

Induction of mitotic crossing-over in diploid strains of *Aspergillus nidulans* using low-dose X-rays

L.B. Stoll¹, F.C.A. Cremonesi², L.T.A. Pires³, T.D. Zucchi⁴ and T.M.A.D. Zucchi^{4,5}

¹Faculdade de Odontologia, Universidade de Franca, Franca, SP, Brasil

²Faculdade de Odontologia, Universidade de São Paulo, Ribeirão Preto, SP, Brasil

³Centro Universitário Moura Lacerda, Ribeirão Preto, SP, Brasil

⁴Departamento de Parasitologia, Instituto de Ciências Biomédicas and Centro de Pesquisas em Biotecnologia, Universidade de São Paulo, São Paulo, SP, Brasil

⁵Departamento de Ciências Biológicas and Biotecnologia, Universidade do Estado de São Paulo, Assis, SP, Brasil

Corresponding author: T.M.A.D. Zucchi

E-mail: tdzucchi@terra.com.br

Genet. Mol. Res. 7 (2): 467-475 (2008)

Received March 25, 2008

Accepted May 9, 2008

Published June 3, 2008

ABSTRACT. As a contribution towards detecting the genetic effects of low doses of genotoxic physical agents, this paper deals with the consequences of low-dose X-rays in the *Aspergillus nidulans* genome. The irradiation doses studied were those commonly used in dental clinics (1-5 cGy). Even very low doses promoted increased mitotic crossing-over frequencies in diploid strains heterozygous for several genetic markers including the ones involved in DNA repair and recombination mechanisms. Genetic markers of several heterozygous strains were individu-

ally analyzed disclosing that some markers were especially sensitive to the treatments. These markers should be chosen as bio-indicators in the homozygotization index assay to better detect the recombinogenic/ carcinogenic genomic effects of low-dose X-rays.

Key words: Low-dose X-rays; Mitotic crossing-over; *Aspergillus nidulans*; Genotoxicity tests; DNA damage; Homozygotization index assay