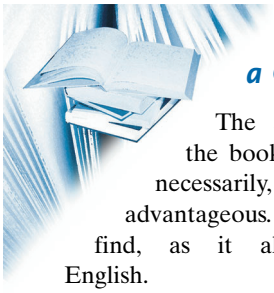


Does Science Need a Global Language?

The answer to the title of the book is straightforward: not necessarily, but it would be advantageous. An option is easy to find, as it already exists: namely English.

Indeed, the main purpose of the book is to explain why English has developed into the global language of the sciences and how this development could proceed further. Today about two billion people speak English in more than 120 countries—of course with varying proficiency, but they can make themselves understood. The tendency to gain proficiency in English is rapidly increasing, and in particular in large countries such as China.

Many factors have contributed to this development: the industrial revolution, which started from England, the colonialism that to some extent resulted from this, which left behind the English language in such internationally influential countries as the USA, Canada, Australia, and India; globalization in the last 20 years (since the collapse of the Soviet Union), which has led to a significant growth in international contacts of all kinds, and especially in the sciences; the internet, with which communication mainly takes place in English; and of course popular culture, which has now long been a global phenomenon: film, pop music, and television.

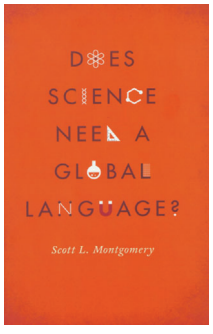
Whereas English was "just" an important scientific language, comparable in importance with French, at the beginning of the 20th century, but behind German as a language of publication, by the 1950s, the majority of scientific publications worldwide were appearing in English. There was still 40% of other languages (mostly French, German, and Russian after the Second World War). But then the use of English increased inexorably, which was driven by American science. In around 1980, English was already the language of 70% of scientific publications, and only 10 years later 90% of the publications in the most important research areas were in English. (All of the numbers come from Montgomery's book, which provides a plethora of hard facts.) The question posed in the title is thus answered by the normative power of facts: the global language of science is absolutely English.

How will things go on? Are there any alternatives, or could there ever be alternatives, such as the rise of another scientific language? Will the future global English also alter the language of its source? These and other questions are considered by Montgomery in a differing but always in a very factual and convincing fashion.

In a chapter entitled "Past and Future", the author looks back at the history of other linguae francae to draw conclusions for the future. He limits the discussion to four previously lost science languages: classical and Hellenic Greek, their successor Latin, then Arabic, and finally Chinese. He could have also chosen other languages, an obvious choice being German. All of these languages have been lost to science, and the reasons, which are mostly (geo)political, are presented in detail in this book. Could this also happen to English? It is unlikely, as what happened between 1970 and 2000 was for the first time a global phenomenon, and the author thus speaks quite rightly of a New Era (as the title of the introduction states). The proliferation of another global language would only be at the price of the destruction of the other languages, because why would an existing language that is always improving be replaced by another in a peaceful manner? It is of course conceivable that advances in artificial intelligence will allow humans to retain their traditional language, but to translate these with machines (mobile phones with translation capability?) directly into English. Current translation programs are not able to do this with much success, but this could change.

Will traditional English itself change as a consequence of its expansion on a global scale? Probably, even though this repercussion will be relatively small, because English is in itself a language with a large capacity for change and adaption. The rise of Denglisch and Franglais is a case of going in the opposite direction: it is the losing languages that have to adapt. What will no doubt change is the language skills of non-native speakers. This author still remembers well discussions with the first Indian and Japanese postdocs who arrived in Germany 30 or 35 years ago; owing to strong accents and limited proficiency of the visitors, communication threatened to collapse at every opportunity. Today this has changed completely. Naturally an accent is still apparent, but global communication involving complex relationships is nowadays possible without a problem. Worldwide, school and university exchange programs have no doubt contributed significantly to this improvement.

As Montgomery also sees it, a command of English, the only global language, will become more and more a skill or proficiency, like driving a car or being able to use a computer; English thus differs from all other national languages. The nationalistic component that was present, such as the boycott of the German language after the First World War or the insistence of the French state of also using the French language in scientific literature and discussions, is now gone.



Does Science Need a Global Language?
By Scott L. Montgomery. The University of Chicago Press, Chicago, 2013. 226 pp., hardcover, $22.50.—ISBN 978-0226535036

Of course national languages will retain their significance, and it is important and sensible to develop and foster them (such as the German and English editions of *Angewandte Chemie*), as otherwise words could literally fail us. But the future will be at least bilingual, and one of these languages will be English.

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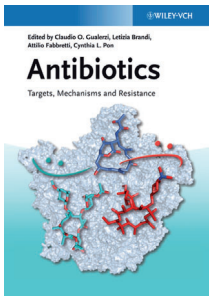

Antibiotics
Targets, Mechanisms and Resistance. Edited by Claudio O. Gualerzi, Letizia Brandi, Attilio Fabbretti, and Cynthia L. Pon. Wiley-VCH, Weinheim, 2013. 576 pp., hardcover, € 149.00.—ISBN 978-527333059

Antibiotics

This is a truely modern textbook on antibiotics giving a thorough overview of the structures, function, and resistance mechanisms for all of the common classes of antibiotics. Some might say this is an "old hat", as not much has happened over the last 20 years apart from endless discussions and critiques about the development of resistance by pathogenic bacteria, their perilous spreading, and the resulting therapeutic failure often with fatal consequences. However, there is a plethora of antibiotic substances, but hardly any therapies that involve combination drugs such as is now standard in oncology. Of the 20 classes of antibiotics, only four have made it onto the market. Perhaps this is a reason to think again. For just this reason, this book is important and it comes at the right time.

The editors are a group of four experts from Camerino, Italy, and they together with more than 20 international specialists have produced a compendium on antibiotics from the chemists' point of view. It is equally aimed at teachers, chemists, biologists, and pharmacologists as the target audience, but it is also aimed at students. It represents the current state of knowledge, however, it is not a book that can be consulted when recommendations are required on how to treat an infection.

The book is introduced by a very enlightening chapter on the problems that arise and the options that are available with the screening methods and the clinical development of new antibiotics. One chapter considers the significance of natural product research in the identification of new drugs and another is on resistance mechanisms. The bulk consists of 18 chapters that are oriented along the known and newly discovered biological targets and describe almost all known antibiotic substances that attack them. A chapter on transport and efflux mechanisms is also included.

Each of the carefully researched chapters has an introduction on the mechanism of action of the substances at the target. 3D pictures showing the bonding situation of the postulated mechanisms are provided as examples. Each chapter is very well structured and is in each case completed by an outlook. The scope of the reference section at the end of each chapter is also remarkable. It includes publications until 2012 and is thus eminently suitable for deeper study. A number of structural formulas have however been printed very small, especially in the summarizing tables.

Non-classical targets are also dealt with thematically, which like chaperones or signal transduction present novel points of antibacterial attack weakening bacterial fitness. After identification of target structures and effective inhibitors, this research area is becoming more important, because possible development of resistance is decreased due to lower selective pressure. In return, the immune system can be more effective in defending bacterial infections.

In summary, a highly informative and readable and very recommendable 500 page book has been produced. For completion, I would however welcome a short chapter on the therapeutic use of antibiotics in the clinical setting and ambulant care. This may be a task for the next edition.

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