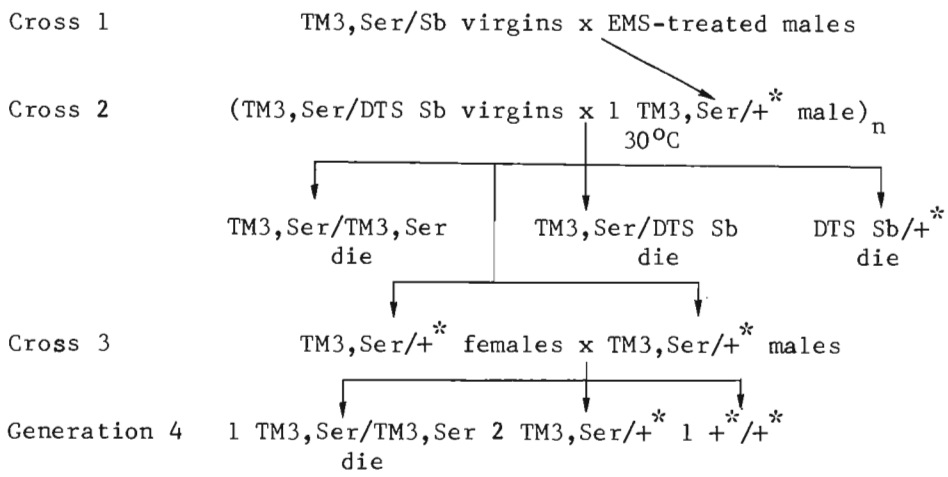
Wright, T.R.F. University of Virginia, Charlottesville, Virginia. A short cut in making autosomes homozygous.

The following crossing scheme, if it works well, should obviate the necessity of collecting from n number of Cross 2 cultures the virgins usually required to set-up Cross 3 which produces individuals homozygous for an autosome in Generation 4. DTS = dominant temperature-sensitive lethal. Cross 2 must be set up at 29 or 30°C.

The dominant visible, recessive lethal mutation, Sb, in the DTS-carrying chromosome is not an absolute requirement, but is convenient for two reasons. If the DTS used is homozygous viable at permissive temperatures, Sb makes it possible to maintain a balanced stock of TM3, Ser/DTS Sb. Second, the absence of Sb in the progeny of Generation 4 indicates that Cross 2 behaved as expected without producing any surviving, fertile DTS Sb/+* or TM3,Ser/DTS Sb individuals. A similar series of crosses can be used for Chromosome 2 using the appropriate balancers and a good second chromosome DTS.



Since we have been blessed with an exogenous supply of third chromosome recessive lethals, we have used the above scheme only once in a very preliminary experiment. Males in Cross 1 were fed EMS according to the method of Lewis and Bacher, DIS 43: 193. For Cross 2 n was only equal to 100 and only 2 TM3,Ser/DTS Sb virgins were used in each vial at 30°C. Of these 26 didn't go. The parents were cleared from the remaining 74 cultures, and when the progeny hatched they were blindly shaken into new vials at room temperature to start Cross 3. These cultures did not go immediately (perhaps due to a temporary heat-induced male sterility), and it was 15 to 16 days at approximately 23°C before sufficient individuals of Generation 4 had hatched to check for lethals. Of the 74 Cross 3 cultures set up, eleven did not go. Of the 63 Cross 3 cultures that went, four produced some progeny in Generation 4 that carried Sb. The presence or absence of a lethal could still be determined in these Sb contaminated cultures, and therefore the overall yield of useful cultures was 63%.

The DTS used in the above experiment was DTS-I165 which along with a second chromosome DTS (which has not been used yet) was very kindly sent to us by David Suzuki.

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Bennett, J. and M.A. Walke. Northern Illinois University, DeKalb, Illinois. Behavioral correlates of the w, w^+ gene substitution.

A pair of isogenic, inbred Oregon-R lines differing only at the white locus, were examined for behavioral differences. The lines represented 60 generations of sib-pair matings and 50 generations (25 cycles) of backcrossing with the w allele. 100 flies of each sex were used from each line (designated ORI for the w^+ line and ORIW for the w line). Observations were made in small polystyrene petri dishes under 10x and 20x stereoscopic magnification. Flies were several days old, but not selected for age. Observations were made of pairs of flies, male and female, for 10 minute periods. A behavioral sequence was only counted once in a period for each fly.

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Vaidya, V.G., N.N. Godbole and R.M. Kothari
University of Poona, India. Analysis of the excretory products of some species of Drosophila.

An attempt is made to study the excretory products of D. melanogaster, D. ananassae and D. repleta. Cultures of these species were individually grown under identical conditions in sterilized containers on the standard agar-cornmeal medium. The excreta of adult flies were carefully collected from the walls of the containers. It was dissolved in ice-cold glass-distilled water separately for each species without resorting to acid-, alkali- or heat-treatment as these may cause certain chemical and degradative changes. The solutions were individually spotted by capillary on Whatman No. 1 qualitative papers, which were then run in glacial acetic acid:n-butanol:water:1:4:5 phase for 4 hours at 27 degrees centigrade by circular chromatographic method after taking the usual precautions (Long et al., 1961). The chromatograms were then dried in air. A set of chromatograms, four for each species, was developed to test amino acid contents of excreta by spraying with 0.5% ninhydrin in acetone and dried at 70 degrees centigrade for 2 minutes. A second identical set was developed for testing the carbohydrate contents of excreta by spraying with 0.5% aniline phthalate in acetone and dried similarly. A third identical set was viewed in dark under 'chromatolite' having emission range 230-290 mu for UV positive spots, if any.

Qualitative tests for uric acid (Brown's reaction), glyoxylic acid (Fearon's test), urea (Sumner's urease test), ammonia (Kroupas's paper test) and creatinine (Kolisch's test) were performed (Welcher, 1966).

All the species showed invariably the presence of uric acid band as judged by the Rf value (0.32) and by Brown's qualitative colour reaction (Brown, 1945). Characteristic absorption maxima at 292 mu also confirmed the presence of uric acid in the excreta of all the three species. Test for glyoxylic acid was positive while those for urea, ammonia and creatinine were negative.

D. ananassae shows an additional UV positive spot on the chromatogram, which from Rf value calculations (0.18) appears to correspond to either adenylic acid or uridylic acid. However, the presence of these components is not yet confirmed by other qualitative tests. Further studies are in progress.

References: Brown, H., 1945, The determination of uric acid in human blood. J. Biol. Chem. 158: 601-608. Long, C., King, E.J. and Sperry, W.M., 1961, Biochemist's Handbook, E. & F.N. Spon Ltd., London. Welcher, F., 1966, Chemical Solutions, D. Van Nostrand Co. Inc. New York.

Bennett, J. and M.A. Walke: Continued from page 140

Both lines showed a bimodal distribution of total activity on an arbitrary scale, but the distributions were radically different (χ^2 = 64, 8 d.f., $P \ll 0.0001$) between the lines. ORI had more individuals at the extremes of activity, ORIW had more with intermediate activities.

A leg rubbing operation where one middle leg was used in conjunction with the contralateral foreleg to rub the other foreleg, designated "three legged front", was observed. A "circling and backing" motion was also noted to have a different frequency in the two lines. "Wing combing" during the observation period also appeared to differ between the lines. The table shows the relationship:

Line	Expression	Wing combing	Circling & backing	Three legged front
ORI	+	151	1	111
	-	49	199	89
ORIW	+	131	12	83
	-	69	188	117
	χ^2	4.81	8.02	7.84
	P	0.03	0.0045	0.005

Of 13 behavioral patterns observed 3 appear to show differences that we may attribute to the substitution of w for w^+ in the homozygous Oregon-R background. In addition a general activity difference is apparent. The association of 4 of 14 measures with the single gene difference can be taken as an indication that such studies are likely to be worth continuing effort.