Cameron, H. R. Location of round spore (R), a dominant ascospore marker.

A mutant (R) producing round ascospores was reported by Mary Mitchell (1966 NN# 10: 6). When this mutant is carried by the fertilizing parent, all of the f_1 ascospores will be round (R has foiled to function as a protoperithecial parent). Outcrosses of the f_1 to wild type segregate in a 1:1 ratio for R. Calculations of second division segregation, based on unpublished data from Mary Mitchell, indicate on approximate distance of 33 units from centromere.

Round spore hos not shown linkage with any of the seven reported linkage groups when tested with markers located near centromeres. Since R oppeored to be well distal to centromere it was crossed to various outside markers. Use of the alcoy linkage testers suggested linkage to IR or IIR and a location of 38 units to the right or left of breakpoint. Succeeding crosses established the location of R on the right arm of linkage group I (Table 1).

Table 1. Map distances for R.

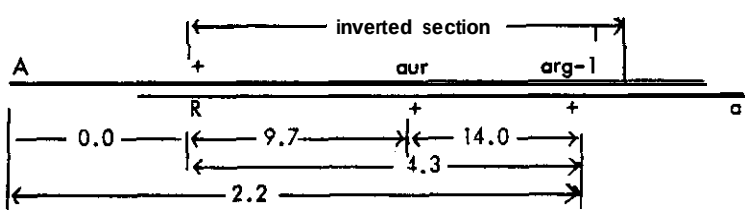
Zygote genotype and recombination percentage	Germination percentage
al + / + 42.9 R	57.0
A al + / a + 38.0 R ⟵ 53.6 ⟶	74.0
'A our + / 0 + 44.6 R ⟵ 52.2 ⟶	78.5
aur os + / + 19.5 + 17.1 R ⟵ 36.6 ⟶	88.0
aur nic-1 os + / + 5.2 + 19.8 + 23.2 R ⟵ 33.9 ⟶	37.3

The following recombination percentages were obtained (Fig. 1) using on inversion (Newmeyer 1965 Genetics 52: 462) with the left break between arg-1 and mating type (A/o) and the right breok distal to osmotic (os). Only the non-dark agar (DA) isolates were included. Dark agar mutants ore the result of a viable duplication-deficiency class and were scored separately.

From the 4 point data (Table 1) round spore appears to be well out on the right arm of linkage group 1 and not near the mating type locus. From the non-dark agar data R must be near one of the breakpoints and since it is not near mating type it must be near the right break point. The low value for crossovers between R and org-1 is because these ore usually single crossovers in the inversion ond therefore result in either DA's or inviable spares.

Conversely the DA's would be expected to result from single crossovers in the inversion and therefore usually be recombinants between R and arg-1. Indeed 16 out of 17 DA were crossovers between arg-1 and R.

Figure 1. Results of crossing R with pericentric inversion a/.



From the above data it appears that R is located about 20-25 units to the right of os. This would place R very close to so (Perkins 1959 Genetics 44: 1185). Four attempted reciprocal crosses with so hove failed to produce perithecia.

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