of potential or unknown situations dwindles, and it has the virtue of remaining applicable as additional subloci of the HL-A system become known. For example, if three subloci governing equipotential antigens were to be considered, the NHR value would be the ratio ID/IN divided by 6 (2 alleles at each sublocus); with four subloci, it would be divided by 8.

Table 3 summarizes the degrees of compatibility (NHR values) possible between donor and recipient. Studies designed to correlate ranks of histocompatibility with the observed results of renal transplantation indicate that the most favorable results occur within NHR values of 0.5 to 1; these situations were found most frequently in transplants from a living, related donor. Fair results have been obtained with NHR values of 0.27; in contrast, donor-recipient compatibility situations where the NHR was less than 0.25 have regularly been associated with a high incidence of renal transplant failure, regardless of whether the organ was from a living, related donor or from a cadaver donor (*8*).

Although the NHR is evidently a simplification of an extremely complex situation, it may be useful as a statistical guide for the rapid choice of optimum organ donors and recipients within a given population. However, the successful use of NHR values is predicated on the determination of the individuals' HL-A phenotypes by laboratories with the serological capability of detecting all of the alleles known at the two HL-A subloci (*9*). It is only under such conditions that the sum of the *known* gene frequencies at each sublocus (0.70 and 0.80, respectively) can be invoked to support the validity of the proposed calculations. This validity will increase in direct proportion to the number of new HL-A alleles detected in the future.

Note added in proof: Recent observations suggest that the term "subloci" might better be substituted by "loci" of the HL-A system.

FELIX T. RAPAPORT
JEAN DAUSSET

New York University Medical Center, New York, and *Hôpital St. Louis, Paris, France*

References and Notes

1. J. Dausset, R. L. Walford, J. Colombani, L. Legrand, N. Feingold, A. Barge, F. T. Rapaport, *Transplant. Proc.* **1**, 331 (1969).
2. Da 9 is equivalent to antigen 6b of van Rood.
3. J. Dausset, J. Colombani, L. Legrand, N. Feingold, *Transplantation*, in press; *Nouv. Rev. Franc. Hematol.*, in press; F. Kissmeyer-Nielsen, K. E. Kjerby, W. Mayr, H. Thulstrup, *Vox Sang*, in press.
4. J. Dausset and F. T. Rapaport, *Transplant. Proc.* **1**, 649 (1969).
5. P. I. Terasaki and D. P. Singal, *Ann. Rev. Med.* **20**, 175 (1965).
6. R. L. Walford, D. Martin, G. M. Troup, W. Goodwin, *Histocompatibility Testing* (Munksgaard, Copenhagen, 1965), p. 89.
7. J. J. van Rood and J. O. Eernisse, *Seminars Hematol.* **5**, 187 (1968).
8. J. Dausset, J. Hors, J. Bigot, *Presse Med.*, in press.
9. Such alleles include not only those given an international HL-A nomenclature, but also all of the other specificities listed in this report.
10. Supported by NIH grants CA 5573, A1 05493, GM 1274801, and A1 16754, and contracts PH 43-65-986, PH 43-65-638, and PH 43-67-1335. Supported in part by a grant from the John A. Hartford Foundation, Inc., and the Irwin Strasburger Memorial Medical Foundation. We thank Sir Peter Medawar for his help, encouragement, and advice. One of us (F.T.R.) is a career scientist of the Health Research Council of the City of New York, contract 1-349.

7 November 1969; revised 9 January 1970

Drosophila melanogaster: Identity of Male Lipid in Reproductive System

Abstract. *A lipid found exclusively in the ejaculatory bulb of adult male* Drosophila melanogaster *has been identified as* cis-*vaccenyl acetate. Identification is based on spectral comparisons with a synthetic sample.*

A new lipid that was detected in the ejaculatory bulb of adult male *Drosophila* (*1*) has been identified.

Gram quantities of male and female *D. melanogaster* (7 days old) were extracted with a mixture of chloroform and methanol (2:1). The crude lipid extract was freed of more polar components by column chromatography on silica gel. The fraction containing the lipid was eluted with a mixture of hexane, diethyl ether, and acetic acid (85:15:1). Further purification was achieved with preparative thin-layer chromatography on silica gel G. The male lipid was finally isolated by gas chromatography (1.5-m column packed with 15 percent diethyleneglycol succinate on Chromosorb W). The lipid is the major component of this fraction and is chromatographically identical with material from isolated tissue.

The mass spectrum indicates that the lipid has a molecular weight of 310. High-resolution mass spectrometry gave the elemental formula $C_{20}H_{38}O_2$ for the molecular ion. The major peak in the high mass region is an ion at mass to charge (*m/e*) 250 (M-60), suggesting loss of the fragment CH_3COOH. The relatively simple infrared spectrum shows an ester carbonyl absorption at 1750 cm^{-1} and a weak band at 724 cm^{-1}, suggesting the presence of a *cis* double bond. The nuclear magnetic resonance (NMR) spectrum showed a triplet at 4.80 τ, and another at 6.10 τ, each corresponding to two protons. These absorptions would correspond respectively to the two vinyl protons of the double bond and two protons on the carbon bearing the acetoxy group. In addition, there is a sharp singlet for the methyl protons of the acetoxy group at 8.22 τ and the terminal methyl protons appear at 9.17 τ.

These data suggest that the lipid is the acetate of an unsaturated C_{18} alcohol. To establish the position of the double bond, the ester was converted to the corresponding diol with OsO_4. This diol was then converted to the ditrimethylsilyl ester, which was analyzed by mass spectrometry (*2*). The major fragments appeared at *m/e* 187 and 301, which would place the double bond between carbon atoms 11 and 12 of the alcohol chain. The final structure would then correspond to *cis*-vaccenyl acetate [*cis*-$CH_3(CH_2)_5CH = CH(CH_2)_{10}OCOCH_3$], which is present in one other insect source, the hair pencil secretion of the male butterfly *Lycorea ceres ceres* (*3*). A synthetic specimen was accordingly prepared from *cis*-vaccenic acid by methylation, reduction, and acetylation (*3*). The synthetic material proved identical to the male lipid on infrared, NMR, and mass spectral comparison, and showed an identical retention time on gas-liquid chromatography.

The physiological function of this lipid is not yet established. Since the lipid is transferred to females during mating (*1*), its function may involve some aspect of reproduction.

GOTTFRIED BRIEGER
Department of Chemistry, Oakland University, Rochester, Michigan 48057
FRANK M. BUTTERWORTH
Department of Biology, Oakland University

References and Notes

1. F. M. Butterworth, *Science* **163**, 1356 (1969).
2. P. Capella and G. M. Zorzut, *Anal. Chem.* **40**, 1468 (1968).
3. J. Meinwald and Y. C. Meinwald, *J. Amer. Chem. Soc.* **88**, 1305 (1966).
4. Supported by PHS grant AM-13038-01 (G.B.) and NSF grant GB-6144 (F.M.B.). We thank Dr. J. Wright, Department of Chemistry, Harvard University, for the exact mass determination, and H. Dene and S. Ogle for technical assistance.

17 November 1969