

known about such mechanisms, the model proposed here is simple and potentially useful in analysing the complicated forces concerning extranuclear genomic evolution.

Thanks are due to the University of Washington for giving me unforgettable experiences. I am especially grateful to M. Slatkin and J. Felsenstein for their hospitality and interest on this subject. I am much indebted to J. B. Walsh whose comments were most useful to remove several obscurities in the early version of this paper. This work is supported in part by NSF grant no. DEB-8120580. Offprint requests to: National Institute of Genetics, Mishima, Shizuoka-ken 411, Japan.

ERRATUM

In Takahata & Slatkin (*Genetical Research* 1983, **42**, 257–265), two sentences should be read as:

but, in contrast, the configuration of the genome and the mode of transmission both make a large difference (on page 257, lines 11–12 up)

Contribution no. 1528 from the National Institute of Genetics, Mishima, Shizuoka-ken 411, Japan (on page 264, above REFERENCES).

REFERENCES

- ANDERSON, S., BANKIER, A. T., BARRELL, B. G., DE BRUIJN, M. H. L., COULSON, A. R., DROUIN, J., EPERON, I. C., NIERLICH, D. P., ROE, B. A., SANGER, F., SCHREIER, P. H., SMITH, A. J. H., STADEN, R. & YOUNG, I. G. (1981). Sequence and organization of the human mitochondrial genome. *Nature* **290**, 457–465.
- BEALE, G. H. & KNOWLES, J. K. C. (1978). *Extranuclear Genetics*. London: Edward Arnold.
- BIBB, M. J., VAN ETEN, R. A., WRIGHT, C. T., WABERG, M. W. & CLAYTON, D. A. (1981). Sequence and gene organization of mouse mitochondrial DNA. *Cell* **26**, 167–180.
- BIRKY, C. W., JR. (1978). Transmission genetics of mitochondria and chloroplasts. *Annual Review of Genetics* **12**, 471–512.
- BIRKY, C. W., JR. (1983). Relaxed cellular controls and organelle heredity. *Science* **222**, 468–475.
- BLANC, H., WRIGHT, C. T., BIBB, M. J., WALLACE, D. C. & CLAYTON, D. A. (1981). Mitochondrial DNA of chloramphenicol-resistant mouse cells contains a single nucleotide change in the region encoding the 3' end of the large ribosomal RNA. *Proceedings of the National Academy of Science, U.S.A.* **78**, 3789–3793.
- BROWN, W. M., PRAGER, E. M., WANG, A. & WILSON, A. C. (1982). Mitochondrial DNA sequences of primates: tempo and mode of evolution. *Journal of Molecular Evolution* **18**, 225–239.
- CHAPMAN, R. W., STEPHENS, J. C., LANSMAN, R. A. & AVISE, J. C. (1982). Models of mitochondrial DNA transmission genetics and evolution in higher eucaryotes. *Genetical Research* **40**, 41–57.
- CROW, J. F. & KIMURA, M. (1970). *An Introduction to Population Genetics Theory*. New York, Evanston and London: Harper & Row.
- GILLHAM, N. W. (1978). *Organelle Heredity*. New York: Raven Press.
- GILLHAM, N. W., BOYNTON, J. E. & LEE, R. W. (1974). Segregation and recombination of non-mendelian genes in *Chlamydomonas*. *Genetics* **78**, 439–457.
- KEARSEY, S. E. & CRAIG, I. W. (1981). Altered ribosomal RNA genes in mitochondria from mammalian cells with chloramphenicol resistance. *Nature* **290**, 607–608.
- KIMURA, M. (1957). Some problems of stochastic processes in genetics. *Annual Mathematical Statistics* **28**, 882–901.
- LANSMAN, R. A., AVISE, J. C. & HUETTEL, M. D. (1983). Critical experimental test of the possibility of 'paternal leakage' of mitochondrial DNA. *Proceedings of the National Academy of Science, U.S.A.* **80**, 1969–1971.