

A round spore character in *N. crassa*

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Abstract

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of an adenine mutant, 35408-reisolate 1, to the wild type, Lein 7A, were uniformly round-spored.

Crosses of N. crassa strains are occasionally observed to give exceptional pairs or whole octets of spores which are more nearly spherical than spindle-shaped. A much more unusual observation, made a number of years ago, was the finding that asci from the cross

Tests of ad⁺ descendants of this cross have indicated that the round-spore character is non-autonomous. Random single-spore isolates, when crossed as fertilizing parents to wild-type testers, were found to be of two types, one giving only, or predominantly, round spores and the other, only normal. When strains arising from the spore pairs (the members of each pair were isolated and cultured together) of 22 round-spored asci were tested in the same way, two of each type per ascus were regularly found. Attempts to obtain crosses of which both parents were round spore producers, or in which such a strain functioned as protoperithecial parent, were unsuccessful. However, the indicated segregation, in round-spored asci, of the ability to transmit the round-spore character suggested the behavior of an ascus dominant, hence the designation, R, was applied. Another sort of change in the character of the ascus, from 4-spored to 8-spored, transmitted by only half the segregants of an ascus, has already been reported in N. tetrasperma by Dodge, Singleton, and Rolnick (1950 Proc. Am. Phil. Soc. 94:38).

The finding of occasional normal spores from crosses of two of the R isolates tested is of interest in connection with dominance. Analyses, in the manner described above, of three asci from one of these crosses, two normal- and one round-spored, all gave the result expected from round-spored asci, that is, two round, and two normal spore producers per ascus. One of the normal-spored asci was further tested by the crossing of its R and + segregants. The segregation of mating type allowed two + x R crosses, both of which gave round spores only. (Asci from one of these crosses constitute the majority, 14 of 22, of those tested and found to give 2:2 segregation of R and +.) This result suggests that in + x R crosses involving descendants of the 35408 strain, reversals of dominance sometimes occur but are not necessarily inherited. On this basis, other crosses which have been observed to give exceptional round-spored asci among normals could be interpreted as + x r, which also exhibit infrequent reversals of dominance. An example of a recessive ascus character in N. crassa has been reported by Srb (1962 Neurospora News! 1:6). * * * Division of Biology, California Institute of Technology, Pasadena. California 91109.