

Biology for MHTCET

Tricky and Challenging MCQs for serious students!

PUZZLE 1 – 08 Sep 2010

Q. In a given region of DNA molecule, nucleotide sequence is ATCG, but that on complementary strand is not TAGC. Explain how.

A. Commonly, students answer this as TAGC, which is wrong.

The fundamental principle involved in answering this question is to know that sequences of nucleic acids are represented in a 5' to 3' direction. This is the reason why:

1. The terminal sequence of three nucleotides on t-RNA is read as CCA, and not ACC.
2. Sequence of initiation codon is read as AUG and not GUA. Similarly for other punctuation codons viz. stop codons.
3. Illustrations of palindromes.

Therefore, in the question statement where the given sequence is said to be ATCG, it should be interpreted as A nucleotide at the 5' end and G nucleotide at the 3' end. Since the opposite strand is anti-parallel, the sequence in that region should be **presented** as CGAT (C nucleotide at 5' end and T nucleotide at 3').

It is important to realize that the above way of presentation does not change any rules of complementary pairing. It merely affects the way of writing or presenting the sequence. A still pairs with T, and C pairs with G (and vice-versa).

