

Dr. Cristiana Santos de Macedo

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Short bio:

Dr. Cristiana Macedo is a staff scientist at Oswaldo Cruz Foundation (FIOCRUZ) in Rio de Janeiro since 2013. She has a doctorate in human biology (dr. rer. physiol.) completed at Philipps University Marburg (Germany) in 2004, and conducted postdoctoral activities at Federal University of Rio de Janeiro and Vanderbilt University (USA). Her early research focused on biochemistry and glycobiology of the malaria parasite *Plasmodium falciparum*. Later on, she embarked on leprosy research, studying changes in host metabolism caused by leprosy using mass spectrometry-based metabolomics and lipidomics.

Leprosy is a neglected disease that represents a significant health problem in many parts of the world. Brazil is the second most affected country, and the number of cases has been rising since 2016. Leprosy's causative agent, *Mycobacterium leprae*, affects the skin and peripheral nerves, and the disease may lead to permanent disabilities. Despite being an ancient disease, many aspects of its pathogenesis are still unknown. Also, leprosy diagnostic relies on invasive techniques like skin biopsy. Studies on alterations of host metabolism during leprosy can uncover important aspects of pathogenesis, which may lead to the development of less invasive diagnostic and prognostic techniques, and also of adjuvant treatments that may improve the efficacy of the current multidrug therapy (MDT). Our work aims to use metabolomics and lipidomics to study host response during different manifestations of leprosy using techniques like liquid chromatography-mass spectrometry (LC-MS) and imaging mass spectrometry (IMS). Results on the upregulation of lipid metabolism in leprosy will be presented, as well as the application of LC-MS to detect mycobacterial lipids on the skin of leprosy patients. Also, applications of metabolomics and lipidomics in tuberculosis research will be discussed.