

CARNEGIE INSTITUTION OF WASHINGTON
DEPARTMENT OF GENETICS
COLD SPRING HARBOR, LONG ISLAND, N. Y.

January 2, 1953

Dear Curt:

Sorry you had to write for a reprint. I have just not sent out any lately. There was, of course, no intentional neglect.

In your note, you mentioned having to give a seminar on the symposium paper. If you interest, I should like to add a few comments to supplement the paper. If the theory of origin of instability were correct, then it should be possible to obtain the Ac-control type of mutability at any selected locus. This was tried for two loci, considered particularly suitable for the study: A₁ in chromosome 3 and A₂ in chromosome 5. Plants homozygous dominant for both A₁ and A₂ were crossed by plants homozygous for either a₁ or a₂, the latter being used as the pollen parents. In each of the homozygous dominant plants, both Ds and Ac were present, Ds being located in the long arm of chromosome 5. The known recessives, a₁ and a₂ do not mutate in the presence of Ac. The resulting ears from these two type-crosses were examined for variegated kernels. Among 72 ears obtained when a₁ was used as the pollen parent, a single variegated kernel was produced. The plant grown from it was variegated and tests of this plant and its progeny proved that the instability at the A₁ locus ~~was~~ was Ac-controlled. From 120 ears derived from the cross when a₂ was the pollen parent, two variegated kernels gave rise to plants. One of them carried an Ac-controlled mutable condition at the A₂ locus and the second carried an autonomous type of mutable condition at the A₂ locus.

Extensive study has been given to two cases in which Ds had been transposed just to the left of Sh (order is: I Ds Sh Bz Wx centromere). In this position, Ds initiates many mutations to sh. Some of these are mutable sh and Ac-controlled. The effect of Ds events may extend proximally to include Bz, either suppressing its action or causing it to become mutable. The effect of other Ds events may extend distally and include the action of I, causing partial or total inhibition of its action. All of the effects which extend to Bz and include total inhibition of its action also affect viability. This likewise occurs when the effect extends to the I locus.

On a separate sheet, I am enclosing a table taken from the last annual report to show the types of instability that have arisen at six different loci in the Cold Spring Harbor cultures. It represents the cases of Ac-controlled and non-Ac-controlled mutability at the same locus.

Should you wish any illustrative material for your seminar, I should be glad to send samples to you. Don't think you must say "Yes" to this suggestion. You may not wish to go to that trouble and I could well understand that.

All good wishes to you and each member of the family.

Cordially,

Barbara