

High levels of genetic change in rodents of Chernobyl

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We previously reported an elevated DNA substitution rate in the mitochondrial cytochrome *b* gene of voles from Chernobyl. Our conclusion was based on a higher level of variation in rodents living in the zone of radioactivity than in rodents from control regions. Those DNA sequences were obtained by manual sequencing of cloned PCR products. We have subsequently attempted to replicate these findings with direct, automated sequencing of PCR products from the same animals. We found discrepancies between these sequences generated by direct automated methods and those previously reported. Re-examination of the original autoradiograms revealed that the elevated levels of variation were largely a product of human error in scoring, aligning and recording the sequences. This error has been confirmed by automated sequencing of a selected sample of the original clones on which the manual sequences were based. There remains a higher rate of substitution in the nine animals from the radioactive zone than in the ten animals from the control population, but the difference is not statistically significant with this sample size. There is variation among the clones from the mice living in the radioactive regions, including clones from the embryos. The two mutations reported in the embryos do not qualify as substitutions based on the standard set forth in the methods and materials that changes be present in multiple clones. The significance (if any) of this variation remains to be determined. The data do not support a mutation rate as high as that reported, and we retract that conclusion. □