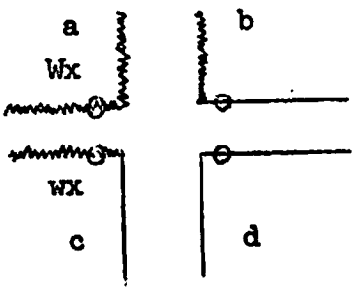

disjunction product	wx constitution
a b d	Wx
b d c	wx
d c a	Wx wx
c a b	Wx wx

Thus whenever 3:1 distribution occurs 3/4 of the gametes produced carry Wx and this added to the usual equal distribution of gametes from alternate disjunction would increase the frequency of Wx individuals when the heterozygote was the female but not when the male.

If one considers the difference between male and female transmission in this experiment (24% or roughly 1/5) and if one attributes this to 3:1 distribution one can see that the frequency of such distribution must be high (since only 3/4 of the non-disjunction events give Wx carrying gametes). This can be calculated as $1/5 + 1/3 \times 1/5 = 4/15$ or 26.7%. In other words, 26.7% of the megasporocytes must undergo unequal distribution, an unexpectedly high figure for non-disjunction in translocations in general.

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1. The gene action sequence in anthocyanin synthesis.

Previous investigations by various workers have led to the following hypothetical gene action sequence (News Letter 31:138):

(C,R); In; A_1; Bz; A_2---------- anthocyanin

It has been suggested that confirmation of such sequences requires a study of the active synthetic stages. Twenty-day old aleurone tissues of self-fertilized colorless testers, singly recessive for $\underline{a_1}$, $\underline{a_2}$, $\underline{c}$, $\underline{r}$, or $\underline{bz_1}$, were pressed together in pairs, using pieces of distinguishable size, and placed on a complete medium or on agar at 25°C. in test tubes. Pigment was observed in one to two days and was subjected to the standard 10% hydrochloric acid test to confirm that the synthesized pigment was anthocyanin. All possible combinations with $\underline{a_1}$, $\underline{a_2}$, $\underline{c}$, $\underline{r}$, and $\underline{bz_1}$ were made and subjected to the above conditions. Complementary interaction resulting in anthocyanin synthesis was observed in all cases and it was unidirectional without a single exception. Out of every two testers (donor and receiver) combined, consistently only one (the receiver) gave pigment. This suggests that the precursors produced and/or controlled by the donor tester are subsequently used by the receiver to give anthocyanin pigment, since the receiver carries the dominant factor that is lacking in the other, as well as all subsequent factors in the sequence. With this reasoning and observations on all the combinations of the above testers it was determined that the action of $\underline{C}$ precedes $\underline{R}$ ($\underline{c}$ tester develops pigment in the pair of $\underline{c}$ with $\underline{r}$), $\underline{R}$ precedes $\underline{A_1}$, $\underline{A_1}$ precedes $\underline{A_2}$, and $\underline{A_2}$ probably precedes $\underline{Bz_1}$ in the synthesis of the pigment. Aleurone tissue of $\underline{in}$ tester, when subjected to the above conditions, was a strong donor to $\underline{c}$ and $\underline{r}$ testers, but was only a weak donor of the required substrates to $\underline{a_1}$, $\underline{a_2}$, and $\underline{bz_1}$. This quantitative criterion of intensity for $\underline{In}$ suggests its modifying action may follow the action of $\underline{R}$ in the sequence.

The behavior of homozygous $\underline{C^I}$ was interesting. When $\underline{C^I}$ aleurone tissue was combined with the others (i.e. $\underline{a_1}$, $\underline{a_2}$, $\underline{c}$, $\underline{r}$, $\underline{bz_1}$ and $\underline{in}$), $\underline{C^I}$ gave pigment, suggesting that, at the least, the inhibitory action of $\underline{C^I}$ precedes the action of $\underline{C}$. The interaction of $\underline{C^I}$ (presumably an allele of $\underline{C}$) and $\underline{c}$ tester in the production of anthocyanin draws special attention. All these observations establish the following sequence:

$$C^I,\ C,\ R,\ (In),\ A_1,\ A_2,\ (Bz_1) \text{--- anthocyanin}$$

The position of other known genes ($\underline{C_2}$, $\underline{Bz_2}$) and the modifiers is still to be determined, and attempts to identify accumulated substrates and to demonstrate catalysts are in progress.

G. M. Reddy

2. Endosperm culture.

Non-sugary (wild type) endosperm tissue, cultured last summer, has given continuous growth and pigment synthesis since that time. The medium was modified from that described in MNL 32: 103, substituting 5 gm. of Difco yeast extract for the tomato juice and using