王子堅

1.Which of the following statement is the most precise modern definition

of gene?

(A)a segment of genetic material that determines one phenotype

(B)a segmemt of genetic material that codes for one enzyme

(C)a segment of genetic material that codes for one polypeptide

(D)a segment of genetic material that codes for one polypeptide

or RNA product

ANS:(D)

2.The fundamental repeating unit of organization in an eukaryotic chromosome is

(A)the centrome (B)the microsome (C)the nucleosome (D)telomere

Ans：(C)

說明：(centrome應為centromere)

(A)centromere:有絲分裂或減數分裂中同源染色分體附著的縮小區域

(B)microsome:微粒體。存在細胞質中，可合成蛋白質

(C)nucleosome：形成chtomatin過程中，最基本的unit核小體會形成一個有連續性的

高整齊度的結構

(D)telomere:端粒。同一DNA序列重複，以保護DNA序列

3.The lingking number of a closed-circular, double-stranded DNA mulecule may

be changed by:

(A)underwind without the breaking of any phosphodiester bonds.

(B)supercoiling without the breaking of any phosphodiester bonds.

(C)breaking the hydrogen bonds in the DNA.

(D)breaking one of the strands, unwinding or rewinding the DNA, then

rejoining the strands.

Ans:(D)

4. Ecoli DNA Pol1, but not Pol2, Pol3 can conduct "nick translation"

synthesis of DNA. This is because Pol1 possesses?

(A) 3'to 5' exonuclease

(B) 5'to 3' exonuclease

(C) endonuclease

(D) polymerace activity

ANS:(B)

5.From our current understanding of all the known DNA polymerases,

the DNA chain elongation at a replication fork can not be

(A)continuous on the leading strand, but discontinuous in the lagging strand

(B)discontinuous on both strands

(C)continuous on both strands

(D)all of above

ANS:(C)

7.The major constituents of the E.coli primosome are:(A)

(A)the DnaB helicase and DnaG primase

(B)the DNA gyrase and DnaB helicase

(C)the DNA gyrase and DnaG primase

(D)the DnaG primase and DnaA protein

ANS:(A)

9.Transposition can be distinguished from other types of

recombination in that the target site in the recipient DNA becomes：

(A)deleted

(B)duplicated and located in each side of the insertion with the same order

(C)duplicated and located in each side of the insertion with inverted order

(D)amplified.

Ans(B)

10.Recombination between two inverted repeats in the same DNA molecule can

generate:

(A)inversion of the DNA fragment flanked by the repeats

(B)deletion of the DNA fragment flanked by the repeats

(C)duplication of the DNA fragment

(D)none of above

ANS:(A)

12. Dam-dependent mismatch repair system can repair mismatch(eg. GT) generated

after replication. What is the role of methylation by DNA adenine

methylation (dam) in the repair enzymes

(a) to induces the synthesis of region enzyme

(b) to inhibit DNA chaion enlongation

(c) to stimulate DNA recombination

(d) to distinguish mehtyl-synthesized strand from the old template strand

13.The Ames test is used to

(A)detect bacterial virus

(B)determine the rate of DNA replication

(C)exam the potency of antibolitics

(D)measure the mutagenic effect of various chemical compound

ANS:(D)

14.Direct repair of 3-methylcytosine requires which of following?

(A)photolyase

(B)AlkB dioxygenase

(C)methyl transferase

(D)3-methylcytosine transferase

ANS:(B)

15.Which subunit is not require for elongation of RNA polymsease?

(A)beta (B) apha (c)w (D) sigma

ANS:(D)

16.Briefly describe the function of RecBCD and RecA in the homologous

recombination.

RecBCD has the function of helicase and nuclease.

RecB(3’to 5’) RecD(5’to 3’) RecC combine with chi sequence and cleave 5’terminus

RecA promote joint molecule formation and strand exchange

17.原本在實驗室單用DNA的polymerase做出來的DNA 出錯率是10^-4

但生物體作出來的是10^-8～10^-9 為什麼?(中譯+大意)

趙清貴

1.Which subunit is not required for elongation activity of RNA polymerase?

(A) α (B) β (C) δ (D) σ

ANS:(D)

2.Which enzyme synthesizes rRNA in Human cell?

(A)mRNA ribonuclease (B)RNA polymerase I (C)RNA polymerase II

(D)RNA polymerase III

4.Which RNA sequence is encoded from DNA template 5'-ATTCGC-3'

(A)5'-GCGAAU-3'

(B)3'-GCGAAU-5'

(C)5'-AUUCGC-3'

(D)5'-UAAGCG-3'

ANS:(A)

6.The following evidence involve ribozyme activity except

(A) splicing of tetrahymena rRNA

(B) splicing of E. coli M1 tRNA

(C) L-19 enzyme activity

(D) splicing of yeast mRNA

ANS:(D)

7.Which is NOT correct about RNA splicing?

(A) Group Ⅲ(pre-mRNA) involves spliceosome

(B) Self-splicing involves ribozyme activity

(C) Group Ⅰ involves outside guanosine 3'OH as nucleophille

(D) Group Ⅱ involves integral adenosine 3'OH as nucleophile

ANS: (D)

8.Which statement is correct about tRNA?

(A) CCA at 3'end is not encoded by tRNA gene

(B) CCA at 3'end appears in primary tRNA

(C) its anticodon matches with codon on mRNA

(D) it carries specific amino acid by covalent bonding at 5'end

ANS:(A)

10.Which factor is used during initiation of protein synthesis?

(A)sigma (B)EF-Tu (C)IF-I (D) EF-G

ANS:(C)

14.Which restriction endonuclease opened DNA end is unliked to the ligand

to PvuII opened DNA?(reffering to the table 29-2)

(A)BamHI (B)EcoRV (C)PvuII (D)HaeIII

ANS:(A)

15.operon hypothesis is proposed to the corrdinate regulation of related

metabolism.fill the most relative answer from the pool:

pool:[arac-arabinose、lactose、operator、CRP、

trp leader sequence、inducer、tryptophan]

regulon :: CRP suppressor :: lactose

16.(1)What is the predicted amino acid sequence, by first reading frame

of mRNA:AUGCCGAAGUUC? Ans:Met-Pro-Lys-Phe

(2)By second reading frame of mRNA:AUGCCGAAGUUC? Ans:Cys

(3)何種RNA序列會轉譯出Met-Phe-Trp? Ans:AUGUUUUGG & AUGUUCUGG

(4)what are the two codons recognizes by tRNA with anticodon GGA?

(5)胺基酸Met-Phe-Trp的mRNA?

(6)give two codons which match a tRNA with anticodon IGC?