

19. Evidence for the complexity of beta components of A^b complexes.

Several A^b complexes of Peruvian extraction (designated A^b:P) differ from the A^b of Ecuador extraction in regard to the order of the alpha and beta members. Thus, in the case of the latter, the order of members, stated with respect to the sh factor is alpha-beta-sh whereas the order in the A^b:F complexes so far studied is beta-alpha-sh. This sequence in the latter case renders it technically much more feasible to isolate by crossing over the beta element of various A^b:P complexes by taking advantage of the extremely close linkage between alpha and sh. Thus, in A^b:P (Lima) Sh/a sh x a sh/a sh crosses, about two-thirds of the colored-shrunken crossovers are determined to be beta-alpha-sh cases on the basis of a dominant brown pericarp (representing a crossover between alpha and sh); however, approximately one-third of the colored-shrunken crossovers have a red pericarp effect. Since it is known that the alpha components of these A^b:P complexes produce a dominant brown pericarp effect, these latter must represent crossover isolations of the beta element following an exchange event between beta and alpha. It may be concluded that A^b:P (Lima) carries a beta element with a red pericarp action. Similar studies carried out with A^b:P (Cuzco) also yield colored-shrunken crossovers which in some cases are dominant brown in pericarp phenotype and in others are red. In addition, however, this complex yields colored-shrunken crossovers whose pericarp phenotype is red-brown and is distinct from the brown and the red phenotypes in the same families. It is assumed for the purposes of further analysis that A^b:P (Cuzco) is at least a triple complex of the type: beta^{rb}-beta^r-alpha, having two adjacent beta elements which differ in their determination of pericarp phenotype.

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