the government in 1970s, involving hundreds of researchers from many research institutions, with government's official recognition of 10 leading scientists (among which Tu was listed) who made crucial contributions. Yet, Youyou Tu's lack of recognition (e.g. not elected into Chinese Academy of Sciences) in China prior to the Nobel honor has been cited as the evidence of an unhealthy academic ecosystem that failed to recognize her talent. One issue that ought to be discussed is: How could Nobel Prizes properly recognize truly outstanding scientific achievements in the world that are clearly done by a team of more than three scientists?

Winning a Nobel Prize, although a regular media event in developed countries, has a special meaning in China. Over the years, speculation on and anticipation of a Chinese citizen winning a Nobel Prize has garnered significant interest in Chinese society. Why? Today, China's ambition to become a great power in science and technology has never been so strong. The government leaders realize that scientific advance is necessary to achieve a sustainable economic progress and to realize the Chinese Dream—President Xi Jinping's agenda of advancing China towards a strong, prosperous, and harmonious society. Winning a Nobel Prize signifies world's recognition of Chinese science. This is not unrelated to China's current extreme enthusiasm for publishing in high-profile journals and zeal for various publishing indices. Such eagerness for tangible yet imperfect indices of recognition has unfortunately yielded poor research evaluation system in many Chinese institutions.

The number of scientists being awarded Nobel Prizes is certainly a good index for a country's scientific strength. Are there more Chinese Nobel Prize winners in store? This would depend on whether and how China can develop its scientific institutions that nurture a sufficient number of scientists whose research accomplishments are of the caliber to be nominated for such a prize. However, Nobel Prize is just the by-product of individual scientists' career-long pursuit of their scientific interests, and for various reasons, many deserving scientists were never awarded with such a prize.

The public is often unaware of the fact that Nobel Prize is only awarded in a few disciplines (i.e. physics, chemistry, and physiology or medicine). But modern science has grown beyond these three disciplines, and many interdisciplinary and integrative areas have emerged. Various prizes have been established for recognizing the highest achievement in these areas, such as Fields Medal in mathematics; Turing Award in computer sciences; Tyler Prize in environmental sciences; and Crafoord Prize in astronomy and mathematics, geosciences, and biosciences; and Kavli Prizes in astrophysics, nanoscience, and neuroscience. These newer prizes clearly deserve public's attention because they cover a much wider spectrum of sciences existing today.

Finally, scientific progress is widely perceived in China to be directly linked to social and economical benefits, yet Nobel Prizes are awarded for 'the greatest benefit to mankind' that includes basic understanding of nature not necessarily yielding immediate societal benefits. With increasing quantity and quality of China's scientific productivity, we can be certain that there will be research accomplishments representing important scientific breakthroughs, some of which are worthy of Nobel Prizes. Nevertheless, with or without these prizes, Chinese science will progress with its own goals and aspirations, with Nobel dream only a part of a much more grandiose dream of attaining a harmonious society of prosperity and justice for all people.

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