ID: Name:

1. Paul Berg, 2. Griffith, 3. MacLeod& McCarty, 4. Cohen & Boyer, 5. Hershey & Chase, 6. F. Sanger, 7. D. Baltimore, 8. M. Nirenberg, 9. Shine & Dalgarno, 10. Sung-Hou Kim, 11. Arthur Kornberg, 12. Roger Kornberg, 13. Craig Venter, 14. Francis Collins, 15. Bill Clinton, 16. Barbara McClintok, 17. Bacillus subtilis, 18. Streptococcus pneumoniae, 19. Hemophilus influenza, 20. Escherichia coli, 21. Mycoplasma gentalium, 22. S. cerevisiae 23. riboswitches, 24. catabolite repression, 25. attenuation, 26. Lac Operon, 27. Trp Operon, 28. Ara Operon, 29. sigma factor, 30. small regulatory RNA, 31. CAP, 32. quorum sensing, 33.

* Using above list, find the most appropriate keyword(s) in following questions (multiple choices are possible) (Questions 1~16)

sporulation, 34. cell cycle, 35. two component signal transduction, 36. phophorelay systems

	ex) proposed transformation principle ANSWER: 2 (Griffth)	ANSWER
1	firt determination of 3D structure of tRNA	
2	blender experiment using bacteriophage (DNA as a genetic material)	
3	proposed that transfromation priciple is DNA	
4	characterization of DNA polymerase	
5	the first sequenced bacterial genome in 1995	
6	characterizaition of RNA polymerase	
7	discovery of transposon	
8	making firt recombinant DNA	
9	inventing dideoytermination in DNA sequencing	
10	first usage of plasmid vector	
11	identification genetic codes	
12	Transcriptional regulation	
13	Translational regulation	
14	Global regulatory system	
15	Positive control	
16	Negative control	

*True or False (Questions 17~38)

17	Because DNA synthesis occurs in only 1 direction, one strand of DNA is synthesized continuously and the other is synthesized in a series of fragments.	
18	All genes in E. coli require posttranscriptional modification.	
19	Archaea have the same characteristics of transcription as bacteria.	
20	DNA polymerse I also functions in the removal of mismatched bases as soon as they are added before the next base is incorporated.	
21	Intercalating agents distort DNA so that missense mutations normally occur.	
22	Base analogs are structurally similar to the bases found in DNA but when incorporated into a growing DNA molecule, they will pair with the wrong base at the next replication.	
23	Transposable elements are unable to cause mutations in the host cell.	
24	The simplest transposable element is an insertion sequence that contains inverted repeat sequences at each end and a gene encoding transposase.	
25	In Hfr conjugation, chromosomal genes are transferred in addition to the F factor.	

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20	DNA molecules can be synthesized outside of cells.	
27	It is impossible to express gene products from eucaryotic genes in bacterial cells.	
28	The name of restriction endonuclease enzymes is derived from the name of the bacterium producing the enzyme.	
29	Horizontal gene transfer is transfer from parent to offspring.	
30	A putative gene is a sequence of nucleotides at least 100 codons in length with a ribosome binding site that is interrupted by a stop codon.	
31	Parasitic bacteria typically possess many more metabolic genes than do free-living bacteria because they are living in a host.	
32	In the mechanics of conjugation, exclusive of gene transfer, Hfr and F ⁺ strains behave the same.	
33	The conjugation bridge in an Hfr X F mating usually breaks before chromosome transfer is complete; however, because at least part of the plasmid is transferred first, the recipient becomes F ⁺	
34	Environmental genomics is sometimes called metagenomics.	
35	For most genes, coding information is found in both strands.	
36	All genes on the same DNA molecule use the same strand of DNA for their coding information.	
37	In the presence of both glucose and lactose, the lactose repressor is not bound to the operator and the genes of the lactose operon are expressed.	
38	The term "proteome" refers to the complete amino acid sequence of a protein.	
	repressor & activator, effector, shine-delgarno, chaperones, polycistronic, promoter, intein, ribozyme, pribnow box, regulatory, hypermutation, competent, prophage, induced, F, inducer, corepressor, constitutive, operator, promoter, catabolic, anabolic, metabolic, parabolic	
	* Fill the blank using above list.	
39	the expression of the downstream genes without affecting the amino acid sequences of the gene	
	products.	
	The term refers to the abnormally high rate of mutation that results from the activation of specific mutator genes	
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Walker said it would not be adopted to treat AIDS patients. Why?

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* from Watson & Crick's Nature paper

50	Following is quoted from Nature paper written by Jim Watson & Francis Crick in 1953. Fill the blank.
	"There is a residue on each chain every ()Å, in the z-direction. We have assumed an angle of) between adjacent residues in the same chain, so that the structure repeats after () resideus on each chain, that is, after 34Å. The distance of a phosphorus atom from the fibre axis is 10Å"
51	What is the central dogma of molecular biology?
52	What is the biological role of restriction enzymes in the cell?
53	What are three general correction mechanisms for mutations in the living organisms?
54	Bacteria growing asexually have a limited genetic variation which may not be enough to adapt to the environment. To overcome this disadvantage, Bacteria can exchange their genetic materials by horizontal gene transfer (HGT). What are three general mechanisms for this HGT?
55	What is the definition of white, green and red biotechnology?
56	From a given sequence, identify all possible reading frames. 5'-AACGAGTATTCGAGGGGC-3' (template strand)
57	You have a restriction enzyme recognizing a specific site of 6 bases. When you use this enzyme to digest the genome of <i>E. coli</i> (3.8Mbps), how many fragment can be made theoritically if A,T,G,C are found equal in <i>E. coli</i> genomic sequence?
	*수고하셨습니다. Good Luck!