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The mitochondrial and ribosomal DNA components of oocytes of *Urechis caupo*

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Summary

Oocytes of *Urechis caupo* contain 10 μμg DNA (Schwartz, 1969). The oocytes' 4 chromosome sets account for 4 μμg DNA, and the remaining 6 μμg were shown to be mitochondrial DNA. All the DNA from isolated mitochondria of *Urechis* oocytes and 60% of the whole oocyte DNA reassociate rapidly after denaturation, share some sequence homologies with chick mitochondrial DNA, and contain circular molecules. The contour length of these circular molecules is 5.85 μ. Mitochondrial DNA of *Urechis* is closely similar in physical structure and size to mitochondrial DNA of *Xenopus laevis* and other vertebrates.

The DNA coding for ribosomal RNA (ribosomal DNA) is amplified in *Urechis* oocytes. Ribosomal DNA of *Urechis* was measured by hybridization with *Xenopus* ribosomal RNA, which is homologous to about 60% of the ribosomal sequences in *Urechis*. The concentration of ribosomal DNA in the nuclear component of oocyte DNA is about 6 times higher than in sperm DNA. The oocyte therefore contains about 24 haploid equivalents of ribosomal DNA, which are localized presumably in its single large nucleolus.

SLS, sodium lauryl sulfate; rRNA, ribosomal defined as 28 S; RNA, defined as 18 S RNA; rDNA ribosomal DNA, defined as the DNA component containing the sequences homologous to rRNA; M-DNA, mitochondrial DNA; GC content, content in deoxyguanylic acid and deoxycytidylic acid; SSC, 0.15*M* sodium chloride 0.015*M* sodium citrate; MAK, methylated albumin adsorbed on kieselguhr