Матеріали
ІХ Українського
біохімічного з’їзду
24-27 жовтня 2006 р.,
Харків

Том 1

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ON THE MOLECULAR NATURE OF THE LOCK AND THE KEY FOR THE EUKARYAL GENES/CLUSTERS

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Earlier we have postulated that gene/cluster locks and keys in eukaryal chromosomes are composed from linear two strands of DNA that are disposed from the front of each column assembled from the nucleosomal triplet (Kurchii, 1998, 2004). The linear fragment of DNA termed as the key is attached to DNA-polymerase and the corresponding linear fragment of DNA termed as the lock is bonded to the gene/cluster. Each gene/cluster lock and each key begin with adenine (A) or thymine (T) bases. The starting point of DNA synthesis is the formation of non-covalent hydrogen bonds between paired A and T bases.
of the lock and the key at the beginning of doubled strands of DNA (TA or TATA) and also between one pair of AT bases that can be disposed at different distance to the end of the lock and the key (see figure). The hydrogen bond is formed between the hydrogen at N6 of the adenine and the oxygen at C2 of the thymine.

This process leads to the division of doubled strands of DNA in the lock into two single strands of DNA. In accordance to the next scenario synthesis of DNA is performed by two DNA-polymerases, i.e. each strand of DNA is accomplished (doubled) independently by the single DNA-polymerase. One strand (leading) of DNA is earlier completed in time and other (lagging) only when daughter nucleosomal triplets are attached to newly synthesized DNA at the first strand of DNA.