

defective mutants, ure is "red here. The two mutants described ore designted as re-1 (9) and re-2 (47), where the hyphenated figures are locus numbers and the figures in parenthesis ore the original isolation numbers, now used as allelic designations (see note by Kølmær, this issue of *Neurospora Newsl.*).

The linkage group was first established as VR for bath of the ure mutants in crosses to bis (C-1810-1). The positions were then more precisely determined in crosses with sp (8 132), inos (37401), am (32213, 47305, and 52949) and hist-1 (C91). Both of the "reose mutants are closely linked to the am and hist-1 loci, and through 3-point analysis it was found that they ore located at

Table 1. Summary of linkage data from 29 crosses involving markers in the region of linkage group VR where ure-1 and ure-2 ore situated.

Recombinant loci		Number of crosses	Recombinants		Total	
			Total	%;map	nits Tested	% Germination
Centr.	ure-2	5	134	27.9	480	72.0
Centr.	ure-1	1	68	29.8	228	80.0
sp	ure-1	1	13	9.2	141	94.0
ure-2	am (32213)	3	16	1.5	1055	67.5
ure-2	ure-1	3	28	3.1	891	79.0
ure-2	hist-1	4	60	4.1	1471	71.4
ure-2	inos	2	14	12.1	116	58.0
ure-2	bis	2	59	14.2	416	68.3
am (32213)	ure-1	3	7	1.1	629	61.2
am (47305)	ure-1	1	3	4.1	72	72.0
am (52949)	"re-1	1	6	1.2	489	98.0
am (32213)	hist-1	8	91	3.9	2346	68.0
am (32213)	inos	1	5	7.2	69	69.0
am (47305)	inos	1	7	7.2	98	98.0
am (52949)	inos	1	8	8.8	91	91.0
ure-1	hist-1	3	11	4.1	780	61.5
ure-1	inos	1	13	5.6	231	92.5
ure-1	bis	3	72	9.0	803	89.3

All isolations were random, except those from which centromere distances were obtained. The crosses include seventeen 2-point, nine 3-point and three 4-point. Individual pairwise map distances were obtained by summation of recombinants and number tested from crosses where the respective two markers were segregating.

opposite sides of am. Subsequently it was found that ure-1 and ure-2 complement in heterocaryons, giving a urease-positive mycelium. They also recombine in crosses to produce urease-positive offspring. Since each mutant is non-leaky, it appears that some combination of gene products (polypeptides) is a prerequisite for an active "reose enzyme, the system thus providing an example of a "two genes one enzyme" relationship.

The linkage data ore presented in Table 1 and the relevant map positions ore drawn in Figure 1. The close positions of one ure locus on each side of the am locus seems interesting, and raises the question as to whether there three genes belong to a common operon. Urease, controlled by the ure loci, produces ammonia by its enzymatic action, while glutamic acid dehydrogenase, controlled by am, consumes ammonia by its action (see: Fincham and Day 1963 *Fungal Genetics*, p. 176. Blackwell Scientific Publications, Oxford). A coordinated control of the production of these enzymes would seem to be of advantage for the organism.

A detailed account of the ure mutants will be published elsewhere. This work was supported by grants from the Swedish Research Council.

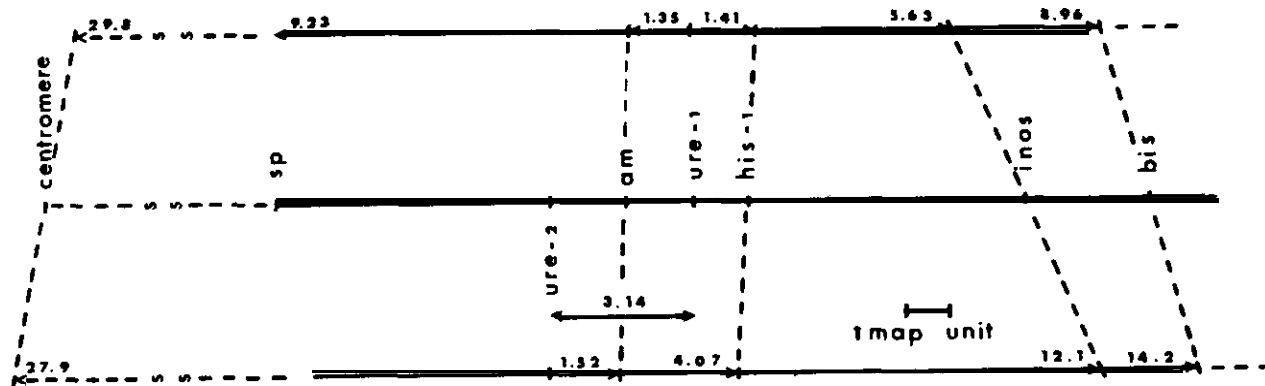


Figure 1. Map distances of group VR morken in relation to "re-1 and "re-2. Top line: Data from crosses with "re-1. All distances measured from the "re-1 position. Lower line: Data from crosses with "re-2. All distances measured from the "re-2 position. Middle line: Relative positions of "re-1 and "re-2, and graphical mean positions of the various markers as determined from crosses with both "re-1 and "re-2.