

A search for position effects in Neurospora

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Abstract

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There are no reported instances of position effect variegation in Neurospora, and very few in the fungi. One reason for this might be the lack of cell autonomy, at least in Neurospora. Cell autonomy is required to observe such variegation. A locus which expresses such a cell autonomous effect is per-1 on linkage group VR proximal to ilv(?6201).

I used this locus as a marker with which to observe possible position effects. The phenotypes of per-1 are twofold. One set of alleles block the production of pigment in the perithecium and in the ascospores leaving them yellow; a second set of alleles block pigment formation in the perithecium but not in the neck of the perithecium or in the ascospores. A chromosome rearrangement with a breakpoint near the per-1 locus might be expected to cause a position effect resulting in loss of pigment or mottling of the perithecium when the rearrangement strain is used as the female parent in a cross.

Appropriate strains were obtained from the stock center and screened for such effects. All strains were mating type A and involved single or multiple translocations with breakpoints in the right arm of linkage group V (221, 1445, 1549, 1879, 2006, 2025, 2031, 2034, 2062, 2093, 2098, 2185, 2427, 2447, 2629), or the left arm (1760, 2004, and 241 I), or either arm (1483, 2021, 2179, 2334, 2397, 2416, 2423, 2633, 2680). None of these strains gave consistently light or mottled perithecia as the protoperithecial parent in a cross to per-1^o. A number of alterations in normal perithecial morphology and/or development were observed in these crosses.

It is difficult to determine the significance of these findings without knowing the details of the cytological breakpoints involved. ■ ■ ■ Department of Molecular, Cellular and Developmental Biology, University of Colorado, Boulder, CO 80309.