FRYE, SARA H., 1600 East Hillside Drive, Bloomington, Indiana: *Chromosome breakage in the yellow-achaete* (y ac) *region in* Drosophila melanogaster.—Yellow mutant phenotypes X-ray induced at a variety of X-ray doses often involve closely linked markers (FRYE, 1958, 1959, and 1961) in scute-8 chromosomes of different germ cells (mature and nearly mature sperm, oogonia, and oocytes). 98% of the transmissible yellows that were X-ray induced in scute-8 chromosomes (where chromocentral heterchromatin (*CH*) is adjacent to *y ac*) of mature and nearly mature sperm were breakage events.—One problem that emerged from our scute-8 study was if two very closely linked (.001–.005) markers on the chromosome map are involved in a X-ray induced yellow in either scute-19^{i} (sc^{19i} 2nd chromosomes) or Bar-Muller-1 (B^{M1} X-chromosomes) where *CH* is *not* adjacent to *y ac*. Three yellows were recovered from 2-kr treated, sc^{19i} chromosomes of mature and nearly mature sperm, but they were not tested for achaete. The frequency of 2-kr induced, scute-19^{i} yellows (3/26,000=1/8,666) is less than the frequency of 2-kr induced, scute-8 yellows (38/19,108=1/502) as expected. Yellows were 2-kr induced in B^{M1} chromosomes of mature and nearly mature sperm, and one double-marker (*y ac*) single, mutant male was recovered. Cytochemical analysis of this rare, X-ray induced, double-marker chromosome (Y / *1J1+ y ac sc+ In49* B^{M1}) is needed since past cytogenetic analyses were extremely inadequate. (Work supported by the earnings of Dr. B. H. Comley, the estate of Dr. H. J. Comley, property settlement with my former husband (Dr. R. E. Frye), grants from PHS, NSF, AEC, American Cancer Society and the Rockefeller Foundation.)

FULLER, JOHN L., and ROBERT L. COLLINS, The Jackson Laboratory, Bar Harbor, Maine: *Genetics of audiogenic seizure in the housemouse.*—The finding that susceptibility to audiogenic seizures in mice can be induced in "seizure resistant" strains by exposure to a suitable sound during a sensitive age period forces a reconsideration of genetic studies in which the convulsible phenotype was ascertained by multiple exposures. It is conceivable that some of the differences of opinion regarding genetic control of seizure susceptibility may be based upon a failure to separate initial and sensitization dependent seizures. Crosses were made between a "resistant" strain, C57BL/6J, and a "susceptible" strain, DBA/2J. It was found that incidence of seizure on initial tests was compatible with homozygosity for a gene designated *audiogenic seizure prone* (*asp*) loosely linked with *b* in the eighth linkage group. Recombination is approximately 40%. Calculations from published data of other authors show complete agreement, although the linkage was not specifically noted in their publications. Analysis of the genetics of sensitization dependent susceptibility is complicated by the fact that *asp/asp* individuals convulse on first trial, so that their status with respect to the physiological basis of this phenomenon is not directly accessible. Nevertheless, genetic differences in efficiency of sensitization are found among the hybrids. The system is independent of *asp*, but as yet no clear choice is possible between a single and a multiple factor hypothesis. (Supported by PHS grant MH-11327 and an institutional allotment from IN-19, American Cancer Society.)

FUSCALDO, K. E., J. F. LECHNER and M. GRAHAM, Hahnemann Medical College, Philadelphia, Pennsylvania:—*Analysis of mutants in the hexose monophosphate pathway in* N. crassa.—Studies in this laboratory and by BRODY and TATUM have provided evidence that the *N. crassa* colonial mutants, *col-2* and *col-3* are defective for glucose-6-phosphate dehydrogenase (G6PD) and 6-phosphogluconic acid dehydrogenase (6-PGD), respectively. Nutritional studies have shown that both mutants revert to wild-type morphology when grown on carbon sources which by-pass the shunt. It appears that the lowered steady state level of NADPH in the colonial mutants is the limiting factor in growth. Substrates, metabolized by alternative routes which yield NADPH, support wild-type growth. The physical characteristics of both enzymes have been studied by polyacrylamide electrophoresis, immunochemical analysis, column chromatography and high speed centrifugation. The results of these studies will be presented. Genetic analysis of the mutants in the shunt pathway has been facilitated by the isolation of temperature sensitive colonial mutants (*cots*). Induction experiments indicate that both G6PD and 6PGD are coordinately controlled. The evidence that (1) *col-2* and *col-3* are closely linked, (2) their morphology is similar, (3) their response in nutritional studies is almost identical and (4) that *col-2* and *col-3* appear to be coordinately controlled suggests a possible role for this gene cluster in the development of *N. crassa* (Supported by PHS Grant AM 08061.)

GARCIA-BELLIDO, A. (introduced by E. B. LEWIS), California Institute of Technology, Pasadena, Cal.: *Cell lineage in the wing disc of* Drosophila melanogaster.—Induced somatic crossing-over was used to analyse the clonal development of the wing disc cells *in situ*. In two parallel experiments larvae and pupae of the genetic constitution *y/Df (1) sc⁸, w^{a}; mwh/Dp ()1;3) sc^{J4}, y+ jv* or *y/sta sn^{3}; mwh/+* were X-irradiated at different ages with 1000r. Somatic crossing-over leads to the formation of *y* bristle, *mwh* hairs– *jv* bristle or *y –sta sn^{3}* bristles twin spots.—The frequency of independent clones increases with the age of the larvae, reaching more than one hundred per wing disc in 4-hour old pupae, and subsequently diminishes to zero in 18-hour old pupae. Correspondingly, the number of cells per clone decreases with the age of the larvae and reaches the value of one about the time of puparium formation.—The number of *mwh* hairs deviates increasingly from the value of 2^{n} with clones larger than two cells.—The boundary of *mwh* clones follows straight rather than irregular lines and their shape is different for different regions of notum and wing.—In larvae older than the first instar, bristle and hair clones stop at the margin of the wing and do not continue from the dorsal to the ventral surface.—The size of the clones which contain bristles are smaller than the clones which differentiate only into hairs.—In the costal margin twin clones leading to identical bristles are most frequent in irradiated mature larvae, but not detectable after the time of puparium formation.—These results are discussed in terms of increasing specificity of cell determination during the growth of the imaginal wing disc. (Work supported by Gosney Fund, C.I.T.)

GARRICK, M. D. and J. P. CHARLTON, Department of Biology, University of Virginia, Charlottesville, Virginia: *Inheritance of genetically variant α and β hemoglobin chains in goats.*—Four phenotypes have been observed when hemolysates prepared from domestic goats are examined by zonal electrophoresis. One type (A/A) exhibits a single band of hemoglobin, while the other three types possess two bands, with the faster band corresponding to the single band. The double banded hemoglobin phenotypes can be distinguished as follows: (a) in A/B goats the faster band predominates and is indistinguishable in mobility from the Hb of A/A goats; (b) in a B/B goat the slower band is slightly predominant and corresponds to that of A/B goats, while the mobility of the leading Hb is very slightly reduced; (c) in an A/D animal the two hemoglobins are present in essentially equal proportions with the faster band apparently identical in mobility to the Hb of A/A goats, while the mobility of the trailing band is very slightly reduced. The hemoglobin chains from these animals have been separated by starch gel electrophoresis in 6M *urea*. Types A/B and B/B differ from types A/A by the presence of an additional kind of α chain while A/D differs in the β chain. The phenotypes of newborn A/A and A/B kids confirm these results. Crosses of types A/A × B/B lead to A/B progeny while A/A × A/D crosses yield parental types. Hence A/A and B/B are considered homozygous for hemoglobin structural genes while A/D and A/B are heterozygotes. Other crosses are consistent with these identifications. It is likely that the phenotypes for A/A, A/B and B/B goats reflect a gene duplication for α chain structural genes. (Supported in part by PHS Grant No. AM 10391 and FR 07094.)

GENEROSO, W. M., Biology Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee: *Chemical induction of dominant lethals in female mice.*—Eleven to thirteen-weeks-old T-stock females were injected intraperitoneally with one of the following sublethal doses: 325 mg/kg ethyl methanesulfonate (EMS), 150 mg/kg methyl methanesulfonate (MMS), 70 mg/kg N-methyl-N'-nitro-N-nitrosoguanidine (MNNG), or 4 mg/kg 2-methoxy-6-chloro-9-[3-(ethyl-2-chloroethyl) aminopropylamino] acridine dihydrochloride (ICR-170). The controls received an equal volume (1 ml) of Hanks' Balanced Salt Solution. Injected females were mated with (101 × C3H)F_1 males at selected intervals during the ½ to 19½ days postinjection test-period, killed 14 to 17 days after observation of the vaginal plug, and scored for the number of corpora lutea,