臺北醫學大學 九十 學年度第 一 學期期末考試題紙 p1

系級	科目	授課教師	考試日期	學號	姓名
保四 保研一	分子生物學	趙振瑞	91 年 1 月 8 日第 3,4 節		

I. 簡答題：(30%)

1. 請寫出 the reaction of aminoacyl-tRNA synthetase (包括 2 steps and overall reactions、反應物與生成物名稱及最後主要產物之結構)。(10%)

2. 請寫出此 prokaryotic DNA antisense strand(不含 introns)經 translation 後，nascent peptide 之 amino acid sequences，並註明 N 端與 C 端(假設於 5’端已出現 Shine-Dalgarno sequence)。(10%)
   5’----------GTGATCATGTTTCAGTGCCGAATGACCATCTAATAACGAC-3’

3. 請簡述 SOS response turns on 之機轉(hint: Lex A 之功能與 Rec A 之角色)。(10%)

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II. 填充題：(26%)(每格一分)

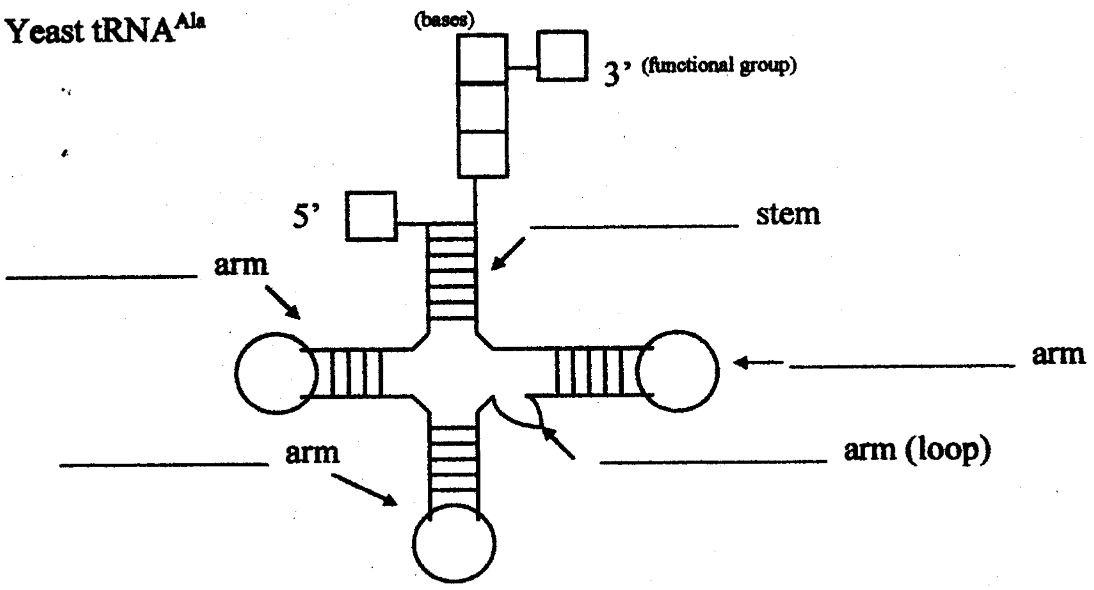
1. Comparisons of prokaryotic and eukaryotic ribosomes and rRNAs：

Characteristics	Eukaryotes	Prokaryotes
size of ribosome complex	______ S	______ S
size of large subunit	______ S	______ S
rRNA(s) in large subunit	______	______
size of small subunit	______ S	______ S
rRNA (s)in small subunit	______	______

2. Mismatch repair mechanism:

Protein(s)	Function(s)
______	ATP-dependent binding and translocation
⇩	⇩
UvrC	______
⇩	⇩
______	Unwind dsDNA
⇩	⇩
DNA polymerase	______
⇩	⇩
______	______

3. Yeast tRNA^{Ala}



臺北醫學大學 九十 學年度第 一 學期期末考試題紙

系級	科目	授課教師	考試日期	學號	姓名
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III. 配合題：(44%)(每題 2 分)(無重複配對且為單一選項)

______ a. tRNA nucleotidyl transferase

______ b. peptidyl transferase

______ c. donor of formyl Met in prokaryote

______ d. IF-2

______ e. EF-Ts

______ f. RF-1

______ g. eIF-4F

______ h. synonyms

______ i. diphtheric toxin

______ j. heme-controlled inhibitor

______ k. puromycin

______ l. SRP

______ m. KDEL receptor

______ n. DNA glycosylase

______ o. interferon

______ p. wobble hypothesis

______ q. photolyase

______ r. Holliday recombination model

______ s. Shine-Dalgarno sequence

______ t. alkyltransferase

______ u. Rec A

______ v. χ site

1. binds at or near 5’ cap of mRNA
2. binds to EF-Tu
3. binds to GTP and aminoacyl tRNA
4. binds to GTP and initiator tRNA
5. binds to GTP and protein signal sequence
6. CCA and CCG
7. CCA and CGA
8. enzyme to repair alkylated bases
9. enzyme to directly repair thymine dimers
10. forms eIF-2 • GTP
11. forms eIF-2-P • eIF-2B
12. hydrolizes the glycosidic bond
13. hydrolizes the hydrogen bond
14. inhibits chain elongation in eukaryotes
15. inhibits chain initiation in eukaryotes
16. inhibits chain elongation in prokaryotes
17. inhibits chain initiation in prokaryotes
18. N^{10}-formyl tetrahydrofolate
19. N^5,N^{10}-methylene tetrahydrofolate
20. purine-rich sequences on mRNA
21. pyrimidine-rich sequences on mRNA
22. sorting ER proteins
23. sorting secretory proteins
24. the site of increased DNA mutation
25. the site of increased recombination
26. transfers a peptide to aminoacyl tRNA
27. transfers an amino acid to tRNA
28. transfers nucleotides to tRNA
29. UAG recognition
30. UGA recognition
31. via 3’ end invasion to cross strand
32. via 5’ end invasion to cross strand
33. with ATPase activity
34. with endonuclease activity
35. with helicase activity
36. wobble position at the first codon on mRNA
37. wobble position at the third codon on mRNA

【附表一】 p4

The Standard Genetic Code

First Position (5‘ end)	Second Position				Third Position (3‘ end)
	U	C	A	G	
U	UUU Phe			UGU Cys	U
	UUC Phe	UCC Ser		UGC Cys	C
	UUA Leu	UCA Ser			A
	UUG Leu				G
C	CUU Leu	CCU Pro		CGU Arg	U
	CUC Leu	CCC Pro		CGC Arg	C
	CUA Leu		CAA Gln	CGA Arg	A
	CUG Leu		CAG Gln	CGG Arg	G
A	AUU Ile	ACU Thr			U
	AUC Ile	ACC Thr			C
	AUA Ile	ACA Thr	AAA Lys		A
			AAG Lys		G
G	GUU Val		GAU Asp		U
	GUC Val		GAC Asp		C
			GAA Glu		A
			GAG Glu		G