A Centennial: Discovery of *Paracoccidioides brasiliensis*

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The year 2008 is the centennial of the discovery of paracoccidioidomycosis and its fungal etiology by the distinguished Brazilian researcher Adolpho Lutz [1]. Subsequent studies by many dedicated Brazilian and other Latin American investigators have led to the formal recognition of *Paracoccidioides brasiliensis* as a taxonomically valid entity, which is solely responsible for paracoccidioidomycosis. Interestingly, two other major pathogens *Histoplasma capsulatum* and *Coccidioides posadasii*, which overlap in the same geographical areas, were also recognized early in these

parts of America. All three of these primary pathogens display common themes in their complex ecology, morphogenetic transition in vivo, endemic distribution, association with mammalian species, common asymptomatic infections, and rare progression to more debilitating diseases. Paracoccidioidomycosis also has a noteworthy social aspect as it overwhelmingly afflicts economically disadvantaged rural populations. Thus, the lessons learned from ongoing studies on ecology, evolution, virulence, rapid diagnosis and treatment, and vaccination for *P. brasiliensis* might have important implications for researchers working with fungal pathogens in other parts of the world.

There is a vigorous scientific tradition in South America most prominently in Brazil that has ensured that *P. brasiliensis* and its clinical manifestations remain under close scientific scrutiny. As a result of these efforts, Franco et al. most recently summarized the voluminous literature generated in last 100 years in 1994 in the monograph ‘Paracoccidioidomycosis’ [2], which was commented by Castañeda in *Mycopathologia* [3]. The journal has the distinct privilege of being an important medium for dissemination of studies on paracoccidioidomycosis and *P. brasiliensis*, the first article appearing as early as 1943 [4]. Over the years, *Mycopathologia* has published nearly 90 specialized articles dealing with all aspects of the disease as well as the pathogen. The current special issue continues this tradition with 13 invited articles from leading laboratories in South America. San-Blas and Niño-Vega [5] start off this special issue with an update on modern

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investigative tools that have recently allowed characterization of *P. brasiliensis* taxonomy, cell wall, diagnostics and antifungal targeting. The existent knowledge on the ecology and evolution of this pathogen is synthesized by Bagagli et al. [6] to construct a hypothetical biological cycle of *P. brasiliensis*, which is also reproduced on the cover of this special issue. Benard [7] reviews the intrinsic balance of host–pathogen factors that determine immunopathology of infection and identifies areas of future investigations. The usefulness of murine models to discern important innate immune mechanisms against *P. brasiliensis* infections is summarized by Calich et al. [8] in order to explain how most of the exposed individuals escape from overt disease. Mendes-Giannini et al. [9] provide an exquisite description of *P. brasiliensis*–epithelial cell interactions to underscore the important virulence factors of the fungus. A wealth of data emerging from DNA technology is summarized by Silva et al. [10] with focus on genes putatively related to *P. brasiliensis*–host adaptations. Parente et al. [11] highlight the use of expressed sequence tags (EST) for the discovery of multiple genes that are critical in fungal differentiation and pathogenesis. Puccia et al. [12] focus on the well-characterized immunodominant glycoprotein of 43 kDa (gp43) to estimate the extent of genetic diversity in clinical and environmental strains of *P. brasiliensis*. The current diagnostic approaches for paracoccidioidomycosis are reviewed by Camargo [13] with special emphasis on antigen–antibody tests. Shikanai-Yasuda et al. [14] survey published studies on cancer and paracoccidioidomycosis to highlight the importance of early and accurate diagnosis in clinical management. González et al. [15] review studies aimed at mimicking initial host responses to *P. brasiliensis* conidia in a murine model that has yielded valuable insight about the development of fibrosis. The experimental study by Taborda et al. [16] describes the important and yet previously unsuspected role of melanin pigmentation in virulence of *P. brasiliensis*. Travassos et al. [17] fittingly conclude this special issue with an article on the prospects of vaccination as an adjuvant to chemotherapy based on a peptide derived from gp43. It is our fervent hope that the mix of articles presented in this issue would provide the readers with a big window on the current state-of-the-art of this fascinating pathogen and set up the stage for future explorations of still unknown facets of *P. brasiliensis*.

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