

Perspectives of Interdisciplinary Collaborations: Personal View on the Nobel Prize in Chemistry 2017

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Editorial

“The Nobel Prize in Chemistry 2017 was awarded to Jacques Dubochet, Joachim Frank and Richard Henderson for developing cryo-electron microscopy for the high-resolution structure determination of biomolecules in solution”, which could be described as “a Nobel Prize in Chemistry was awarded to physicists for their contribution to biology”.

In the history of Nobel Prize of Chemistry, crossover awarding is not rare. Ernest Rutherford, 1st Baron Rutherford of Nelson, known as the father of nuclear physics and claimed “All science is either physics or stamp collecting”, was awarded Nobel Prize of Chemistry as well. Moreover, such crossover has shown significant increase in the 21st century: 10 of the last 15 Nobel Prize of Chemistry were awarded to biology-related achievements.

This phenomenon demonstrates the trends of the society advancement. In the information age, challenges become more complex and appear to be the consequence of factors in multiple disciplines, therefore demanding simultaneous multidisciplinary efforts to response. Pioneering the attempts of solutions, academic publications and funding proposals have been presenting increasing interests to bridging the gaps between different fields of sciences, technologies, and even humanities via interdisciplinary collaborations. In another way, increasing opportunities of industrial funding, which balances the cut budget in science from government sometimes, forces the formation of such collaboration.

The advantages of interdisciplinary collaborations are obvious. During the study process, researchers learn logical procedures to approach the intrinsic cores of the target objects. The procedures vary with the specific disciplines. Gathering experts with different backgrounds can surely widen the sight in the discussion and promote the formation of brain storm. Improvement of efficiency can be expected as well since each subdivisional item is investigated by the professionals of the corresponding discipline. The outcome presentation takes into consideration the wider audience and is subsequently easier to be understood and accepted by the public.

However, critical issues may emerge and hinder the success. Besides the different sights of wisdom, difference of operational custom and rhythm may generate conflicting impression, e.g. it is infeasible for biologists to acquire the data at the same rate as chemists. Involvement of industrial or governmental parties may induce more complicate situation and require more contents of non-scientific consideration in the projects.

Like it or not, the increase of interdisciplinary collaboration in the future will be popular. Thus, efforts on harmonizing the multidisciplinary team are of the highest priority to maintain the smooth operation. Fortunately, experiences have been summarized from successful projects and recommendations are given accordingly. Brown et al. [1] shared their journey on urban water research in early this century. Activities such as symposiums and forums are being hold to grow the network of researchers, especially the early-career ones, to encourage the interdisciplinary collaboration. The perspective is positive and bright as all attending parties share the same aim: effective and efficient responses to the complicate challenges in the new age.

References

1. Brown RR, et al. Interdisciplinarity: How to catalyse collaboration. Nature 2015;525:315-317.