

c-DNA or COPY DNA or COMPLEMENTARY DNA

DEFINITION → The DNA formed on messenger RNA has been called the c-DNA or copy DNA.

PROCESS OF c-DNA FORMATION → c-DNA is formed as a result of reverse transcription followed by duplication of the DNA to form the double stranded DNA molecule. The steps are as follows—

1. m-RNA is formed with the process of transcription.

2. The m-RNA is annealed with primer oligo.

3. It is subjected to reverse transcription. The process is catalysed by the enzyme reverse transcriptase.

4. The m-RNA is now treated with suitable alkali and it is removed.

5. The single stranded DNA is allowed to replicate with the help of the enzyme DNA polymerase.

6. The nicks of DNA are cleaved with the help of S₁ nuclease. This results in formation of duplex DNA which is a copy of original m-RNA. It is called c-DNA.

5' ————— m-RNA ————— 3'

↓ anneal with primer oligo (dT)
AAAA An 3'

5' —————
end of c-DNA
hook round. ————— 3'

TTTT Tn 5'
↓
oligo (dt) primer

3' —————
RNA —————
DNA —————
AAAA An
TTTT Tn 5'

↓ treat with alkali
to remove RNA

hook extended ————— TTTTT Tn 5'

↓ DNA Polymerase

5' ————— hook extended ————— 3'
TTTTTT Tn 5'

↓ SI nuclease to
cleavage hook

3' ————— hook cleavage
hook extended ————— 3'
TTTTTT Tn 5'

This is duplex DNA copy of original mRNA.

Synthesis of c-DNA from m-RNA.