

2. A second blue-fluorescent seedling in maize.

One blue fluorescent character has been described (Teas and Anderson) which appears as a recessive in the seedling stage but acts as a dominant in the anthers. Linkage tests have placed the gene either in chromosome 5 or far out in the long arm of chromosome 9.

In 1950, three families from gamma ray and atomic bomb radiation each gave a single plant which segregated brilliant blue fluorescent seedlings. Paper chromatograms showed them to be different from the earlier type. Intercrosses also showed them to be different from blue fluorescent-1. The irradiated parents were widely different, but each had been pollinated by the same standard plant (3159-7) whose parentage involved only untreated CC5 and L317. Six other irradiated plants had been pollinated by the same standard, but only gave normal offspring. A repetition of all 9 families in 1952 yielded 7 additional plants which segregated blue fluorescent seedlings. The totals for the two plantings were:

<u>Irradiated parent</u>	<u>normal</u>	<u>segregating fluorescent</u>
3173 -9	49	1
" -10	48	1
3175 -2	44	3
" -4	52	0
" -5	45	1
3176 -6	44	0
" -9	46	0
" -20	36	2
3177 -14	42	2
Total	406	10

Thus only 2.5 per cent of the progeny of 3154-27 carried the mutant gene. The mutation was a spontaneous one and affected a sector including about one twentieth of the tassel.

Crosses were made with a series of waxy translocations. The testcrosses were made with a recovered waxy fluorescent. Seedling tests gave the following data:

<u>Translocation</u>	<u>Total</u>	<u>Crossovers</u>	<u>Per cent</u>
wx 1-9c	143	78	54.5
wx 2-9b	167	86	51.5
wx 3-9c	267	158	59.2
wx 4-9b	264	133	50.4
wx 5-9c	264	149	56.4
wx 6-9a	255	117	45.9
wx 6-9a	211	105	49.8
wx 8-9d	192	97	50.5
wx 9-10b	82	11	13.4

The linkage with wx 9-10b would indicate the gene location in chromosome 10, probably in the middle section.

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