

AN EXPERIMENT IN PROGRESS WITH MOUSE POPULATIONS

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I have been asked to read into the record a brief description of the population-irradiation experiment recently begun at the Donner Laboratory. This experiment is now in the second generation after irradiation was begun.

Two irradiated and two control populations are maintained, each of which has 80 to 100 mating pairs of ICR albino mice. In each generation males are given 500r of acute gamma irradiation five to seven weeks of age and monogamously mated at 13 weeks after irradiation. Mating exposure is limited to 20 days. In one experimental group and its corresponding control, the progeny of the first litters are randomly mated. In each of the remaining two populations, a fixed number from each first litter is represented in the subsequent generation. Matings are then at random. This restriction on complete random mating reduces the rate of natural selection against recessive lethals by nearly one third and against other less severe mutations by nearly one half. Thus the interactions of two levels of mutation rate with two levels of selection rate will be studied.

It is expected that the principal populations will be maintained for at least ten generations. At generation intervals nonirradiated mice will be withdrawn to be sibmated or randomly mated, and their progeny tested for reproductive performance, resistance to stress, and behavioral characteristics.