Fungal Genetics Reports

Volume 21 Article 5

Some mutations affecting perithecial and spore pigmentation

T. E. Johnson
University of Washington

Recommended Citation
Johnson, T. E. (1974) "Some mutations affecting perithecial and spore pigmentation," *Fungal Genetics Reports*: Vol. 21, Article 5.
https://doi.org/10.4148/1941-4765.1798

Some mutations affecting perithecial and spore pigmentation

Abstract
Mutations affecting perithecial and spore pigmentation

Johnson, T. E. Some mutations affecting perithecial and spore pigmentation.

We have isolated seven mutants which foil to make normal, block pigmented perithecia and instead moke light yellow perithecio. Perithecial development proceeds normally except for the lock of pigment. Fertile ascospores are produced when either wild type or a mutant is used as the mole parent. The genotypically mutant ascospores ore unpigmented; they germinate without heat shock a few days after they are shot. A heat shock at this time kills the mutant ascospores. These mutants may be allelic with the per-l mutation of H. Branch Howe, which mops proximal to ilv(?6201) on the right arm of linkage group V; however, the tests of allelism ore not entirely unambiguous at this paint. per-1 causes the production of perithecio which ore light yellow in all their tissues except for the ostiole and the spores. The isolation numbers of our mutants ore: per(PBE1), per(PBJ1), per(ABI1), per(PBP1), per(PBT4), per(PBT5), and per(ABT8).

These mutants could be of general use in two different ways: 1) as male parents in test crosses to putative female steriles or in ony cross where the identity of the female parent is important; 2) as genetically marked helper nuclei used to correct the female sterile defect in female sterile mutants. We have tested these mutants in both capacities.

In testing putative female sterile strains, it sometimes happens that the supposed mole parent itself grows and forms the protoperithecia which ore then fertilized by the putative female. This con obscure the tests for female fertility which might otherwise be relatively clear. One way to get around this problem is by using female sterile strains as the fertilizing parent in a cross. However, a few female sterile strains hove been tested here for use as male parents in test crosses. All were found to give lower levels of fertilization than wild type. The per mutants described here show no lowered level of ability to function as the mole parent in a cross. If the per parent functions as the female this con be immediately seen because the perithecia ore yellow instead of block. Thus the genetic identity of the mole and female parents con be determined by inspection.

Many female sterile strains con be helped through a cross as the female parent if they ore put into a heterocaryon with a female fertile strain. This heterokaryon is then used as the female parent. A number of investigators hove used this method of crossing female sterile strains. per female fertile/per+ female sterile heterokoryons offer on additional convenience if ascus dissection is desired. The asci in which the per+ nuclei of interest are participating con be recognized because they segregate 8:0 instead of the 4:4 spore color pattern of per. By coupling appropriate biochemical markers to the per nucleus and/or by using the per as the male parent in the cross also, random spores from the desired mating con be isolated from the some cross.

per might also be convenient for studies of interallelic recombination. Apparent interallelic recombination has been observed in crosses of various per alleles. The block ascospores provide a very easy means of detecting recombination which could be used either with random spores or with intact asci. The inability of per spores to withstand heat shock would serve as on additional means of recombinant selection.

Deportment of Genetics, University of Washington, Seattle, WA 98105.