Introduction: Our Endless War with Microbes

Sailen Barik

Center for Gene Regulation in Health and Disease, and Department of Biological, Geological and Environmental Sciences, Cleveland State University, Cleveland, Ohio

“Messieurs, c'est les microbes qui auront le dernier mot” (Gentlemen, it is the microbes who will have the last word)”–Louis Pasteur

Parasites have come to be an inseparable part of history and civilization since time immemorial. I remember growing up in a remote but picturesque village in my childhood where a couple of adults had huge puffy legs with tuber-like growths, which to me looked like an elephant's. It was a heart-breaking sight when they used to walk by our house, dragging their heavy legs, one excruciatingly slow step after another. Nobody could tell me what they had and whether they would ever be cured of this malady. They were simply people to stay away from. Years later, when I studied parasitology, I came to learn that the disease is in fact nicknamed "elephantiasis", one form of which is scientifically known as "filariasis". The key agents of elephantiasis are parasitic worms such as Wuchereria bancrofti and Brugia malayi, although the actual pathology results from a complex interplay among several factors (1). This experience and my early training in prokaryotes and viruses led me to study simpler unicellular parasites such as the Apicomplexa. In this volume, yours truly and three leaders in parasitology have contributed to various facets of antiparasitic drug development.

Dr. Vikash Dubey, leading his team from the Indian Institute of Technology (IIT), writes on the brave new world of nanotechnology and its futuristic application in fighting the parasites. Since nanobiosciences in general is an emerging field, the article covers more than just parasites, but rather introduces the readers to the application of nanotechnology in other areas of biology, such as virology and drug delivery. The potential of this low-cost, highly efficient and versatile technology to cure the millions of parasite-infected people in poorer nations is discussed with hope and compassion.

The collaborative article on apicomplexan cyclophilins is written by Dr. Ibrahim at Minufiya University, Egypt, and Dr. Nishikawa, Obihiro University of Agriculture and Veterinary Medicine, Hokkaido, Japan. Essentially all immunophilins are chaperones for protein folding, and their pharmaceutical advantage is that some of their inhibitors, such as cyclosporins and rapamycin, are already FDA-approved for use in the clinic. Nonetheless, many parasite cyclophilins have shown novel aspects of cellular location and drug interaction. The Nishikawa team recently discovered an interesting novel effect of Toxoplasma cyclophilin on nitric oxide synthesis by the host macrophages, and here provides a masterly review of the overall field of parasitic cyclophilins and their pharmacological possibilities.

Dr. Julio Turrens at the University of South Alabama, Mobile, AL, USA, is a pioneering biochemist and cell biologist in trypanosome research. In his article, he makes a convincing case for drug development, targeting the multiorganelle parasitic enzyme, NADH-fumarate reductase. Let us hope that it will get the attention of serious supporters of parasitic drug development pipeline, such as the Bill and Melinda Gates Foundation, to benefit the millions suffering from trypanosomiases and leishmaniases.

As I quoted Louis Pasteur above, it is quite likely that terrestrial microbes will outlive us, but it is probably reasonable to assume that if we do not put up any fight, we will be extinct much earlier. This special volume is a celebration of that spirit, and serving as its guest editor was truly an honor, as it allowed me to work with leading contributors of the field. My sincere thanks to all of them for the wonderful articles they delivered ahead of time. I also thank the Editor-in-Chief, Dr. M. Saeed Sheikh, for his invitation to undertake this responsibility, and the journal staff for expert assistance. I conclude with my humble homage to the uncountable victims of parasitic diseases, who could
not wait for new drugs or could not afford to pay for existing ones.

(1) http://en.wikipedia.org/wiki/Elephantiasis

Guest Editor
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