

Himoe, E. and L. Lowenstein. University of Wisconsin, Madison. Spontaneous sex-linked recessive lethals in *D. melanogaster*.

A series of spontaneous sex-linked recessive lethals have been recovered from a suspected "mutator" system, which unfortunately could not be maintained.

These lethals have been approximately localized, using an X-chromosome containing the markers *y*, *cv*, *m*, *f*, and *car*. No cytological analyses have been performed yet, but genetic analysis shows no obvious aberrations associated with any of them. The following is a list of these lethals by region, and their approximate positions within the regions, based on total counts of roughly 200 to 300 male progeny for each. Stocks of these lethals may be obtained from the Department of Zoology, University of Wisconsin, if anyone wishes them for further study.

Region	Lethal no.	Approximate location	Region	Lethal no.	Approximate location	
0 (no recombinants recovered between <i>y</i> and lethal)	1L1	covered by $sc^8 \cdot Y$		33L2	28.0	
	14L1	not covered by $sc^8 \cdot Y$		25L1	32.6	
	27L1	not covered by $sc^8 \cdot Y$		23L3	32.7	
	N31	not tested with $sc^8 \cdot Y$		N28	34.2	
1 ( <i>y</i> - <i>cv</i> )	23L2	1.4	3 ( <i>m</i> - <i>f</i> )	13L1	37.4	
	30L1	1.6		28L1	44.8	
	32L1	2.3		9L1	47.3	
	33L3	2.6		12L1	48.5	
	29L2	4.0		27L2	48.7	
	31L2	13.5		11L1	49.2	
2 ( <i>cv</i> - <i>m</i> )	5L1	16.3	23L1	51.7		
	14L2	19.7	N15	52.4		
	31L1	20.6	33L1	52.8		
	15L1	21.0	4 ( <i>f</i> - <i>car</i> )	28L3	62.1	
	4L1	21.5		no recombinants recovered between <i>car</i> and lethal	10L1	
	31L3	22.8		N30		
	3L3	23.2		N5		
	28L2	26.1				

Seeley, A. A., J. B. Peterson and M. H. Smoler. University of Wisconsin, Madison. Relative biological effectiveness of X-ray and gamma radiation.

The purpose of the experiment was to compare the relative biological effectiveness of 140 kvp X-rays to gamma rays delivered from a Cesium 137 source. The frequency of induced sex linked recessive lethals in *Drosophila* was observed using

the standard methods. Dose rate measurements were made using a high intensity Victoreen ionization chamber for Cesium and a regular ionization chamber for X-ray. Four series of tests were made using P1 Canton S males; in series one, the males were given 3200 r X-rays at a dose rate of 234 r/min; series two males were given an intense dose of 3200 r gamma at a dose of 466 r/min; series three males were given a dilute dose of 3200 r gamma at a dose rate of 6.9 r/min; series four was a control. Results showed a very significant difference in mutation induction between X-rays and both series of gamma, but no significant difference between the two gamma treated series. These results confirm an earlier study by Edington (1956, Genetics 41:814-821) on cobalt and X-rays, which showed a RBE of approximately 1.6.

Series	No. lethals/No. tests	% lethals $\pm$ % S.E.	Significance Test
1) X-ray	85/822	10.34% $\pm$ 1.065	Series 1 vs. 2 & 3 p<.001
2) Gamma dilute	55/974	5.65% $\pm$ 0.74	Series 2 vs. 3 p=0.17
3) Gamma intense	42/969	4.33% $\pm$ 0.655	
4) Control	0/139		