

## 1. Variegated pericarp studies

It has been shown that when variegated pericarp of "medium" grade mutates to the stable self-colored (self-red) type another mutant showing a distinctly lighter type of variegation frequently is formed as a co-twin (Brink and Nilan, GENETICS: 37:519-544). On the basis of limited data it was suggested that the mutant co-twin to self-color is identical with "light" variegated, a phenotype which regularly occurs with a somewhat variable and usually low, frequency among the offspring of all medium variegated plants in this stock. Additional data obtained in 1952 and based upon twin spots occurring on two ears confirm the identity.

Both the ears upon which twin spots appeared were heterozygous for colorless pericarp. They were pollinated by colorless pericarp. The three classes of kernels (medium variegated, as the "control", and the two components of the twin spots, namely, self-red and light variegated) were grown out. Pollen from several of the resulting plants was then applied to a closely related colorless pericarp-stock. The colored offspring from self-red mutant kernels are regularly self-red) and are omitted from the summary. The distributions of offspring of the heterozygous plants tracing to the medium and light variegated kernels on the original twin-spot ears are tabulated below.

### Ear No. 1

Family	Distribution of offspring			
	Colorless	Self-red	Light var.	Med. var.
(Descended from light var. twin-spot kernels)				
63-377	32	2	18	17
-380	35	0	12	15
-381	35	4	17	13
-382	26	3	18	19
Totals	128	9	65	64

### (Descended from medium var. "control" kernels)

63-393	41	7	6	12
-394	31	13	5	27
-396	34	6	8	28
Totals	106	26	19	97

### Ear No. 2

Family	Distribution of offspring			
	Colorless	Self-red	Light var.	Med. var.
(Descended from light var. twin-spot kernels)				
63-132	23	1	29	3
-134	35	1	25	2
-135	18	0	2	2

Totals	76	2	86	7
(Descended from medium var. "control" kernels)				
63-148	17	3	2	14
-149	27	2	5	26
-150	33	4	4	13
-151	25	7	4	20
-152	13	5	2	20
Totals	115	21	17	82

The light variegated segregates in the families descended from the light variegated kernels in the twin-spot sectors were identical in appearance with the light variegateds appearing among the descendants of the kernels in the medium variegated portions of the same ears. It may be concluded that they represent a single genetic class of variegated pericarp.

Light and medium variegateds occurred with equal frequency in the four families descended from the light variegated kernels from the twin-spots on Ear No. 1. The corresponding families from Ear No. 2 show a large preponderance of light variegateds. The difference is explainable on the hypothesis (Brink and Nilan, cited above) that Modulator, the genetic element which differentiates light and medium variegateds, is linked with the P locus in the Ear No. 2 group and independent of P in the families derived from Ear No. 1.

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