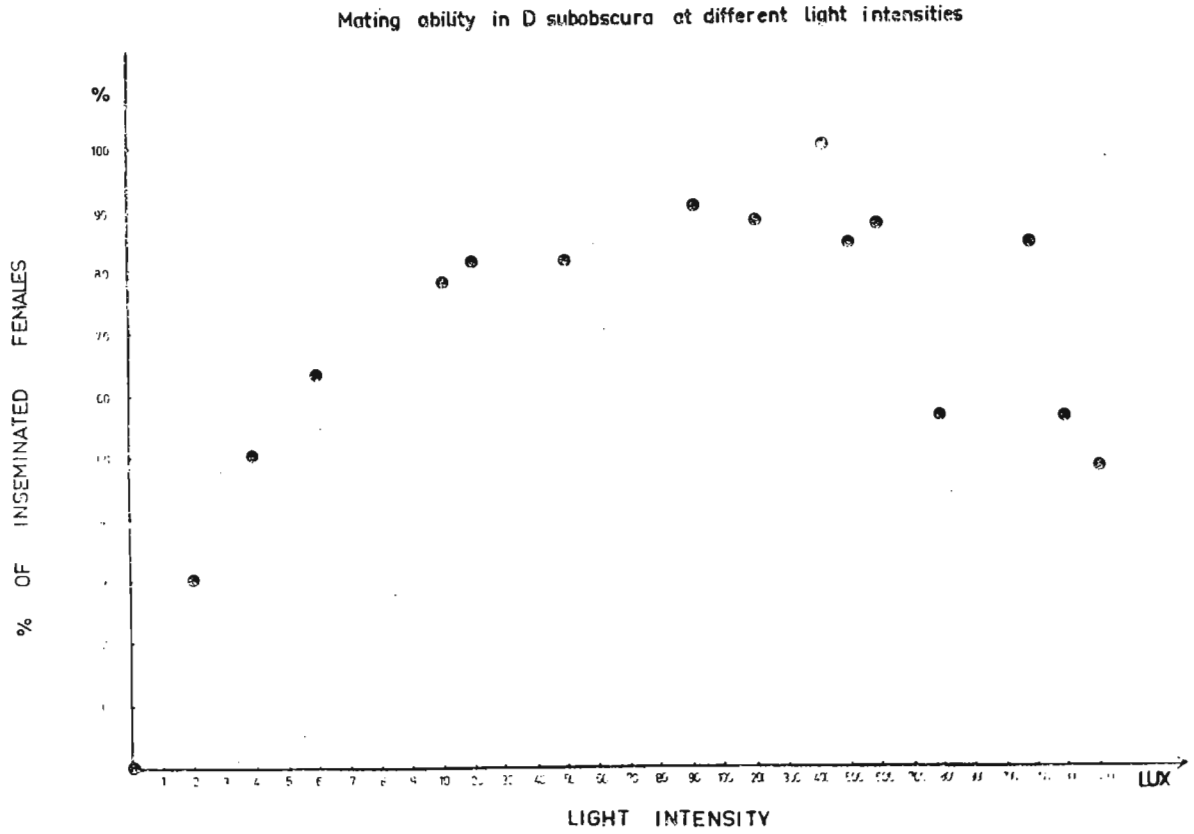
Marinković, D. and M. Andjelković Institute for Biological Research, Belgrade, Yugoslavia. Reproductive ability of D. subobscura at different light intensities.

The males and females from F_1 progeny of wild flies collected at Fruska Gora (about 60 km. north of Belgrade) were separated using aspirators and kept for six days in the dark, in bottles with culture medium. On the seventh day groups of 5 males and 20 females were placed in new 150cc glass bottles with culture medium, and these bottles were exposed during 48 hours to one of different light intensities in the range of 0 - 4000 lux, at 20°C. After etherization of the flies, the females were dissected (a total of about 2000), and the proportion of those inseminated was determined. In this way, the reproductive ability of D. subobscura was measured simultaneously six times, at fifteen different light intensities.



The distribution of the frequencies obtained corresponds to a normal distribution, with a maximum proportion of inseminated females (ca. 90%) when the flies were exposed to a light intensity of 100 - 600 lux. At weaker light intensities, mating success was sharply lowered. At greater than 1000 lux the proportion of inseminated females decreased quite gradually, reaching a value of only 30% at 4000 lux.

When initiating this experiment, the help of Dr. O. Kitagawa was very valuable.

Literature: Elens, A.A. and J.M. Wattiaux 1970 DIS 45:110; Rendel, J.M. 1945 Jour. Genet. 46:287; Springer, R. 1964 DIS 39:118; Wallace, B. and Th. Dobzhansky 1946 P.N.A.S. 32:4.

Denell, R.E.* and R. Jackson. University of California, La Jolla, California. A genetic analysis of transformer-Dominant.

Gowen isolated a third-chromosomal dominant gene which causes genetic females to develop into intersexes, and denoted it Hermaphrodite (Hr). He was, of course, unable to map this mutant by recombination. However, Gowen and Fung (Heredity 11:397) found that genetic females who were heterozygous for Hr and the recessive third-

chromosomal sex-transforming gene transformer (tra) were more male-like than Hr/+. They concluded that Hr and tra are alleles, and Hr is listed in Lindsley and Grell (1968) as transformer-Dominant (tra^D). Hildreth (Genetics 51:659) has described a third-chromosomal gene, double-sex (dsx), which transforms both genetic females and males into intersexes. It now appears that Hr is an allele of dsx rather than of tra, on the basis of the following evidence: 1) X/X;dsx/Hr individuals are indistinguishable from normal males except for an increase in body size and abnormal testes. However, Hr completely complements the effect of dsx on males, and X/Y;dsx/Hr individuals are normal and fertile. 2) Hr-bearing genetic females with an interstitial duplication of 84D to 85E on the salivary gland chromosome map (which includes the locus of dsx) are phenotypically normal females, although they are sterile and lay no eggs. 3) Three revertants of Hr were induced by X-irradiation. When first isolated, they all failed to complement dsx. When they were examined sometime later, two stocks had been contaminated, and the reversion-bearing chromosomes lost. The remaining reversion-bearing chromosome still failed to complement dsx, and was normal in salivary gland chromosome preparations.

These data are all consistent with the conclusion that Hr is an allele of dsx. We, therefore, propose that it be renamed double-sex-Dominant (dsx^D).

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Denell, R.E.* University of California, La Jolla, California. Reversion studies of Nasobemia.

Nasobemia (Ns) is a homozygous viable, dominant gene in Drosophila melanogaster. Flies bearing Ns show, with varying degrees of expressivity, a homoeotic transformation of the antennal region into a mesothoracic leg (Gehring, Arch. Julius Klaus-Steft. XLI:44). Males homozygous for Ns were given 4000 r of X-rays, and five putative reversions of Ns were recovered from cells treated at post-meiotic stages. These were designated by the symbol Ns^{+R} followed by an identifying number. They were tested for homozygous viability, and subjected to salivary gland chromosome analysis, with the following results:

Line	Homozygous viable	Cytological characteristics
Ns^{+R11}	-	Normal
Ns^{+R25}	-	At least a 3 break rearrangement of the 3rd chromosome, with breaks in the proximal heterochromatin and at 84B12 and 85AC
Ns^{+R70}	+	Normal
Ns^{+R72}	-	Df(3R)84A;84D
Ns^{+R96}	-	A complex T(Y;3) inferred from genetic evidence, with breaks in the Y and at 84B1-2 and 94C

In addition, Ns^{+R70} is viable heterozygous with all other chromosomes. Any heterozygous combination of the other chromosomes is lethal.

Since Ns^{+R11}, Ns^{+R25}, Ns^{+R72}, and Ns^{+R96} share noncomplementary recessive lethals, it is strongly suggested that they represent events at the same locus, that is at Ns. Further, since all three revertants with rearrangements are associated with an event at 84B12, it is concluded that this region represents the position of Ns.

Ns and the various alleles of Antennapedia (Antp) have similar phenotypes, and are similarly placed on the recombinational map. Gehring found that flies heterozygous for Ns and $Antp^B$ were viable, with an enhanced transformation phenotype. However, since all Antp alleles are associated with rearrangements and share a common recessive lethal, he tentatively designated Ns as a separate gene. I crossed In(3R)$Antp^B$, $Antp^B$/In(3LR)TM1, Me ri sbd^1 ♀♀ x Ns^{+R11}/In(3LR)TM6, $Ubx^{6/e}$ e ♂♂, and recovered no $Antp^B/Ns^{+R11}$ flies among 281 progeny. Thus, the revertant of Ns fails to complement the recessive lethality of $Antp^B$, suggesting that Ns is another allele of Antp. It is, therefore, suggested that it be renamed Antennapedia-Nasobemia ($Antp^{Ns}$).

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