Fungal Genetics Reports

Volume 24 Article 18

Map sequences established or confirmed by duplication coverage

D. D. Perkins
Stanford University

Recommended Citation
Perkins, D. D. (1977) "Map sequences established or confirmed by duplication coverage," *Fungal Genetics Reports*: Vol. 24, Article 18. https://doi.org/10.4148/1941-4765.1750

Map sequences established or confirmed by duplication coverage

Abstract

Map sequences established or confirmed by duplication coverage

Perkins, D. D. Map sequences established or confirmed by duplication coverage.

Duplications can provide an easy method of determining the order of closely linked genes or of genes and centromeres. The method is independent of crossing over. Gene position can be determined unambiguously by a simple right-left test, depending on whether a locus is inside or outside the duplicated segment. The duplications are produced when rearrangements such as insertional and quasiterminal translocations are crossed to wild type. Duplications of known content can also be produced by intercrossing certain overlapping rearrangements. For descriptions and illustrations of the method see Perkins and Barry, 1977 (Adv. Genet. 19, pp. 170-171), Perkins et al., 1969 (Genetica 40, pp. 268-269), or Perkins, 1972 (Genetics 71, pp. 33-39).

Table 1 gives gene sequences that have been determined or critically confirmed by duplication coverage. In a few cases this determination was made by other authors, as indicated. Some of these sequences were previously unknown; others had previously been determined by conventional mapping, but usually were based on meager evidence.

The table is intended to be merely a summary of conclusions. It is not intended to be self-contained or to provide all the information necessary to arrive at the conclusions. Such information will mostly be found in Adv. Genet. 19, where Fig. 19 (p. 211) shows the extent of the specific duplications, and the Appendix (pp. 226-265) enumerates genes that have been tested for coverage by each duplication. A few additional data are provided by Perkins and Barry in Neurospora Newsl. 24. - - - Department of Biological Sciences, Stanford University, Stanford, CA 94305.

Table 1. Summary of map orders known from duplication coverage tests

Locus	Order established	Duplication used
Linkage Group I		
mei-3, csp-1	L of sn and of centromere (a)	39311
sn	L of un-2, R of arg-3	AR173, AR190; 31011
un-2	R of centromere	AR173
his-2	R of un-2 and centromere	AR190
met-10	R of un-2	AR173, AR190
nuc-1	R of his-2 (b)	AR173, AR190
rg	R of his-2, L of nic-2	AR173, 4540
un-1, cys-9	L of thi-1	4540
al-2, os-5	L of arg-6	T54M94
arg-6	L of al-1	4637 x STL76
Linkage Group II		
het-6	Between cys-3 and pyr-4 (c)	AR18, P28A9
arg-5	R of bal and centromere	ALS176
nuc-2	R of ro-3 (d)	NM177
Linkage Group IV		
un-8	R of psi and centromere	ALS159
pt	R of pdx (e)	S1229
rib-2	R of arg-2	S4342
pyr-3	R of arg-2	NM152, S1229, S4342
Linkage Group VI		
pan-2, rib-1	R of centromere	AR209

R = right, L = left.

(a) mei-3: D. Newmeyer and D. Galeazzi, personal communication.

(b) R. Metzenberg, personal communication.

(c) Mylyk 1975. Genetics 80: 107.

(d) Metzenberg et al. 1974 Genetics 77: 25; Littlewood et al. 1975 Genetics 79: 419.

(e) Barry 1960 Genetics 45: 974.