González-Duarte, R. and Prevosti, A. University of Barcelona, Spain. Polymorphic system controlling esterase-5 in D. subobscura.

Using electrophoretic mobility in acrylamide gels as described by Hubby (1963) and Hubby and Lewontin (1966) we have characterized six alleles at one locus controlling a polymorphic system for the esterase-5. Our survey indicates that more than six alleles are present at this locus. The genetic crosses between single individuals homozygous for an electrophoretic form of this enzyme confirmed their behaviour as single Mendelian genes in F_1 and F_2 offspring. The relative mobilities of the six electrophoretic variants of the enzyme are: $E\text{-}5^{0.85}$, $E\text{-}5^{0.89}$, $E\text{-}5^{0.92}$, $E\text{-}5^{0.94}$, $E\text{-}5^{1.00}$, $E\text{-}5^{1.06}$. The locus controlling protein esterase-5 in this species is autosomal, differently from what happens in D. pseudoobscura for the homologous gene.

Hubby, J. L., 1963. Protein differences in Drosophila. I. Drosophila melanogaster. Genetics, 48: 871-879.
Hubby, J. L. and Lewontin, R. C., 1966. A molecular approach to the study of genic heterozygosity in natural populations. I. The number of alleles at different loci in Drosophila pseudoobscura. Genetics, 54: 577-594.

Kuroda, Y. National Institute of Genetics, Misima, Japan. The effect of ecdysone analogues on the differentiation of eye-antennal discs cultured in a chemically defined medium.

Eye-antennal discs were dissected from mature third-instar larvae of the Oregon-R strain of Drosophila melanogaster grown under sterile conditions. They were organ-cultured at 28°C in hanging drops of the chemically defined medium K-6, as described in the previous paper (1). In the medium without any supplementations of hormonal substances eye-antennal discs showed a pronounced increase in the eye-forming and antenna-forming portions after 24 hours of cultivation. Folded area of the eye disc extended and flattened out, but no distinct differentiation of the ommatidia was observed.

Four steroids having ecdysone activity which have been isolated from plants by Nakanishi (2) and Takemoto et al. (3, 4) were tested for their activity to promote the differentiation of eye-antennal discs cultured in the chemically defined medium. The chemical structures of these steroids, ecdysterone, ponasterone C, inokosterone and rubrosterone are shown in Fig. 1.

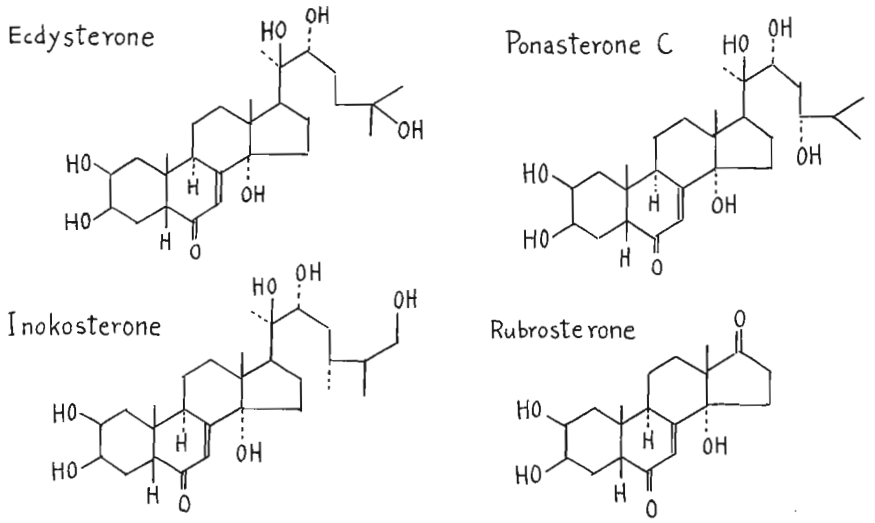

Fig. 1. Chemical structures of ecdysone analogues.

When these ecdysone analogues of plant origin were added to the medium in which eye-antennal discs were cultured, a pronounced differentiation of ommatidia was observed. The results obtained are summarized in Table 1.

Table 1. Effect of ecdysone analogues on the differentiation of eye-antennal discs in organ culture

Substances	Concentration (mg/ml)	No. of explants tested	No. of explants in which ommatidia were differentiated	Per cent of differentiation
Control	0	16	0	0
Ecdysterone	10.0	16	15	94
	1.0	8	7	88
	0.1	6	2	33
	0.01	7	2	27
Inokosterone	1.0	3	3	100
	0.1	9	4	44
	0.01	8	3	38
Ponasterone C	1.0	8	5	63
	0.1	8	2	25
Rubrosterone	10.0	8	6	75
	1.0	20	14	70
	0.1	12	11	92
	0.01	11	10	91
	0.001	12	11	92
	0.0001	13	12	92
	0.00001	11	10	91
	0.000001	12	6	50
	0.0000001	12	5	42
	0.00000001	9	2	22

Among ecdysone analogues tested rubrosterone was most effective in promoting the differentiation of ommatidia in eye-antennal discs cultured in the chemically defined medium; at the concentration of 0.00001 μg/ml it was still active in producing the ommatidium formation under the conditions employed.

1. Kuroda, Y. and S. Tamura, 1956, Med. J. Osaka Univ., 7: 137.
2. Nakanishi, K.,1967, Ann. Meet. France Chem. Soc.
3. Takemoto, T., S. Ogawa, and N. Nishimoto, 1967, J. Pharm. Japan, 87:325.
4. Takemoto, T., Y. Hikino, H. Hikino, S. Ogawa, N. Nishimoto, 1968, Tetrahedron Letters (in press).

Childress, D. University of Oregon, Eugene, Oregon. Crossing over in a homozygous B^S translocation.

Females homozygous for $T(1;4)B^S$ marked with sc w^e cv on one X^D (distal piece of the X with the 4 centromere), and y on the other X^D were crossed to $T(1;4)B^S$, sc w^e cv males. One of the B^S segments in the female also carried a complete Y chromosome marked with y^+. The results were as follows:

sc w^e cv ——— ○ B^S ——— ○

y ——— ○ ——— xxxxx○xxxxx y^+ $B^S Yy^+$

	% crossing over reg.1 (sc-w^e)	% crossing over reg.2 (w^e-cv)	Total flies
♀♀	2.9	12.4	1681
♂♂	2.8	11.4	1522

Crossing over in the w^e - cv region is in the normal range (12.2), but crossing over at the tip between sc and w^e is nearly twice the normal value (1.5). Preliminary experiments indicate that crossing over at the distal tip is normal or slightly depressed in females heterozygous for the B^S translocation*, and in homozygous translocation females without the Yy^+ attached to the B^S segment. This is interpreted to mean that the increase is an interchromosomal effect caused by the rearranged Y chromosome rather than to the translocation itself.

*Also observed by I. Sandler, Studies in $T(1;4)B^S$ in D.m. MS thesis, University of Missouri.(195