Clark, A.M. State University of Leiden, The Netherlands. Influence of the nutritional state of females on the frequency of X/O males recovered after matings with irradiated males.

Würgler and Maier (Mutation Res. 1972, 15:41-53) have reported a maternal influence on the frequency of X/O males obtained after irradiation of mature spermatozoa. The nutritional condition of the females might be an important factor in affecting the yield of X/O males, either by way of a quantitative effect on post-fertilization repair systems in the egg, or by way of qualitative differences between eggs produced by well-fed and under-fed females respectively.

2-3 day old males of the genotype y $B/B^S$ Y $y^+$ (the X-chromosome being derived from R(1)2 that opened out) were irradiated with 3000 R and then mated overnight to (a) females aged 6 days on standard, well-yeasted food medium, or (b) females aged 6 days on unyeasted honey-agar or sucrose-agar medium. After removal of the males, the females were allowed to lay eggs on standard food medium for an initial brood A (24 hours), followed by a further brood B (48 hours). The percent of X/O males obtained in experiments with three different kinds of females, together with the total progeny counts, are given in the table.

| Female genotype | Brood | Frequencies of X/O males from: well-fed females | | starved females | |
|---|---|---|---|---|---|
| X.Y. | A | 2.91% | (1,066) | 1.61% | (124) |
| | B | 1.40% | (358) | 0.78% | (1,032) |
| $ysn^3$ | A | 1.72% | (1,394) | 1.43% | (841) |
| | B | 0.83% | (1,330) | 0.44% | (1,113) |
| Oster | A | 0.83% | (3,721) | 0.21% | (1,404) |
| | B | 0.79% | (2,393) | 0.55% | (1,995) |

The trend is consistent in each case. A lower frequency of X/O males is recorded when the females are poorly nourished during the few days prior to egg-laying. This indicates that female nutritional condition is yet another factor which must be taken into account when comparing the frequencies of X/O males recorded from different experiments.

The finding that in 5 out of 6 experiments somewhat higher loss frequencies were recorded in brood A than in brood B is consistent with a recent observation of Würgler, Bürki, and Büchi (Abstr., 3rd Europ. Dros. Res. Conf., Sept. 1972, Milan, ed. Barigozzi) on the modification of a maternal effect by storage. Herskowitz (Genetics, 1963, 48;703-710) noted an increase of the II-III translocation frequencies in sperm that had been irradiated in undernourished females in comparison to that having been irradiated in well-fed females. The contrasting effect of undernourishment of the females on the rate of recovery of X-chromosome loss and translocations from irradiated spermatozoa, may be more than a mere coincidence. Both Proust, Sankaranarayanan, and Sobels (Mutation Res. 1972 16:65-76), Maier, Graf, Ulrich, and Würgler (Abstr. 3rd European Dros. Res. Conf., Sept. 1972, Milan, ed. Barigozzi) and Mendelson (unpublished) recorded such contrasting effects for loss of chromosomes and translocation, when applying various different modifications of the material environment.

This work received support from the J.A. Cohen Institute for Radiopathology and Radiation Protection and the Health Research Organization TNO. It was carried out in part under the Association of Euratom with the University of Leiden, Contract Nr. 052-65-I BIAN.

---

(Continued from preceding page)
ly we could not find again such a phenomenon in several other observations performed with the same strain; thus, we could not make a better study of the problem. In spite of this, we think that the importance of the present finding lies in suggesting that the superpolytenization, normally occurring over the entire genome, in some circumstances may partially affect a single chromosome; and, what is more relevant, it may be restricted to a well delimited part of the chromosome. Such a possibility can open good perspectives for the study of chromosomal physiology.

References: da Cunha, A.B., Z.M. França, A.M.A. Gonçalves, A. Hitelman and M. Garrido 1967, Rev. Brasil. Biol. 27:113-124.