



# Worldwide culture in science and laboratory medicine: an attainable target

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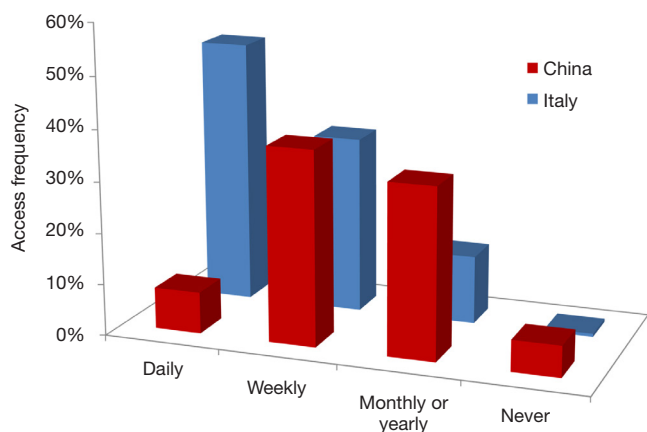
In the emerging era of personalized (precision) medicine, it is now undeniable that laboratory diagnostics will play an increasingly central role in both science and modern medicine (1,2). Due to many technological advances, the dissemination of scientific information has undergone a revolution in the past 30 years. The development of Internet, and the increasing worldwide accessibility to this global system of interconnection, have both contributed to facilitating and enhancing the amount and the quality of information available to healthcare operators and laboratory professionals. Despite virtually all publishers have created journals' websites, in which the table of contents and the single articles can be accessed, the development of the so-called biomedical research platforms has represented the major breakthrough. All these searchable databases can be accessed as Web resources, so accelerating the identification of scientific articles published in journals indexed in the various platforms (3).

Despite many opportunities are now available on the Web, the most famous biomedical research platforms currently include Medline (especially through PubMed interface), Scopus/EMBASE, Web of Science and Google Scholar. PubMed and Google Scholar are freely accessible, whereas Scopus/EMBASE and Web of Science both require institutional or personal subscription. The graphical layout, the Boolean search options, as well as the number and type of indexed journals are the most important differences. All these factors may actually influence the personal preference towards accessing one scientific database over another.

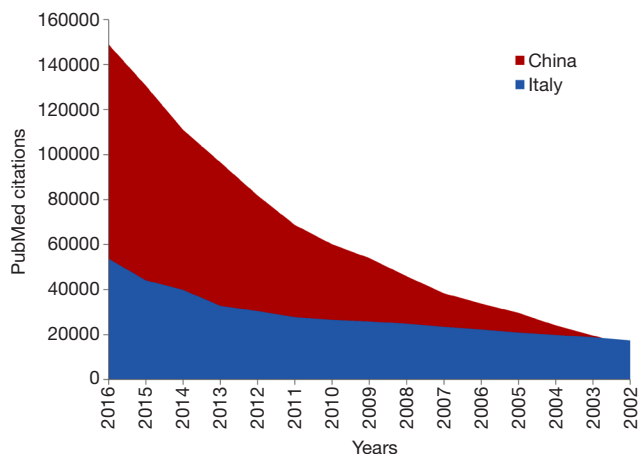
The current knowledge about the inclination to accessing

biomedical research platforms and scientific publishing is mostly anecdotal. In this issue of the journal, Chen *et al.* publish an interesting survey about academic articles reading and retrieving by laboratory professionals in China (4), which complements—and also provides a reasonable parallel with—data of a similar survey carried out in Italy, during a comparable period of time (5). The substantial difference in the frequency of accessing scientific databases is the first interesting aspect emerging from the outcome of these two surveys, with Italian laboratorists using Web resources more frequently than the Chinese colleagues (*Figure 1*). Notably, as many as 51% of Italian laboratory professionals tend to use biomedical research platforms on a daily basis, whereas this percentage is only 8% in China. Another important aspect regards the number of articles published per year, with as many as 55% Chinese laboratory professionals not publishing scientific articles, which compares well with a virtually identical percentage in Italy. This very similar scenario attests that, despite laboratory medicine is the science offering the greatest opportunity for scientific publishing, yet laboratory professionals have modest interest in this activity.

Interestingly, the authors provide some reasonable explanations for the relatively low frequency of biomedical research platforms access and scientific publishing in China, mostly relying on a low (perceived) importance of laboratory medicine and the gradual diffusion of laboratory automation, which would ultimately decrease the enthusiasm for gathering and disseminating scientific knowledge. Incidentally, other reasons may be identified



**Figure 1** Frequency of access to biomedical research platforms by Chinese and Italian laboratory professionals.



**Figure 2** PubMed citations for articles with Chinese or Italian affiliations.

and pointed out. Most scientific journals are published in Europe and in the USA, especially the oldest and most eminent ones in terms of popularity and “metrical” impact. The language of publishing has indeed represented a major drawback for many Countries in Eastern Europe, Asia, Africa and South America in the past decades. In fact, despite English is now the predominant language for scientific publishing, it is the mother tongue of a minority of scientists and researchers around the globe (6). Only recently the unremitting diffusion of Internet and the greater attitude towards integrating parts of Western culture have facilitated new generations of students and scientists to become more familiar with English language. Some valuable, China-based publishers have also recently emerged.

For example, the AME Publishing Company actually counts as many as 15 journals indexed by MEDLINE, Scopus/Embase or Web of Science, and this may considerably contribute to spreading the culture of accessing scientific information and publishing in the Eastern part of the World. Notably, the growing interest in scientific publishing in China is also mirrored by data emerged from recent study, showing that this Country was only preceded by the USA in the overall number of citations retrievable from PubMed between the years 2002 and 2012 (7). Even more importantly, China exhibited the most remarkable improvement among the top-ten of Countries for number of PubMed indexed items, raising from eight position in 2002 to second place in 2012. Last but not least, if one considers the overall number of items available in PubMed from Authors with either Chinese or Italian affiliation, the scenario is quite impressive. As shown in *Figure 2*, despite both Countries had a rather similar number of items indexed in PubMed in the year 2002, and both Countries displayed a notable positive trend in the following 15 years, Chinese authors have published an approximately 3-time higher number of articles in the year 2016 compared to their Italian colleagues.

The quality of scientific publishing is a rapidly growing enterprise in China, strongly supported by the Universities and by the national government, which has instituted many initiatives to improve scientific communication and writing (8). Yet, some hurdles need to be overcome, but many of these are not so different from those encountered in Western Countries. Hopefully, cooperative efforts will help joining the efforts and spreading a worldwide culture of quality and integrity in science and laboratory medicine (9).

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