III. Assortment with gl_2: C/c; r^r/r^g; b Gl_2 'R'/B gl_2 Inv 2a ♀

Seedling phenotypes from eight plants

red, glossy (colored seed)	green, glossy (colored seed)	non-glossy (colored seed)
18	4	535

Frequency of crossing over between 'R' and gl_2 (based on green, glossy seedlings only) = 17%.

Frequency of crossing over between 'R' and gl_2 (based on all glossy seedlings) = 8%.

IV. Assortment with Peru 1497 R^g-2: (R^g-2 Bolivia 706 X R^g-2 Peru 1497) ♀.

No colorless seeds were observed in the F_2 progeny; hence, these two R genes on chromosome 2 are closely associated and could be alleles.

V. Interaction with Pl: 'R'/r; pl/pl X r^g/r^g; Pl/Pl.

Plants derived from this cross were purple in color, resembling a B Pl phenotype.

The experiments reported by Styles and those described above show the existence of a duplicate R color factor (or factors) on chromosome 2, at or near the B locus. The R and B loci both condition anthocyanin formation. Furthermore, both loci are known to undergo heritable changes in expression (paramutation). These indications of homology between R and B were further supported by the finding that the Bolivia 706 R^g-2 gene, like B, boosts the expression of Pl.

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1. Cytoplasmic effect of the male gamete.

Results of our work with a double-cross maize hybrid show that the cytoplasm of a male gamete in maize can influence the hereditary expression of characters in the progeny. Furthermore, the expression of the male cytoplasm can be influenced by the female cytoplasm. These experiments open a new frontier in cytoplasmic inheritance.

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