

CENTROMERE ORGANIZATION AND EVOLUTION OF CHROMOSOME 8

As pointed out in an earlier post (The X-chromosome telomere-to-telomere, no gap), the third generation of DNA sequencing technology allows the assembly of an entire chromosome end-to-end, including the centromeric region, which had not been possible with previous sequencing approaches. [Logsdon et al.](#) (Nature) report, for the first time, the telomere-to-telomere sequence of an autosome, chromosome 8. The most interesting part of this work concerns the centromere, of which the sequence has been investigated for its organization as well as for its evolution. The latter task was accomplished by comparing the human sequence to the one of the homologous centromeres of chimpanzees, orangutans and macaques. The comparison showed that the alpha higher-order repeats are located peripherally and are older than the centrally located monomeric alpha satellites. Comparative molecular cytogenetic analysis had already shown that alpha satellite DNA evolves rapidly ([Archidiacono et al. 1995](#)). Logsdon et al. now report that the alpha satellite mutation rate is 2.2 times that of the rest of the genome.