

**Reproductive success of *Drosophila melanogaster*: natural populations from radioactively contaminated territories**O. Protsenko<sup>a</sup>, A. Kravets<sup>b</sup>, T. Mousseau<sup>c</sup> and I. Kozeretska<sup>d</sup>

<sup>a</sup>Taras Shevchenko National University, 64 Volodymyrska St, 64 Volodymyrska St, 03033 Kiev, Ukraine; <sup>b</sup>Institute of Cell biology and genetic engineering, National academy of science of Ukraine, 03022 Kiev, Ukraine; <sup>c</sup>Department of Biological Sciences, South Carolina State University, Columbia, SC 29208, United States of America; <sup>d</sup>National Taras Shevchenko University of Kyiv, Volodymyrska str., 64, 01033, Kyiv, Ukraine, 01033 Kyiv, Ukraine

mizgirevka@rambler.ru

*Drosophila* individuals were collected in autumn 2006 from sites in Ukraine with different levels of radioactive contamination. Flies were sampled near the cooling pond of Chernobyl Nuclear Power Plant with a radioactive background of 2100  $\mu\text{R/h}$ , the city of Chernobyl (100  $\mu\text{R/h}$ ), in Poleskoe (50  $\mu\text{R/h}$ ), Lubny (16  $\mu\text{R/h}$ ), Uman' (16  $\mu\text{R/h}$ ), Piryatin (15  $\mu\text{R/h}$ ), Odessa (14  $\mu\text{R/h}$ ) and Kyiv (13  $\mu\text{R/h}$ ).

The fecundity, scored as the average number of offspring produced by F1 females, was obtained for each population. Fecundity varied from  $19.06 \pm 3.87$  (Chernobyl cooling pond) to  $42.93 \pm 3.77$  (Poleskoe). The lowest fecundity was seen in the populations from the most radioactively contaminated sites. An exception was Poleskoe, whose larvae fed on substrate derived from less polluted areas. There was no relationship between fecundity and background contamination levels for populations from the relatively uncontaminated sites, as they varied by only 3  $\mu\text{R/h}$ .

Laboratory strains during 20 generations lived under chronic exposure (dose rate 1,2 - 12 mR/h) in terms of mini ?-field. The doses accumulated for 20 generations are in interval 0,1- 1 Gy. Fecundity index in control of Conton-S strain was  $60,54 \pm 1,9$ , higher than in natural populations. At the same time the fecundity index for Conton-S after chronic exposure with dose rate 12mR/h decline to  $24,87 \pm 1,36$ .

Active mobile genetic elements are known to cause gonad reduction in *Drosophilids*. Gonad reduction varied from 0 (which cannot be considered, as it less than 1%) to  $14 \pm 0.5\%$  in our populations. These levels of gonad reduction suggest mobile genetic elements are not active in any of the studied populations. Therefore the observed decrease in fecundity in populations from the city of Chernobyl and near the cooling pond of the Chernobyl reactor is not likely related to any elevated activity of mobile elements.