Keywords: antibacterial • antibiotic • drug discovery

That the success of modern medical practice, and the improved levels of health in society more generally, has resulted from the chance discovery of penicillin nearly a century ago, is widely acknowledged, but perhaps more problematic has been the slow but now increasing realisation that the benefit from small-molecule antibiotics may prove to be short-lived.[1] Reports from the international arena are now appearing which suggest that urgent action is required to identify next-generation systems, and this requires attention not only to scientific, but also intellectual property, commercial and marketing considerations, along with changes in societal expectations.[2-4] The task at hand is significant, urgent, and expensive, but comes at a time when there are many other competing demands on international resources, in areas ranging from energy to water to security.[5] For this reason, a global approach is needed,[6] but in the race to solve these issues, paradoxically, the most appropriate way forward not necessarily so clear, and the need for progress in fundamental science is all too easily overlooked. This two part issue "New Frontiers in Antibiotic Drug Discovery" includes some of the most recent developments in antibacterial science, with perspectives from key players across a spectrum of activity. Karen Bush addresses the issue of resistance in Gram-negative bacteria,[7] and novel targets for antibacterial drug discovery, including mediation of CsrA-RNA interaction,[8] cyclic nucleotide regulated biofilm formation,[9] New Delhi Metallo-β-lactamase, and cell-wall metabolism in Pseudomonas aeruginosa,[10] are all discussed. Novel small molecules, including avibactam[] and polyamines,[11] as new antibacterials are also highlighted. Finally, Matt Cooper and colleagues from CO-ADD in Brisbane outline their approach to providing freely available high-quality compound screening to the global chemical community, in the search for new active small molecules.[12]

The opportunities in and potential for antibacterial research are considerable, and I am very thankful to the authors for their contributions in this special issue. I hope that it will wider stimulate interest in, and the creation of novel ideas for, the urgent work that is required.

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