

New isogenic wild types in N. crassa.

The wild types 74-OR23-1 A and 74-OR8-1 a have been especially useful in Neurospora laboratories because of their high degree of isogenicity, so that for many purposes they could be used interchangeably depending on the mating type required. Some stocks of these strains, however, have been found to contain a small proportion of mutant nuclei, and an early subculture of the original 74-OR8-1 a has been found to contain a chromosome rearrangement in heterokaryotic condition (Barry et al. 1972 NN#19:17). (The original strains were homokaryotic single ascospore isolates.) In addition, a few phenotypic differences between the strains have become apparent. They differ somewhat in female fertility, with 74-OR8-1 a being slower to cross than 74-OR23-1 A. Also 74-OR8-1 a is sensitive to 2,3,5-triphenyltetrazolium chloride (TTC; due to a gene linked to mating type), whereas 74-OR23-1 A is resistant (Wallace and Wilson 1971 Genetics 68:s72).

Two new strains have been derived from 74-OR23-1 A and 74-OR8-1 a and can be used in their place. Strain 74-OR23-IV A (abbreviated ORV A) is a vegetative reisolate of 74-OR23-1 A. It was obtained by serial single-conidium isolations of 74-OR23-1 A and is an eighth isolate from the series. It appears to be homokaryotic. Strain ORS a is an ascospore isolate obtained from seven generations of crosses of 74-OR8-1 a and subsequent a isolates to 74-OR23-1 A.

Crosses between different combinations of 74-OR23-1 A, 74-OR8-1 a, ORV A, and ORS a, and between these wild types and standard fl^P tester strains were tested for patterns of shot asci (see Perkins 1966 NN#9:11). The patterns indicate that ORV A and ORS a are in normal sequence. Different crosses between ORV A and ORS a averaged 93% darkly pigmented and 7% unpigmented spores, which is common for isosequential crosses tested in this way.

The wild types ORV A and ORS a are similar to 74-OR23-1 A in female fertility. To illustrate, when any one of these three strains is grown for five days prior to fertilization at 25°C in 18 x 150 mm test tubes containing 10 ml Westergaard and Mitchell medium, the crosses produce pigmented young perithecia within about a day. In contrast, crosses using 74-OR8-1 a as the female produce visible perithecia after an additional day, or the 74-OR8-1 a parent must be grown an additional day before fertilization in order for the crosses to produce a one-day response.

Both ORV A and ORS a are TTC-resistant. They are presumably het-C; het-d; het-e as are both strains from which they were derived. The suitability of crosses for cytology of chromosomes during meiosis depends in part on the strains crossed (McClintock 1945 Am. J. Bot. 32:671). Crosses between ORV A and ORS a (or between 74-OR23-1 A and 74-OR8-1 a) have not been optimal for cytology. However, crosses between either ORV A or ORS a and several other strains have yielded good chromosome preparations. No obvious chromosome anomalies have been found, in agreement with the genetic data.

Use for over a year has not revealed any adverse properties of ORV A or ORS a. The newly isolated wild types have been deposited in the Fungal Genetics Stock Center.

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