

Studies on the 'dispensability' of recessive lethals

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Abstract

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balanced heterokaryon with one of its nuclei carrying a recessive morphological marker. Lethals were detected by the non-appearance of marked homokaryons. They were then tested for supplementability on complete medium.

Using the same system, 19 spontaneous lethals were tested and none proved to be supplementable, confirming Atwood and Mukai's finding that supplementable spontaneous lethals are relatively rare.

Gierer (10th Symp. Soc. Gen. Microbiol. London, 1960) showed that nitrous acid has its mutagenic effect on TMV via deamination of a single RNA base. If its effect is similar in *Neurospora*, i.e., if it covers only a small area of genetic material, a higher proportion of nitrous acid induced than spontaneous lethals might be expected to be supplementable, from the argument of Horowitz and Leupold (Cold Spring Harbor Symp., 16, 65-74, 1951). This would seem particularly likely in the case of nitrous acid induced mosaic lethals (Royes, *Neurospora Newsletter* #1, 1962), which presumably affect one strand of DNA. Six mosaics and 18 total lethals were tested and among these only one of the total lethals was supplementable. Its requirement was found to be for arginine. Since the unmarked nucleus in the original heterokaryon was arg-6 the induced mutation must have been at a complementary locus.

Non-supplementability on complete medium might be due to interaction of components of the complete medium. Accordingly 8 of the lethals were tested on each of 6 single nutrients which are known to interfere with the growth of certain auxotrophs. No cases of supplementation were found. --- Mutagenesis Research Unit, Institute of Animal Genetics, Edinburgh, Scotland.

Atwood and Mukai (Proc. Nat. Acad. Sci. 39, 1027-35, 1953) devised a method for detecting mutants which cannot grow on complete medium. They used a