atids similar to those observed in XO males. Two deviations from the XO phenotype have been observed. Lampbrush loop structures which are not obvious in XO primary spermatocytes can be seen in those carrying the deficiency. Furthermore, in electron micrographs of cross sections through the primary spermatocytes both crystals and the nuclear structures shown by Meyer et al. (1961) and Tates (1971) to be present in wild type (XY) spermatocytes are seen. The second deviation from the XO phenotype is that counts of spermatid tails in cross sections of cysts close to the middle of the testis indicate a mean number of tails per bundle of 54.5, considerably higher than the 31 reported in XO males by Kiefer (1973). Additionally, many of the axonemes and mitochondrial derivatives exhibit cross sections like those seen in XO males.

Preliminary observations of small deficiencies totaling virtually all of the Y chromosome except for the proximal regions around the kinetichore suggest that only the small region noted above leads to crystals, aberrant nebenkerne and micronuclei. Males carrying some of the other small deficiencies do not have normal ultrastructure in their spermatocytes or spermatids but the extent of such aberrations is not known.

At present work is under way to further characterize the Y chromosome deficiencies both genetically and cytologically (Kennison) and to study their effects on germ line development using both light and electron microscopy (Hardy).

References: Kiefer, B.I. 1973, in: Genetic Mechanisms of Development (Ruddle, F.H., ed.) pp. 47-102, Academic Press; Lifschytz, E. and D. Hareven 1977, Developmental Biology 58:276-294; Lifschytz, E. and G.F. Meyer 1977, Chromosoma 64:371-392; Meyer, G.F., O. Hess and W. Beerman 1961, Chromosoma 12:676-716; Tates, A.D. 1971, Ph.D. Thesis, Transitorium voor Gneeskunde, The Netherlands.

Hawley, R.S. University of Washington, Seattle, Washington. Radiation-induced nondisjunction in females homozygous for In(1)sc^{8}.

In(1)sc^{8}, y w^{a} / In(1)sc^{8}, f v cv females were exposed to 3000 R, using a Co^{60} source, and then mated to Y^{S} In(1)EN.Y^{L}, v f B / O males. The progeny, resulting from eggs laid from 24-72 hours after irradiation, consisted of 1546 B females, 438 B^{+} males, 72 v f B males, 11 B^{+} females, 2 w^{a} B^{+} females, 1 y B^{+} female, and 1 v B^{+} female. The frequencies of B males (.22), which result from nullo-X ova, and B^{+} females (.005), which result from diplo-X ova, are identical to published values obtained following similar treatment of wild-type females (Hawley 1975). The recovery of 4 females homozygous for recessive markers confirms the observation of Savontaus (1975) that radiation-induced nondisjunction is not restricted to Eo tetrads.

In a second experiment, In(1)sc^{8}, y w^{a} / In(1)sc^{8}, f v cv females treated with 3000 R were mated to Y^{S} In(1)EN.Y^{L}, v f B / O; C(4)RM, ci ey^{R} females and 27 v f B males and 6 B^{+} females were selected from among the progeny. By crossing the v f B males to C(1)RM, y f / Y ; ci ey^{R} / ci ey^{R} females, 7 (24%) were shown to have resulted from eggs which were also diplo-4. Of the 6 B^{+} females, 4 (66%) were homozygous for ci ey^{R}. Following similar treatment of wild-type females, 19% of the nullo-X exceptions were also diplo-4 and 38% of the diplo-X exceptions were also nullo-4 (Hawley 1975).

These data suggest that the associations between the X and 4th chromosomes that dictate the frequency and manner of radiation-induced nondisjunction are not influenced by the location of the pericentric heterochromatin.

References: Hawley, R.S. 1975, Mut. Res. 33:391-394; Savontaus, M.-L. 1975, Hereditas 80: 195-204.

Hazelrigg, T. and T.C. Kaufman. Indiana University, Bloomington, Indiana. Newly induced mutations of doublesex.

Previous work (Duncan and Kaufman) has shown that the homoeotic gene doublesex (dsx) is located in region 84F of the polytene chromosome map. Both a recessive allele (which yields an intersexual phenotype in males and females) and a dominant allele (which transforms only females into intersexes) are known to be associated with this locus. In the present work, an EMS mutagenizing (Lewis and Bacher) screen has been performed to uncover new alleles of dsx, and also recessive lethals located in this region of the chromosome. The screen utilized a deficiency, dsx^{D+R2}, recovered as a revertant of dsx^{D}

(Duncan and Kaufman). This deficiency extends from 84D9-12 to 84F16, and exposes the intersexual phenotype when heterozygous with the recessive dsx. The results of this screen are summarized in the following table.

# Chromosomes Tested	# Sterile	# Viable	# Lethal	% Lethality
2815	406	2345	64	2.3

Among the viable chromosomes, 4 recessive mutations exhibiting an intersexual phenotype were recovered. These have been crossed to dsx. Their failure to complement with dsx demonstrates that these mutants are indeed new alleles of this locus. Further detailed analysis of the morphological characteristics of these new alleles is in progress.

It is hoped that mapping of the recovered lethals will make possible the construction of a fine structure map of the dsx region. By utilizing 3 overlapping deficiencies recovered in Duncan and Kaufman's study, the positions of the lethals in 3 segments of region 84E-F is currently being ascertained. Inter se crosses following the deficiency mapping should yield a picture of the genetic structure of the region to which dsx has been localized, an area of the chromosome comprising about 15 bands.

References: Duncan, I. and T.C. Kaufman 1975, Genetics 80:733; Lewis, E.B. and F. Bacher 1968, DIS 43:193.

Hazra, S.K., J. Banerjee and S.K. Sen.
Bose Institute, Calcutta, India. Location and nature of white-ivory (w^i) in the white locus of D. melanogaster.

It was earlier reported (Hazra et al. 1978) that white-ivory (w^i) does not affect recombination in the region further away from its location in the white locus of D. melanogaster. The present investigation was designed for a critical analysis of this feature in its vicinity as well as to locate the mutant more precisely in the white locus. The relevant w^i mutant was obtained from Pasadena Stock Center, USA. Other white locus mutants employed here are white-apricot (w^a), white-cherry (w^{ch}), white-eosin (w^e), white-coral (w^{co}), white-honey (w^h) and pure white (w). Yellow body color (y), split bristle (spl) and echinus eyes (ec) served as flanking markers. Attached-X females of the genotypes y w^a spl/w^iec; y w^{co} spl/w^iec; y w^{ch}spl/w^iec; y w^e spl/w^iec and y w^h spl/w^iec were constructed according to Lindsley and Sandler (1963) and mated individually to y w spl ec males. All heterozygous females carried SM1/+ and Ubx^{130}/+ rearrangements in the 2nd and 3rd chromosomes respectively to increase crossing over in the distal portion of the X chromosome (Judd 1959). The couple mutants were confirmed by their ability to yield respective single mutants due to reversion of w^i to w^+. The association of w^i with w^a in the coupling phase is indistinguishable from w^a phenotypically. Accordingly, this putative couple mutant was confirmed by the recovery of w^i as results of crossing over in between w^a and w^i mutant sites. Out of 27140, 28500, 112860, 292000 and 552400 flies screened respectively from the crosses as mentioned above in the serial order, 6, 6, 4, 4 and 4 recombinants were recovered. Recovery of y w^a w^iec and y w^{co} w^iec flies as recombinants guaranteed that w^i is located to the right of w^a and w^{co}. Emergence of w^i w^{ch} spl flies from the third cross confirmed the earlier indication made by Lewis (1959) that w^i is located to the left of w^{ch}. Since the mutants w^e and w^h were shown to share a common location with w^{ch} by earlier workers, it was anticipated that they would yield similar results as that of w^{ch}. On the contrary, the emergence of y w^e w^iec and y w^h w^iec flies as recombinants from fourth and fifth cross respectively refuted such a working hypothesis. The location of w^i to the right of w^e and w^h led us to think that a subsite of white locus could further be split through recombination. This suspicion was found to be along the right lines as evident from the results obtained from the subsequent experiment.

This experiment was expected to serve a dual purpose. First, the relative location of w^i and w could be determined; and second, the indication obtained from previous tests that the mutants of a subsite have distinct spatial locations could be checked with respect to w and w^{ch}. Free-X females of the genotype w^i w^{ch} spl/ y w ec; SM1/+; Ubx^{130}/+ were constructed and mated to y w spl ec males. In a total of 426000 flies screened, 6 y w^{ch} spl exceptionals were obtained as the result of crossing over in the genetic interval marked by w^i and w^{ch}. A most interesting observation was the emergence of two y spl males through reciprocal recombination in the genetic interval marked by w^{ch} and w. The complementary crossover, w^i w^{ch} w, could not