

2. Expression of \underline{pr} in plant tissues.

For several years now we have been trying to develop an early inbred line of maize suitable for genetic studies. Two years ago, one family, derived initially from crosses between Gaspé plants and strains of the W22 inbred line, segregated \underline{R}^r and \underline{r}^r , \underline{P}^{wr} and \underline{P}^{ww} , and also what appeared from the kernel phenotypes to be \underline{Pr} and \underline{pr} . The \underline{R}^r and \underline{P}^{wr} factors were traced back to the W22 inbred strain, and the \underline{r}^r and \underline{P}^{ww} to the Gaspé plants. The origin of the \underline{pr} factor has not been traced as yet, as the records indicate no previous segregation for red and purple seeds.

The accompanying table shows that this family has several unusual features, including:

- 1) A silk color factor requiring the \underline{R}^r factor for the synthesis of 3-hydroxylated anthocyanins and the \underline{P}^{wr} factor for synthesis of 3-deoxyanthocyanins.
- 2) The expression of the \underline{pr} factor in such plant parts as cob, silks, and anthers as well as in the aleurone. This \underline{pr} factor affects the anthocyanins, the 3-deoxyanthocyanins, the 3-deoxyleucoanthocyanidins, and the C-glycosylflavones. From the orange color of the \underline{P}^{wr} \underline{pr} cob, the \underline{pr} factor appears to affect the \underline{P} locus pigment also, probably by conditioning the formation of the precursor apiforol rather than the normal precursor luteoforol.

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3. Assay for the effects of chemical and natural substances on growth using empty endospermic sac injection.

Tonita (Proc. Int. Conf. Plant Growth Substances 1967 and 1970) has reported effects on flowering of substances injected into the empty endospermic cavity of young winter wheat seedlings. We have tested this method with maize and have used it to examine the effects of natural and chemical substances on three different stocks of maize: a) an early inbred line derived from crosses with Gaspé flint, b) an early maturing commercial hybrid, Polar Vee, and c) a strain of the comparatively late maturing inbred W₂₂.