

# Book review

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## Antibiotics: Current Innovations and Future Trends

(2015) Sergio Sanchez and Arnold L. Demain (editors); Caister Academic Press; £180; ISBN: 978 1 908230 54 6



The recent rapid rise in antimicrobial resistance (AMR) has not been matched by the research and development of novel antibiotics to combat this onslaught. Frequently lamented in research papers and journals, it is now accepted that the golden age of antibiotic discovery is well and truly behind us. The fervent and exciting discoveries of the 1940s to 1960s heralded an age of biodiscovery unparalleled in the modern era, outdoing advances in

every other field of biomedicine. In the last 40 years, antibiotic development has been slow; only five new classes of antibiotics have been generated and introduced to the markets, yet the rise in AMR and the increasing regulatory challenges faced by pharmaceutical companies appear to be thwarting these efforts.

Although clearly covering many and diverse aspects of antibiotic research, this book falls short of being the concise comprehensive compendium it was meant to be. For instance, the first chapter chronically belabours the etymology of the 'antibiotic'. Is it an antibacterial drug, an antiviral compound or an antifungal antibiotic? Many column inches are devoted to the contemporary inaccuracies and travesties of antibiotic misnomers and misuse and how some professions have hijacked the word and used it for personalized definitions pertaining to, and extolling, their own work. Not only is this chapter devoted to this concept, several other chapters also contain sections repeating these mantras. Indeed, repetition and reiteration of elementary facts is a hallmark of this book and becomes rather tedious after a while. Unfortunately, a definitive definition of antibiotics is not forthcoming, as the first chapter ends with the rather ambiguous definition that an antibiotic is a word with multiple meanings and connotations!

Elsewhere, the scientific and academic rigour of some chapters is seriously detracted from by an excessive amount of typos, poor academic writing and dreadful grammar, and would have benefitted from an in-depth and comprehensive edit. Similarly, such an edit would have eliminated the excessive repetition found in most chapters relating to the history, sources and future of antibiotics.

However, despite this, several chapters are worthy of mention as they exemplify the exciting challenges facing the pharmaceutical industry. Silent gene clusters could prove to be invaluable sources of secondary metabolite generation as new methods are continuously coming on line; co-cultivation methods to trigger gene clusters, modification of wide domain clusters and chromatin modification in fungi are all examples of methods that have or are producing exciting research outputs. Lantibiotics and other ribosomally synthesized peptides are proposed as novel classes of antibacterial agents with three lantibiotics currently under advanced pre-clinical development (Mutacin 1140, NVB302 and NAI-107). These developments not only are exciting, but also portray the exhaustive lengths individual laboratories and pharmaceutical companies are going to in order to mine and extract antibiotics from bacteria.

A high note of the book is in a chapter entitled "Antibiotics in the Pipeline" where at least 50 recent antibiotic successes are listed. Most are in Phase III trials and appear to be highly efficacious against a variety of bacteria implicated in many bacterial infections such as tuberculosis (TB), irritable bowel syndrome (IBS) and urinary tract infections (UTIs). However, as is the case with most research, more needs to be done before a beneficial effect on the overall problem can be seen.

The academic rigour of several chapters in this book cannot be questioned or doubted, but the complete lack of editorial input in some chapters lets the book down. Instead of a coveted compendium, this book is confusing and not well written and its poor sentence construction and syntax contribute to an overall frustrating and unsatisfactory reading experience.

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