

Foreword

This special issue of *Memórias do Instituto Oswaldo Cruz* focuses on leprosy (Hansen's disease or *hanseníase* in Portuguese). It is fitting that this issue is being published on the 100th anniversary of the death of Gerhard Henrik Armauer Hansen, the Norwegian physician who first identified the bacterium, *Mycobacterium leprae*, as the causative agent of this disease in 1873. Although Hansen's disease has been all but eliminated in this country, it is still a major health problem in many parts of the world. The latest statistics reported by the World Health Organization showed that worldwide new case detection was 228,474 in 2010. In Brazil, there were 34,894 new cases diagnosed, with 2,241 reported in children (6.4%), indicating that there are still areas where leprosy is clearly a health problem. Although it is true that Brazil remains one of the last remaining countries yet to reach the goal of less than one new case per 10,000 population, the degree to which the public primary health care service and Brazilian leprologists are working towards detecting and treating all cases is a testament to the strength of the program.

The impetus for this special issue began with discussions between Milton Moraes, Marcelo Mira and other leprosy researchers at the Brazilian Leprosy Congress in Maceió, state of Alagoas, in 2011. After agreeing on a plan and developing a list of potential contributors, a letter of invitation was sent out in early 2012. Despite the relatively short notice, this issue contains 28 peer-reviewed articles with nearly 200 individual authors, many whose primary focus is on leprosy research. This collection covers state-of-the-art original articles or reviews from basic to clinical and epidemiological research findings and discussions of the future challenges for diagnostics, epidemiology, treatment and control.

The early detection of *M. leprae* infection in individuals is exceedingly important as it would allow timely treatment, which is crucial for the control of leprosy and prevention of leprosy complications such as nerve damage. Currently however, no tools are available to diagnose *M. leprae* infection at the earliest stages or predict progression of infection to disease or the development of reactions. Thus, diagnostic tests that allow timely prediction would be very important tools to leprosy control and prevention. A number of articles focus on examining biomarkers of infection and disease progression based on serological or cell mediated responses to defined *M. leprae* antigens. The use of the *M. leprae*-specific phenolic glycolipid I to assess the antibody titre to understand the extent of exposure and disease prevalence in hyperendemic municipalities in the state of Pará was studied by Barreto et al., whereas antibody responses to protein antigens were analyzed in patients, household contacts or endemic controls in studies by Hungria et al., Rada et al. and Spencer et al. Cell mediated responses to unique peptides from virulence-associated *M. leprae* proteins were used to gauge the amount of exposure/infection in Brazil, Ethiopia and Nepal by Bobosha et al.

Several articles covered human susceptibility and genetic risk factors for acquiring leprosy or developing reactional episodes (Joyce, Corrêa et al. and Fava et al.). Insights into the immunogenetics of leprosy in knockout mouse models and the armadillo appears in a seminal review by Adams et al. from the National Hansen's Disease Program in Baton Rouge, Louisiana, USA, who have contributed greatly to the development and study of animal models of *M. leprae* infection for over 25 years. The basic biology of *M. leprae* and mechanisms of virulence and its ability to subvert the immune system were studied by Dias et al., while lipid metabolism and the functional role of lipid droplet formation in the pathogenesis of the bacterium were eloquently reviewed by Mattos et al. The use of polymerase chain reaction for the purposes of genotyping *M. leprae* strains in different geographic regions of Brazil (Fontes et al.) as well as to determine the percentages of nasal carriage in household contacts (Araújo et al.) was described. The use of uniform multidrug therapy to improve patient compliance in completing their drug therapy regimen (Gonçalves et al. and Penna et al.) and the reviews of the progress that Brazil and other leprosy endemic countries have had against combating this disease were also discussed (Penna et al. and Talhari et al.).

The Editors wish to gratefully acknowledge the contributions of all of the peer-reviewers for their critiques of the papers and to all of the researchers, clinicians and, most importantly, the many patients, contacts and other individuals who participated in studies that have contributed to our greater understanding of this disease.

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