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416. Discovery of a sexually reproducing population of the main fungal pathogen of rice, *Magnaporthe oryzae*, in Asia. D. Tharreau\*, D. Saleh, E. Fournier, P. Xu, C. Li, H. Adreit, J. Milazzo, V. Ravigné, E. Bazin, D. Tao & J.-L. Notteghem. \* UMR BGPI, TA A54/K, Baillarguet Campus, 34000 Montpellier, France. [didier.tharrea@cirad.fr](mailto:didier.tharrea@cirad.fr)

Determining if recombination occurs is of uttermost importance, particularly in pathogenic species, since it impacts the adaptive potential of populations. This might be strenuous in fungi, where sex can be cryptic or facultative. *Magnaporthe oryzae* is the heterothallic fungus responsible for rice blast. Its sexual cycle was never observed in the field and the worldwide population genetic structure is consistent with asexual reproduction. However, previous scattered data suggested that recombination could occur in limited areas of South Asia. Here we provide biological and population genetics evidences that *M. oryzae* reproduces sexually in some localities in China. In one population, almost all strains were female fertile, whereas this phenotype required for sexual reproduction is rare or absent in most populations. Strains from complementary mating types were also present in equal frequencies and underwent normal sexual cycle in vitro. Population genetics parameters fitted a recombinant population. Computer simulations confirmed that this genetic structure could not be observed without recombination. An in vitro evolution experiment showed the loss of female fertility after few clonal reproduction cycles. The wild phenotype was not restored by various stresses. The loss of female fertility segregated in progenies of crosses between evolved strains and wild ones, indicating a putative genetic basis.