

Ouweneel, W.J. Hubrecht Laboratory, Utrecht, Netherlands. Homoeotic mutants in *Drosophila*: interaction during development.

A given mutation not only affects a specific type of normal tissue, but also the same kind of tissue whenever this arises at an abnormal location in the fly under the influence of a homoeotic

mutation. For instance, *dachs* not only shortens the normal legs but also the legs formed instead of the arista in *aristapedia* (*ss*^a);¹ *multiple-wing-hairs* not only effectuates a characteristic hair pattern on the normal wing but also on the wing outgrowths appearing in the eyes under the influence of *ophthalmoptera* (*opht*).² It turns out that also homoeotic mutations themselves affect allotypic tissues produced by other homoeotic mutations. Three classes of genetic combinations are suitable to demonstrate this type of interaction. First, *ss*^a was found to change not only the normal arista, but also the arista produced from the proboscis by *proboscipedia* (*pb*) (at low temperature) into a tarsus, whereas *pb* has no influence on the antenna. This confirms earlier results of Vogt,³ although I feel her explanation (sequential activity of *ss*^a and *pb*) is irrelevant. Secondly, *bithorax* (*bx*) changes the haltere into a wing-like structure, while *tetraltera* (*tet*) strongly reduces the wing and produces a hypodermal (leg-like?) protrusion along with, or instead of the wing. In *bx tet* combinations *tet* seems to reduce not only the normal wings but also the wing-like structures produced by *bx*; however, no leg-like structures replacing the halteres were observed so far. The same class of interactions is exemplified by the effect of *Contrabithorax*, which heterotopically changes the posterior mesothorax produced by *bithoraxoid* from the first abdominal segment into a posterior metathorax.⁴ Thirdly, in combinations of *tet* with either *eyeless-opht* or *loboid-opht* it was found that *tet* not only affects the normal wings but also changes the wing-like outgrowths from the eye area produced by *opht* into hypodermal bristle-bearing protrusions. Therefore, homoeotic mutations act not only in one specific imaginal disc, but also at any other place in the developing organism where the genome allotypically determines a tissue to follow a given developmental pathway with which the mutations concerned can interfere.

References: 1. Braun, W. 1940, *Genetics* 25: 143-149. 2. Ouweneel, W.J. 1970, *Genetica* 41: 1-20. 3. Vogt, M. 1946, *Z. Naturforsch.* 1: 469-475. 4. Lewis, E.B. 1963, *Am. Zoologist* 3: 33-56.

Krimbas, C.B. Agricultural College of Athens, Athens (Votanikos), Greece. Gene arrangement frequencies in Pindos population of *D. subobscura*.

A small sample of *D. subobscura* taken in the summer of 1968 in a Quercus forest near the village of Korydallos, 34 km from Kalambaka, on the road of Kalambaka-Metsovon, in Pindos Mt. was analysed for the gene arrangement frequen-

cies in all five chromosomes, by crossing wild males and sons of wild females to a stand-

Table I

A _{st}	A _I	A ₂	N					
.33	.38	.29	58					
J _I	J ₃₊₄	J _{St}	N					
.74	.01	.25	85					
E ₁₊₂₊₉	E _{St}	E ₈	E ₁₊₂	E ₁₊₂₊₉₊₁₂	N			
.58	.19	.19	.03	.01	86			
U ₁₊₂₊₆ *	U ₁₊₂	U _{St}	U ₁₊₂₊₈	U ₁₊₂₊₇	N			
.54	.29	.13	.02	.02	84			
O ₃₊₄	O ₃₊₄₊₁	O _{St}	O ₃₊₄₊₂₂	O ₃₊₄₊₇	O ₃₊₄₊₂	O ₃₊₄₊₂	N	
.48	.21	.12	.06	.02	.06	.05	87	

*U₁₊₂₊₄ included

ard strain. Table I reports these frequencies as well as the numbers of chromosomes studied. This is the first sample reported from the West of North Greece and does not differ strikingly from the mainland (North and South) Greek samples. It seems that local differentiation between not very far remote populations of *D. subobscura* is not great.