International Symposium

MMGPB

MOLECULAR MECHANISMS OF GENETIC PROCESSES AND BIOTECHNOLOGY

MOSCOW 18 - 21 NOVEMBER 2001
MINSK 22 - 24 NOVEMBER 2001
Nucleosome Replication is Semiconservative

B.A. Kurchii

Institute of Plant Physiology and Genetics, 31/17 Vasylkivska Str., 03022 Kiev, Ukraine, Email: kurchiiba@yahoo.com

We proposed (Kurchii, 1998) that three nucleosomes are disposed side by side into a row and form a column across a chromosome. A model is based on the premise, that linker DNA does not wrapped around a single nucleosome, it is situated between two layers of nucleosomes. A nucleosome is a
parallelepiped of 11x11x6-nm. Three mononucleosomes form a triplet that has a size 33x11x6-nm (or 30x10x6-nm). DNA in the ribbon-like structure is disposed onto the plane of such nucleosomal triplet in the snaky-like (zigzag) form (fig.1A, the upper row of nucleosomes is absent) and is covered by another nucleosomal triplet (fig.1B). Thus, a basic unit of the chromatin is the structure formed by two nucleosomal triplets that form a column across the chromosome. Such columns are known as compact 30-nm chromatin fibers. During the S-phase of the cell cycle, both DNA (fig.1C) and mononucleosomes (fig.1D) are duplicated in a semiconservative manner. New formed nucleosomal triplets bind to the new synthesized DNA strands (daughter strands of DNA). Hence, the parental nucleosomes are not disrupted during passage of the replication fork.

REFERENCE