Ahmad, M. and S. H. Mirdha. Linkage data for four linkage group III markers in Neurospora crassa.

Barratt et al. (1954 Adv. Genet. 6: 1) had shown the position of adenine-2 (ad-2) between leucine-1 (leu-1) and tryptophan-1 (tryp-1). Perkins and Ishitani (1959 Genetics 44: 1212) mapped ad-2 proximal to both leu-1 and tryp-1. Ropy-2 (m-2) was not mapped by Barratt et al. but Perkins and Ishitani showed it to be located proximal to both tryp-1 and ad-2. It was therefore decided to map the relative positions of leu-1, tryp-1, ad-2 and m-2. Media and methods of Ahmad et al. (1966 Proc. Pakistan Acad. Sci. 3: 1) were employed during this investigation.

Two double mutants, leu-1 (33757). ad-2 (70004t) and tryp-1 (10575), m-2 (B20) were prepared and then crossed as shown below:

$$\text{leu-1, ad-2} \times \text{tryp-1, ro-2.}$$

From this four-point cross, 4441 single spore cultures were classified. Ropy could be distinguished from the non-ropy progeny by its significantly restricted growth on Vogel's medium plates as well as by its characteristic mycelial growth in tubes. The progeny which fell under the sixteen different classes are shown in Table 1. The distances and the order of the four loci were then determined as shown in Table 2.

Table 1. Progeny from cross of leu-1, ad-2 x tryp-1, ro-2.

Genotype				Number
leu-1/+	ad-2/+	tryp-1/+	ro-2/+	
leu-1	ad-2	+	+	1417
+	+	tryp-1	m-2	2014
leu-1	ad-2	+	ro-2	742
+	+	tryp-1	+	232
leu-1	+	tryp-1	m-2	163
+	ad-2	+	+	109
leu-1	ad-2	tryp-1	m-2	20
+	+	+	+	81
leu-1	+	+	+	67
+	ad-2	tryp-1	m-2	37
leu-1	ad-2	tryp-1	+	22
+	+	+	m-2	74
leu-1	+	tryp-1	+	19
+	ad-2	+	m-2	19
leu-1	+	+	m-2	19
+	ad-2	tryp-1	+	6

Table 2. Distances of the four loci from one another.

Loci	Distance in centimorgans
leu-1 and ad-2	439/4441 x 100 = 9.9
leu-1 and tryp-1	507/4441 x 100 = 11.4
leu-1 and ro-2	772/4441 x 100 = 17.4
ad-2 and tryp-1	326/4441 x 100 = 7.3
ad-2 and m-2	617/4441 x 100 = 13.9
tryp-1 and m-2	533/4441 x 100 = 12.0

Figure 1. Chromosome map of a section of linkage group III showing the relative positions of leu-1, ad-2, tryp-1 and ro-2.

These calculations gave the sequence of the four loci or leu-1, ad-2, tryp-1 and ro-2. Next, corrections for double and triple point crossovers were made and the order and corrected distances of the four loci from one another were determined (Figure 1).

With regard to the relative positions of ad-2 and tryp-1, these findings differ from the findings of Perkins and Ishitani (1959) but support the observations of Barratt et al. (1954) and Perkins et al. (1962 Con. J. Genet. Cytol. 4: 187). Positions of leu-1 and ro-2 have been found to be the same as reported by Perkins and Ishitani (1959) and Perkins et al. (1962). ▪ ▪ ▪

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