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Perspectives

# Bringing scientific methods to traditional medicine



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Traditional medicine is an important healthcare option for more than half of the world's population today.<sup>1</sup> Among the ancient health legacies, traditional Chinese medicine (TCM) is widely practiced in East Asia, from Japan, Korea, China, Taiwan to Vietnam, and those with ethnic Chinese population like Thailand and Malaysia. From the perspective of TCM, it adopts a holistic approach to examine, assess and treat patient as a complex entity, while taking into account of the macro- and micro-environmental determinants of health.

Another ancient yet living tradition in Asia is the Indian Systems of Medicine (ISM) including Ayurveda, Yoga & Naturopathy, Unani, Siddha and Homoeopathy (also known as AYUSH). The Indian subcontinent is home to diverse ethnic groups, beliefs, cultures, languages and health practices, and thus accommodates a number of medicinal systems originated in and outside the region. Similar to TCM, ISM takes into consideration physical, psychological, philosophical, ethical and spiritual well-being of individuals.<sup>2</sup> Social acceptance and affordability are key factors that determine a higher utilization of ISM among low-income households in India. Recognizing ISM as part of the national healthcare network, the government of India has established formal institutions such as hospitals, colleges and research units around the country to mainstream ISM care.

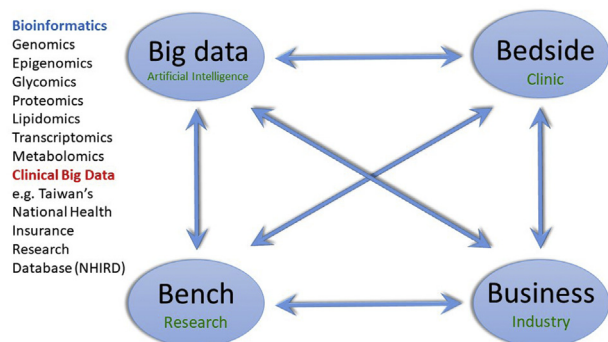
In 1996 Taiwan's universal National Health Insurance (NHI) program became the first case in the world to cover both allopathic and traditional healthcare. More than 95% of TCM services are reimbursed by NHI. Over the years, Taiwan has developed a modernized track of TCM-based health system, from training of practitioners to service delivery, from materials import, production, distribution to quality assurance of natural medicines, and from integration of TCM with western medicine to clinical research. Nearly one third of the population in Taiwan use TCM.<sup>3</sup> More importantly, the population-based National Health Insurance Research Database is a useful powerhouse where evidence-based results can be generated to inform practitioners, policy makers and even health industry. Use of big data, for example, can help us understand integration patterns and TCM-western drug interaction<sup>4</sup> while findings about toxicity of aristolochic acid have led to legislation ensuring safer use of TCM.<sup>5</sup>

Although TCM and ISM researchers are beginning to apply modern scientific principles to ensure safety, quality, proper use and effectiveness of traditional medicine, scientific research in this field is far from satisfactory. Lack of cross-cultural and interdisciplinary dialogue may further limit the desired advance. The time has come to exploit synergies by expanding the application of traditional wisdom through knowledge sharing and, by employing established scientific methods. Identifying what's representative of each other's strengths and weaknesses is where practical cooperation can begin with.

To call for greater collaboration and investment in traditional medicine research, we have adopted concepts

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**Figure 1** Strategy for collaboration in traditional medicine research.

of translational research and introduced the all-encompassing strategy (Fig. 1). It incorporates the conventional bench-to-bedside application cycle and gives equally prominent space to big data and business. Unlike the rather static, circular relationship between laboratories, clinics, and pharmaceuticals in the past,<sup>6</sup> the strategy highlights three features. First, it recognizes the advantage of using large data sets to find new correlations, form research questions, and even shed new light on old subjects. Big data analysis not only functions on its own, it also plays a pivotal role in triggering a variety of reactions in the three other quadrants directly or indirectly. A good example is the NHI Research Database mentioned earlier. Second, the strategy calls on researchers of all disciplines from basic to applied sciences to work together, building collaborative networks that transcend the boundary of traditional medicine. Statisticians, bench scientists, bedside clinicians, and industries can have significant impact when working within the overarching framework. Third, the model is dynamic for its multidirectionality by which actors gain insights and strengths from one another. Business, for example, can be a driving force behind initiatives in any of the other quadrants and any given stage. A notable contribution may lie in its ability to effectively facilitate the development of commercially viable

therapies or products for larger populations. In the case of traditional medicine often confined within cultural boundaries and yet to meet the criteria of scientific soundness, transcultural and interdisciplinary collaboration is warranted. Introduction of the strategy is expected to provide an opportunity to collectively achieve good health and wellbeing through supporting and complementing each other.

## Conflict of interest

The authors have no conflicts of interest relevant to this article.

## Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jfma.2019.08.022>.

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