

BT-301

1ST EXCELLENT ZOOLOGIST

1- Structual instability of plasmids may arise by deletion or arrangements of …….

- **DNA**

2- Major screening strategies involve ……

- Genetic methods
- Sequence dependent screenings
- Screening expression libraries
- All of these

3- Functional complementation also possible in …

- Transgenic animals and plants

4- Gram-negative bacteria such as E. coli have a ….

- Complex wall membrane

5- In chromosome jumping the DNA of interest is identified cut into fragments with restriction enzymes and ……..

- Circularized

6- ……. Depends upon transcription of appropriate gene, efficient translation of mRNA and in many cases, post translational processing and compartmentalization of nascent polypeptide.

- Synthesis of functional protein

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7- **Immunochmical screening involves the use of ……..**
- Antibodies

8- **If DNA liberary is established using expression vectors each individual clone can be expressed to yield a …….**
- Polypeptide

9- **One way of increasing the expression of a clone gene is to increase the number of the ……..**
- Plasmid copy number

10- **Complementarity of Shine Dalagamo (S-D) sequence with 16s r RNA can affect the …..**
- Rate of translation

11- **This is the process by which a particular DNA sequence compensates for a missing function in a mutant cell and thus restores the wild type phenotype.**
- Functional complementation

12- **Synthesis of c DNA from RNA is done using …**
- RT+ PCR

13- **To isolate specific clone PCR is carried out with gene specific primers.**
- Gene specific primers

14- **Expression from a strong promoter can represent …… of cloned gene product of total cell protein.**
- 20-40%

15- **Benton and Davis (1977) devised a method called.**
- Plaque lift

16- **pBR322 is an example of in_____constructed cloning vehicle.**
- Intro
- Extro
- **Vitro**
- In-extro

17- **It is difficult to clone DNA segments longer than about_____when plasmids are used as the vector**
- 10,000 bp
- **15,000 bp**
- 20,000 bp
- 25,000 bp

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18- **Plasmid_____has a number of characteristics that make it suitable as cloning vehicle.**

a. pBR322
b. pBS322
c. pRR322
d. pBR232

19- Over the years numerous different derivatives of_____have been constructed.

a. pBR232
b. pRR322
c. pBR322

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d. pBS322

20- pUC19 carrying sites for many different_____endonucleases

a. addition
b. active
c. moving
d. restriction

21- Charon 4A and 16 Each has the lacZ gene, encoding enzyme βgalactosidase .

22- Connecting the two lambda fragments to foreign DNA by using_____.

a. DNA ligase
b. Polymarise
c. RNA
d. Polymarise II

23- Packaging in vitro yields about_____of vector DNA

a. 104 plaques/ µg
b. 105 plaques/ µg
c. 106 plaques/ µg
d. 107 plaques/ µg

24-Plasmids have been constructed which contain a fragment of λ DNA including_____.

a. Sin site
b. cos site
c. tan site

25- Cosmids are particularly attractive vectors for constructing libraries of _____ fragments .

a. eukaryotic genomic

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b. prokaryotic genomic
c. phynotype

26- Modified schemes for cloning in Cosmid vectors devised by Ish-Horowicz and Burke in _____

a. 1980
b. 1981
c. 1982
d. 1983

27- Phasmid vectors are_____of plasmid and ʎ phage sequences .

a. Separation
b. Combination
c. Addition
d. Davison

28- Bacterial artificial chromosomes are simply plasmids designed for the cloning of very long segments of DNA_____.

a. 200,000 to 300,000 bp
b. 100,000 to 300,000 bp
c. 150,000 to 400,000 bp
d. 160,000 to 350,000 bp

29- Yeast artificial chromosomes have sites where very_____fragments can be inserted

a. Large RNA
b. Messenger RNA
c. Large DNA
d. Small DNA

30- YACs with inserts more than_____are nearly as stable as normal cellular chromosomes

a. 140,000 bp
b. 130,000 bp

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c. 120,000 bp
d. 150,000 bp

31- Vectors that can replicate and are stably maintained in two or more unrelated host organisms are called shuttle vectors

a. shuttle vectors
b. clone vectors
c. double vctors
d. vaccines

32- Any cell based cloning procedure has_____essential parts

a. three
b. four
c. five
d. six

33- Genome size (kb) of human is_____.

a. 1.8 x 10^6
b. 2.8 x 10^6
c. 3.8 x 10^6
d. 2.8 x 10^6

34- **PCR with specific primers could be used to_____.**

a. isolate genes
b. break genes
c. remove genes

35- **High molecular weight genomic DNA is digested with_____.**

a. pBR322
b. Sau3AI.

36- cDNA is prepared by reverse-transcribing cellular_____.

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a. DNA
b. RNA

37- **_____are rare in bacteria but occur in genes of higher eukaryotes**

a. Introns
b. Exrons

38- _____is a sensitive means for detecting, quantifying and cloning specific cDNA molecules

a. ST-PCR
b. RT-PCR

39- Plasmid and_____vectors carry drug resistance or nutritional marker

a. DNA
b. cosmid

40- Grunstein and Hogness developed a screening procedure in_____.

a. 1974
b. 1975
c. 1976
d. 1977

41- **Screening by hybridization can be monitored by_____.**

a. Autoradiography
b. Radiology
c. Hybridization

42- A_____genomic fragment must be found as a starting point for the walk .

a. Vector
b. Cloned

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c. Clear

43- Chromosome jumping involving a series of_____manipulations.

a. Chemical
b. Biological
c. Biochemical

44- Chromosome jumping is in the cloning of human_____gene.

a. cystic fibrosis

45- The PCR is widely used to isolate specific DNA sequences from_____genomic DNA .

a. uncloned

46- A_____is a mixture of primers, all of similar sequences but with variations at one or more positions

a. degenerate primer

47- Expression libraries are useful because they allow a range of_____to be employed

a. alternative techniques

48- **Immunochemical screening involves the use of_____.**

a. antibodies

49- In Screening expression libraries the molecular target for recognition is generally an ___.

a. epitope

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50- Immunochemical screening of λgt11 is much more convenientto use _____ insertion vectors.

a. bacteriophage-λ

51- The original detection method using iodinated_____.

a. antibodies

52- Screening is carried out without using an antibody, by incubating the membranes with_double stranded DNA probe

a. radiolabelled

53- Functional complementation is the process by which a particular DNA sequence compensates for a missing function in a_____.

a. mutant cell

54- Functional complementation has been used for complementation in _____ mice to isolate the Shaker- 2 gene

a. transgenic

55- _____bacteria such as E. coli have a complex wall-membrane structure

a. Gram-negative

56- All of the proteins are first synthesized in the_____but somehow find theirway out .

a. cytoplasm

57- Proteins trafficking are actually several general mechanisms of protein export in ___.

a. bacteria

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58- Expression from a strong promoter can represent_____of cloned gene product of toral cell protein

a. 2040%

59- Complementarity of Shine-Dalgarno (S-D) sequence with_____can affect the rate of translation .

a. 16s rRNA

60- Composition of triplet immediately preceding the AUG start codon also affects the efficiency of_____.

a. translation

61- _____of mRNA usually proceeds by a combination of endonuclease and 3'exonuclease attack.

a. Degradation

62- One way of increasing the expression of a cloned gene is to_____the number of the corresponding transcript .

a. Increase

63- The loss of plasmids due to defective partitioning is called_____.

a. segregative instability

64- Structural instability of plasmids may arise by_____or rearrangements of DNA .

a. deletions

65- Factors which will be important include the choice of nutrients and _____ parameters .

a. environmental

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66- Host cell_____can affect the level of expression .

a. physiology

67- The number of_____in a cell far exceeds any one class of mRNA.

a. ribosomes

68- The loss of plasmids due to defective partitioning is called_____.

a. segregative instabilit

69- DNA sequence information is a prerequisite for planning any _____ manipulation of the DNA .

a. substantial

70- Techniques for DNA sequencing became available in the late_____.

a. 1970s

71- _____method method for DNA sequencing makes use of chemical reagents to bring about base-specific cleavage of the DNA .

a. Maxam-Gilbert

72- Chain termination or dideoxy procedure method was developed by Sangeret al. ___.

a. 1977

73- Improvements to original Sanger's method have been made by replacing the ___of E. coli DNA polymerase I .

a. Klenow fragment

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74- **Sequences that were read beyond 4oo bp contained an average of _____**

a. **3.2% error**

75- **Sequences that were read less than 4oo bp had_____.**

a. **2.8% error**

76- **_____ is a process to change the genetic information of an organism .**

a. **Mutagenesis**

77- **There are _____**different methods of site-directed mutagenesis have been **devised .**

- three

78- **A synthetic DNA fragment containing the desired mutant sequence is used to replace the corresponding sequence in the_____.**

- **wild-type gene**

79- **After E. coli transformation,_____that are formed are either that of original wild type DNA or that containing the mutated base .**

a. **heteroduplex**

80- **_____for site directed mutagenesis single bases mismatched between the amplification primer .**

a. **PCR methods**

81- **The advantage of a PCR based mutagenic protocol is that the desired mutation is obtained with_____efficiency**

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a. 100%

82- PCR is a technology in molecular biology used to_____a single or a few copies of a target DNA.

a. amplify

83- PCR can also be used to generate DNA fragments for_____.

a. gene cloning

84- _____are enzymes that synthesize DNA molecules by adding nucleotide, the building blocks of DNA

a. DNA polymerases

85- thermostable DNA polymerase isolated from thermophilic bacterium is ___.

a. taq polymerase.

86- Primer is a_____of oligonucleotide that serves as a starting point for DNA synthesis .

a. short strand

87- a mixture of primers, all of similar sequence but with variations at one or more positions is called as_____.

a. Degenerate primer

88- Various strategies can be adopted for first-strand_____.

a. cDNA synthesis

89- One use of RT-PCR is in determining the_____in a sample .

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a. amount of mRNA

90- qPCR is used to measure the quantity of a_____.

a. target sequence

91- _____is used to measure starting amounts of DNA, cDNA, or RNA .

a. Real-time quantitative PCR

92- In_____, two sets of primers are used in two successive PCRs.

a. Nested PCR

93- _____isused to identify the flanking sequences around genomic inserts .

a. Inverse PCR

94- _____is used to amplify several different DNA sequences simultaneously.

a. Multiplex PCR

95- RAPD stands for_____.

a. Random amplification of polymorphic DNA

96- In RAPD the segments of DNA that are_____are random .

a. amplified

97- RFLP stands for_____.

a. Restriction fragment length polymorphism

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98- RFLP exploits variations in_____sequences .

a. Homologous DNA

99- In RFLP, DNA sample is digested by_____.

a. restriction enzymes

100- In RFLP, DNA sample is separated by_____.

a. gel electrophoresis

101- AFLPs stands for_____'

a. Amplified fragment length polymorphisms

102- AFLPs are differences in restriction fragments length caused by_____.

a. SNPs or INDELS

103- AFLP is a PCR based tool used in_____.

a. genetic engineering

104- PCR has been used in gene cloning and screening of_____.

a. genomic libraries

105- PCR has major impact on medicine especially in the field of_____or diagnosis .

a. clinical microbiology

106- The application of scientific procedures to solve criminal and legal matters is called ___.

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a. **Forensic science**

107- To obtain evidence from minimal samples of saliva, semen or other tissues include in__.

a. **Molecular methods**

108- Fingerprinting is a forensic technique used to identify individuals by characteristics of their_____.

a. **DNA**

109- PCR has facilitated research in detection of_____in plants, animals and environment

a. **Pathogens**

110- The recovery and analysis of DNA and protein from ancient human, animal and plant remains is called_____.

a. **Molecular paleontology**

111- Assigning of a specific gene to particular region of a chromosome and determining the location of and relative distances between genes on the chromosome called as ___.

a. **Genome mapping**

112- The landmarks on genome map might include_____, regulatorysites and genes themselves .

a. **short DNA sequences**

113- Genetic linkage maps illustrate the order of_____.

a. **Genes**

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114- _____give the DNA base pair distances from one landmark to another

a. Physical maps.

115- _____of bacteria has been obtained by combining the mapping techniques .

a. Chromosomal maps

116- Botstein et al _____ were the first to recognize that DNA probes that target RFLPs can be used for mapping

a. 1980

117- RFLP-Restriction fragment length polymorphism exploits variations in _____ sequences

a. homologous DNA

118- STS stands for _____

a. Sequence-tagged sites

119- (STS) are more convenient markers than_____because they do not use southern blotting

a. RFLPs

120- Single nucleotide polymorphisms (SNPs) are different sequence alternatives (alleles) exist in a_____.

a. population

121- SNPs probably are the most important sequence markers for_____of genomes

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a. physical mapping

122- Polymorphic DNA can bedetected by_____.

a. amplification

123- Amplified fragment length polymorphisms (AFLP) is a diagnostic_____.

a. fingerprinting technique

124- FISH stands for_____.

a. Fluorescence in situ hybridization

125- Fluorescent probes that bind to only those parts of the chromosomes with a ___of sequence complementarity .

a. high degree

126- RH mapping used_____breakage of chromosomes

a. X-ray

127- RH mapping used X-ray to determine the_____.

a. order on the chromosome

128- _____overcomes these limitations, being an entirely in vitro technique.

a. Happy mapping

129- The different mapping methods are integrated as each has its own strengths and weaknesses .

a. Correct statement

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130- The process of determining the exact order of nucleotides within a DNA or RNA molecule is called_____.

a. sequencing

131- In_____, DNA sequencing was a very tedious process which involved determining only a few hundred nucleotides at a time .

a. 1970s

132- In_____strategy, DNA shredded into smaller fragments

a. Shotgun sequencing

133- Shotgun sequencing is used for sequencing_____.

a. long DNA strands

134- a map of each chromosome of the genome is made before the DNA is split up into fragments for sequencing is called_____.

a. Clone-by-clone sequencing

135- _____are homologous genes in different organisms

a. Orthologs

136- Genome of bacteria may be of variable in size from_____.

a. 0.49 Mb to 9.1 Mb

137- _____genomes exhibit an amazing structural diversity .

a. Mitochondrial

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138- Gene transfer has occurred between_____and nuclear DNA .

a. mtDNA

139- The minimal_____is smaller than many bacterial genomes .

a. eukaryotic genome

140- _____genomics of eukaryotes gives insight into the evolution of key proteins .

a. Comparative

141- are used to study the expression of many genes at once.

a. Microarrays

142- Spotted DNA arrays are produced by printing DNA samples on treated microscope slides .

a. Correct statement

143- The predominate application of DNA microarray has been tomeasure ___.

a. gene expression levels

144- Microarrays have been widely used as_____genotyping platforms .

a. single nucleotide polymorphism (SNP)

145- -
Phage display is the technology that allows expression of_____on the surface of phage particles .

- exogenous polypeptides

146- the phage clones with binding affinity for the target by a process called_____ .

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a. **biopanning**

147- A genetic technique in which one of an organism's gene is made inoperative that is simply called as_____.

a. **knocked out**

148- the insertion of a protein coding cDNA sequence at a particular locus in an organism's chromosome is called _____.

a. **knock-in**

149- siRNA is the method of choice to target specific genes for_____.

a. **silencing**

150- Oligonucleotide chips are manufactured by in_____synthesis.

a. **situ oligonucleotide**

151 : Making of yogurt from milk is the example of biotechnology

a. **Traditional**
b. Modern

152 : Enzyme Celluloses use for the cleaning of

c. Protein particle
d. **Grass marks**
e. Lipids

153: HUMIRA is an antibody

f. Diclonal
g. **Monoclonal**
h. Triclonal

154: Craig venter present which cells by beating govt concision on HGP

i. Stem cells
j. **Ultimate reboot cells**
k. Adult stem cells

155: Risen bread by using yeast is a process

l. **Aerobic respiration**
m. Anaerobic respiration

156: 4000 BC what is use for cheese flavor

n. Yeast
o. **Mold**

157: Risen of bread by yeast this process is called

p. Extraction

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q. Fermentation

r. Cleavage

158: 400 BC food is stored by using

s. Acids

t. Bases

u. Salt

159: Leeuwenhoek make how many lenses and microscopes respectively a. 100,330

b. 200,500

c. 200,400

d. 500,200

160: Enzyme role in the reaction

v. Higher the activation energy

w. Lower the activation energy

x. No effect on activation energy

161: DNA present in cell which cell organelle

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y. Nucleus
z. Mitochondria
aa. Chloroplast
ab. All

162: MC1R gene controls
ac. U shaped tongue
ad. Curly hairs
ae. Freckles on face
af. Eye color

163: IPO is abbreviation of ?
ag. INITIAL PUBLIC OFFERING
ah. INTERNAL PUBLIC OFFERING
ai. INITIAL PUBLIC ORGANIZATION

164: Arthropoitem first drug for?
aj. CANCER
ak. Anemia
al. Arthritics

165: Nerves are covered by sheath called?
am. Lipids
an. Myelin
ao. protein

166: Restriction enzymes are brought by
ap. Cohen
aq. Boyer

167: In which disease which enzyme glucocerebrocidase is deficient?
ar. Gaucher
as. Diabetes
at. Anemia

168: How many Deoxy-ribonucleotides make the structural units of DNA.
au. 3
av. 4
aw. 5

169: nucleotides of DNA are joined together through
ax. Peptide linkage
ay. Ester linkage
az. Phosphor-diester linkage

170: DNA base composition change with
ba. Change in environment
bb. Change in food
bc. Have no effect
bd. The growing age

171: In DNA, the number of adenosine residues is equal to the number of
be. Cytosine
bf. Thymine

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bg. Guanine

172: The DNA helix have primary periodicities

bh. 2.4 angstrom

bi. 3.4 angstrom

bj. 4.4 angstrom

173: Within two strands of DNA phosphodiester bond run in

bk. Opposite direction

bl. Same direction

174: Each ribonucleotide is composed of three components:

bm. A ribose sugar

bn. A Nitrogenous Base

bo. A Phosphoric acid

bp. All of above

175: The process of forming mRNA on a DNA template is known as

bq. Translation

br. Replication

bs. Transcription

176: The length of mRNA molecules is variable and it depends on

bt. Length of DNA

bu. Length of gene

bv. Length of chromosome

177: A linked with amino acid by

bw. Ionic bond

bx. Covalent bond

178: in ribosomes rRNA contain weight about a. 50%

b. 60%

c. 70%

179: result of breaks in helix are

by. Budges

bz. Internal loops

ca. Both

180: Number of stranded amino acids

cb. 19

cc. 20

cd. 21

181: Smallest amino acids is

ce. Alanine

cf. Serine

cg. Glycine

182: Amino acids are attach with each other by a covalent bond called

ch. Ester bond

ci. Hydrogen bond

cj. Peptide bond

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183: With the formation of peptide bond between 2 amino acids release a molecule of

ck. Carbon dioxide

cl. Water

cm. Hydrogen

184: In primary structure of amino acids all elements are in co-planer but in

cn. Cis configuration

co. Trans configuration

185: The helical twist of the α-helix found in all proteins is

cp. Left handed

cq. Right handed

cr. Both

186: The range of Ø, values have a wide range But some values are prohibited because of

cs. Hydrogen bonding

ct. Helical structure

cu. Steric hindrance

187. How many amino acid residues in a single turn of helix

a. 3.4

b. 2.6

c. 3.6

d. 3.7

188. adjacent polypeptide chains in a sheet can be

cv. Parallel

cw. Anti-parallel

cx. Both

189: A multimer with just a few subunits is called as

cy. Oligomer

cz. Protomer

190: An icosahedron is a regular----cornered polyhedron having----------triangular faces.

a. 8, 12

b. 12, 20

c. 20, 12

d. 12, 8

191: Genetic material in viruses can be in form of

da. DNA

db. RNA

dc. DNA, RNA both

192: E. coli's chromosome consists of approx. nucleotide pairs.

dd. 5 million

de. 8 million

df. 6 million

dg. 4 million

In E-coli each super coiled loop have average length of

dh. 10-20 kbp

di. 1-2 kbp

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dj. 7-9 kbp

193: The chromosomes of eukaryotic cells are-------- than those of prokaryotes

dk. Larger and less complex

dl. **Larger and more complex**

dm. Small and less complex

dn. Small and more complex

194: DNA with bound histones in the eukaryotes is called as

do. DNA strand

dp. Chromosome

dq. **Chromatin**

195: Each nucleosome contain -----bp of DNA and------- histones

a. 100, 8

b. **200, 9**

c. 200, 8

d. 100, 9

196: Highly condensed chromatin is known as

dr. **Heterochromatin**

ds. Euchromatin

dt. Both

du. None

197: the study of the entirety of an organism's genes

dv. Genetics

dw. **Genomics**

dx. None

198: Study of proteome is called

dy. Metabolomics

dz. **Proteomics**

ea. Genomics

eb. None

199: By gene sequencing we can understand mechanism of which disease

ec. Infectious diseases

ed. Pathogenic bacteria

ee. Viruses

ef. **All of above**

200: Restriction enzymes are used for

eg. Insertion of vector

eh. Breakdown of proteins

ei. **Digestion of DNA**

ej. None

201: Which one is example of genomic library

ek. AACs

el. TACs

em. **BACs**

en. None

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202: YACs is abbreviation of

eo. Yeast artificial colonies
ep. Yeast artificial chromosomes
eq. Yeast acidified colonies
er. None

203: Genomic researches use for

es. Criminal justices
et. Civil justices
eu. Establish paternity
ev. All

204: Humans have genome size of--------- Mb

a. 2,500
b. 2,700
c. 3,000
d. 3,500

205: Viral genome is

ew. Circular
ex. Linear
ey. Both
ez. None

206: Lambda contain how many bp in its genome

b. 48,502 bp
c. 48,500 bp
d. 47,500 bp

207: fluenza virus have which type of nucleic acid and number of genes

fa. ssDNA ,8
fb. dsDNA ,12
fc. ssRNA ,12
fd. dsRNA ,8

208: Small organisms carry-------- coding density.

fe. Low
ff. High
fg. None

209: Over 95% of mitochondrial proteins are encoded in the

fh. Mitochondria
fi. Chloroplast
fj. Endoplasmic reticulum
fk. Nuclear genome

210: How many rRNAs present in case of Human Mitochondrial Genome

fl. 12
fm. 37
fn. 2
fo. 15

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211: Chloroplast genome contain which type of inheritance pattern

fp. Mendelian
fq. **Non- Mendelian**
fr. Both
fs. None

212: Length of Minisatellites

a. 1-3
b. 1-5
c. 1-7
d. 1-13

213: multicellular eukaryotes have up to genes

a. 30,000
b. 40,000
c. 50,000
d. 60,000

214: Number of genes is correlated to genome size

ft. True
fu. **False**

215: Vertebrate genomes can produce more than one polypeptide per gene because of

fv. **Alternative splicing of RNA**
fw. mRNA
fx. Cellular metabolites
fy. Alternative splicing of DNA

216: Introns are

fz. Coding part of DNA
ga. **Non-coding part of DNA**
gb. Both
gc. None

217: Percentage of exons in the human genome

a. 1.3%
b. 1.4%
c. **1.5%**
d. 1.7%

218: Similarity of man- yeast genome is a. 21%

b. 23%
c. 25%
d. 27%

219: Distantly related species help us understand events

gd. **Ancient evolutionary**
ge. Recent
gf. Both

220: Bacteria, Archaea, diverged from each other almost

gg. 1 billion years ago

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gh. 2 billion years ago
gi. 4 billion years ago
gj. 6 billion years ago

221: the FOXP2 gene product turns on genes involved in
gk. Baldness
gl. Vocalization
gm. Tumors
gn. All of above

222: prokaryotes genome highly consist of
go. Gene
gp. Transportable elements
gq. Repeats
gr. None

223: which of the following is start codon
gs. GTA
gt. ATG
gu. AAG
gv. TTG

224: Upstream region with binding site contain TATA box
gw. True
gx. False

225: Polycistronic mRNA encodes for proteins
gy. Few
gz. Several
ha. One
hb. Tow

226: Splicing is Removal of introns from the----- molecule
hc. tRNA
hd. rRNA
he. mRNA
hf. All of above

227: Most of prokaryotic genes are without introns and in the are
hg. Monocistronic
hh. Dicistronic
hi. Tricistronic
hj. Polycistronic

228: Following are not Nonfunctional copies of genes except
hk. Pseudo gene
hl. Duplicated gene
hm. Tandemly repeated gene
hn. Sequencing gene

229: Ethidium bromide is a
ho. DNA precipitator
hp. Loading dye

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hq. Digester of DNA
hr. None of them

230: Following are example of Non LTR retrotranposons except
hs. LINE
ht. SINE
hu. ORF
hv. None

231: Transposon is cut off by
hw. Transposase
hx. Proteases
hy. Lipases

232: Retrotransposons, which move by means of an
hz. DNA intermediate
ia. RNA intermediate
ib. Both

233: Transposons content in the iris genome is
a. ~75%
b. ~85%
c. ~89%
d. ~98%

234: How many types of transposons in prokaryotes
ic. One
id. Two
ie. Three

235: IS10 is found in R plasmids
a. True
b. False

236: LTRs stand for
if. Leading direct Terminal Repeats
ig. Long dominant Terminal Repeats
ih. Long direct Terminal Repeats
ii. Long direct Timid Repeats

237: ORF2 encodes an RNA binding protein
ij. True
ik. False

238: Which of the following is suitable replicon vehicle
il. Plasmids
im. Bacteriophage
in. Both

239: During DNA extraction-------- is use for precipitation
io. Phenol
ip. Isopropanol
iq. Isopropyl
ir. EDTA

240: is a fragment of DNA or RNA which is used to detect the sequences of target DNA

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is. Probe
it. Primer
iu. None

241: A technique using X-ray film to visualize fragments of molecules that have been radioactively labeled

a. Blotting
b. Autoradiography
c. Gel electrophorese
d. Chromatography

242: Autoradiography is use to analyze the

e. Length of DNA
f. Number of DNA
g. Both
h. None of them

243: A Southern blot is a------ method

i. Kitchen
j. Laboratory
k. Both
l. None

244: After hybridization reaction, membrane is washed and hybridization are detected by

m. Blotting
n. Autoradiography
o. Gel electrophorese
p. Chromatography

245: A northern blot is a method used to detect------ molecules among its mixture

q. Specific DNA
r. Specific RNA
s. Specific amino acids
t. Both

256: In western blotting antibodies are used to detect

u. DNA fragment
v. RNA fragment
w. Specific antigens
x. None

257: To enable the cells to take up circular vector DNA they have to be made

y. Polar
z. Linear
aa. Competent
ab. Both a and c

258: In electroporation is applied to cells in order to increase permeability of the cell membrane to take DNA

ac. Magnetic field
ad. Electric field
ae. Both

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259: E. coli is electroporation technique use for introducing

af. Whole DNA
ag. Fragment of RNA
ah. Cloned genes
ai. None of above

260: Animal cells, protoplasts of yeast and plant are susceptible to transformation by

aj. E.coli
ak. Liposomes
al. Bacillus subtilis

261: Amplification of genes done by

am. Gel electrophoresis
an. PCR
ao. Blotting

262: the phenomenon of restriction and modification elucidated in

a. 1960s
b. 1970s
c. 1980s
d. 1990s

263: Restriction system allow bacteria to monitor the------ of incoming DNA

ap. Binding
aq. Origin
ar. Recombining site
as. None

264: For phage λ restriction/ modification is studded on which of the following strain

at. E. coli C
au. E. coli K
av. E. coli D
aw. E. coli C and E. coli K

265: Methylation of certain bases is the process happened in

ax. Restriction
ay. Modification
az. Recombination
ba. All

266: How many type of R-M system are known

bb. 1
bc. 2
bd. 3
be. **4**

267: In type 1 The active enzyme consists of --restriction subunit,-- modification subunit and -- recognition subunit

a. 2,3,2
b. 1, 2, 3,
c. 2,2,1
d. 3,2,1

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268: Most of the useful R-M system is

bf. Type I

bg. Type II

bh. Type III

269: Type ---enzymes recognize a defined sequence and cut within it

bi. Type I

bj. Type II

bk. Type III

270: Restriction occur distant from the recognition site this statement is true for

bl. Type I

bm. Type II

bn. Type III

bo. Type IIs

271: R. HindIII in this name R indicates

bp. Modification-methylase

bq. Specie name

br. Endonuclease

bs. None

272: AAGCTT is recognition site for

bt. HaeIII

bu. HindIII

bv. HindII

bw. HamHI

273: The number and size of fragments done by restriction enzyme depend on

bx. Origin site ofDNA

by. Recognition site ofDNA

bz. Target site ofDNA

ca. Binding site ofDNA

274: Six base recognition site occurs every

cb. 4^4 bp

cc. 4^6 bp

cd. 4^8 bp

275: -------- the enzyme that degrade DNA

a. Nucleases

b. DNA polymerase

c. Reverse transcriptases

d. DNA ligases

276: An enzyme that creates a phosphodiester bond

Nucleases

a. DNA polymerase

b. Reverse transcriptases

c. DNA ligases

277: mainly------- methods are used for joining DNA in vitro

d. 1

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e. 2
f. **3**
g. 4

278: ------- can repair the nicks produced after the association of cohesive ends of DNA strands
a. Nucleases
b. DNA polymerase
c. Reverse transcriptases
d. DNA ligases

279: T4 DNA ligase has been used to joint----- DNA molecules
a. Cohesive ends
b. Blunt-ended
c. Single stranded nicks

280: The main difference between linker and adaptor is that former having
d. Cohesive ends
e. Blunt-ended
f. Single stranded nicks

281: Eukaryotic mRNA can be cloned in vector after converting it to
g. DNA
h. tRNA
i. cDNA

282: Naturally occurring bacterial plasmids range in size from
a. . 500 to 40,000 bp
b. 5,000 to 400,000 bp
c. 4,000 to 500,000 bp
d. 3,000 to 400,000 bp

283: Open circle or OC DNA have
j. Both strand intact
k. One strand intact
l. Completely closed

284: ------- may be a mutagen, a carcinogen, or a teratogen
a. Phenol
b. Isopropanol
c. Ethidium bromide
d. Oxygen

285: Which plasmid carry set of tra gene
a. Conjugated
b. Non- conjugated
c. Both

286: ost range of plasmid is determined by
d. Binding site
e. Ori region
f. Tra gene
g. None

287: Naturally occurring plasmids are stably maintained because they contain

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h. Ori region
i. Tra gene
j. Par region
k. None

288: ----------of plasmids may arise by deletions or rearrangements of DNA
a. Incompatibility
b. Structural instability
c. segregative stability
d. Partitioning

289: Single sites for number of restriction endonucleases is property of------- cloning vehicle
a. Naturally occurring
b. Ideal
c. Every
d. Synthetic

290: Plasmids which were not constructed in vitro for the sole purpose of cloning are called plasmid
e. Natural
f. Ideal
g. Every
h. Synthetic

291: pSC101 Contain
i. Immunity to colicin
j. Ampicillin resistance
k. Tetracycline resistance
l. Colicin E1 production

292: pSC101 contain---------resistance
Ampicillin
Tetracycline
None

293: pBR322 is an example of-------- constructed cloning vehicle
In vivo
In vitro
Artificially

294: pBR322 contains the resistance gene against
Ampicillin
Tetracycline
Both
None

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295: in pBR322 replicon element is
pBR11

pMB1

RSf2124

PstI

296: pBR322 have------- target sites for different restriction enzymes

30 20

40

50

297; pBR322 have high copy number and----------weight

High

Low

298: pBR325 encodes------resistance in addition to those resistance have psc101 plasmid.

Ampicillin

Chloramphenicol

Tetracycline

299: pAT153 another derivative of
pBR325

pBR322

psc101

300: plasmids which loss during cell division is called .
High copy number plasmid

Low copy number plasmid

Runaway plasmid

Lambda phage vector

301: Wild type is not suitable as a cloning vector because it has------ restriction enzymes sites

Very low number of

Too many

A few

302: Charon4A is a replacement vector is this statement

True

False

303: Charon 60 is a replacement vector is this statement
True

False

304: Charon 60 has------- restriction site

1

2

3

Many

305: Charon 4A and 16 are both derivatives of ------

Bacteriophage

Lambda

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Ecoli

306: sCharon 60 can be cloned . 2 kbp
3kbp
4kbp
5kbp

307: lacZ gene encode for enzyme . . PAL
4CA
βGal
PPR

308: first step in the cloning is Cutting vector
Isolation of DNA
Insertion of vector
Infection

309: in case phage-λ Packaging yields about-------- of vector DNA
10^4 plaques/ µg
10^5 plaques/ µg
10^6 plaques/ µg

310: At each cos site nicks are introduce------- far apart on opposite strand of DNA
10bp
13bp
12bp
16bp

311: Cos sites are . …. Cloning site . . Cooperative site
Cohesive site
Capsulation site

312: Gene D is include in the------process
Capsulation
Ligation
Termination
Packaging

313: M13 is a filamentous bacteriophage with-----
dsDNA
ssDNA
dsRNA
ssRNA

314: Which of the following vector replicate without killing its host Phage-λ
M13
Mp18

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Cosmid

315: M13 can clone DNA of variable length about 3kpb

4kbp

5kbp

6kbp

316: In x gal containing medium blue colonies represent the cloned DNA colonies, statement is . True

False

317: Cosmid can clone around--------- length of DNA

45kbp

37kbp

53kbp

200kbp

318: Modified cosmid vector produced by-------- n 1981

Watson and crick

Ish-Horowicz and Burke

Edward Southern

Bates and Swift

319: A modified procedure for cosmid is derived by Watson and crick

Ish-Horowicz and Burke

Edward Southern Bates and Swift

320: Cosmid c2XB is derived by Watson and crick Ish- Horowicz and Burke Edward Southern

Bates and Swift

321: vectors are combination of plasmid and ʎ phage sequences

Lambda

Phasmid

Cosmid

322: BACs can clone----------length of DNA fragment

5kbp

150-200kbp

100-300 kbp

60kbp

323: YACs vectors replicate in-------- like normal chromosome

Bacteria

Yeast Fungi

Mammalian cell

324:: YACs can clone----------length of DNA fragment

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5kbp

150-200kbp

100-300 kbp

60kbp

325: Vectors that can replicate and are stably maintained in two or more unrelated host organisms are called

YACs

Shuttle vectors

BACs Cosmid

vector

326: Expression vector are used to control
Infection

Expression

Translation

Insertion

327: In Ecoli p1 phage can clone------length of DNA

10-15 kb

2-25 kb

35-45 kb

70-100

328: The second strategy is to selectively amplify the target sequence directly from the source DNA by using

Different vectors

PCR

Gel electrophoresis

329: represent the genomic makeup of an organism

cDNA library

RNA sequence

Genomic library

330: Genome size of human is

$2.8x10^6$

$3x10^6$

$1.25x10^5$

331: Drosophila melanogaster have size of DNA $1.8x10^5$ this statement is

True

False

332: Average fragment size can be controlled by----------

Restriction endonucleases

Mechanical shearing

Random cutting

333: High molecular weight genomic DNA is digested with-------

BamH1

***Sau*3AI**

Sal1

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PmB1

334: For construction of genomic libraries------- vectors are required

High capacity cloning Low capacity cloning Moderate capacity cloning

335: is prepared by reverse-transcribing cellular RNA

DNA

cDNA

Proteins

Amino acids

336: Which lack the non-coding sequence

DNA

rRNA

cDNA

337:; Introns are rare in bacteria but occur in genes of higher

Eukaryotes

Prokaryotes

338: cDNA library is representative of the---- population from which it was derived

DNA

RNA

Proteins

339: A serious disadvantage of the hairpin method is that cleavage with S1 nuclease results in the loss of sequences at the

3' end of the clone

5' end of the clone

340: correct orientation of inserted cDNA can be achieved by------

Hairpin method

Self-priming method

Sequencing

Reverse transcriptase method

341: followed by the PCR (RTPCR) leads to the amplification of RNA sequences in cDNA form

Genomic library

Reverse transcription

Splicing

Digestion of DNA

342: Major screening strategies involve Genetic methods Sequence-dependent screening

Screening expression libraries

All of above

343: All useful vector molecules carry a selectable---------- or property

Nutritional marker

Genetic marker

Drug resistance

344: In phage vectors,------ is itself the selected property

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AP^R

TC^R

Plaque formation

CH^R

345: Nucleic acid---------- is the most commonly used method of library screening

Amplification

Sequencing

Hybridization

Screening

346: 1975) developed a screening procedure to detect DNA sequences in transformed colonies

Ish-Horowicz and Burke

Edward Southern Bates and Swift

Grunstein and Hogness

347: The results of the hybridization can be monitored by PCR

Autoradiography

Gel documentation

Centrifuge

348: Benton and Davis (1977) devised a method called Hybridization

Plaque lift

Sequencing

Screening

349: In plaque lift techniques there is direct contact between plaque and filter this statement is False

True

350: A great advantage of hybridization for library screening is that it is extremely Important

Versatile

Difficult

Unique

351: A cloned genomic fragment must be found as a------- point for the walk

Mid

End

Starting

Selectable

352: In chromosome walking, human genome starting point may be a ----

CAPs

SNPs

RFLP

AFLP

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353: One------ of chromosome walking is the requirement that each DNA segment used is not repeated elsewhere in the genome

Benefit

Drawback

Characteristics

354: In chromosome jumping, the DNA of interest is identified, cut into fragments with restriction enzymes and

Elongate

Circularized

Break down

Straighten

355: Cloned DNAs from the closure sites make up a jumping library is this statement

False

True

356: The PCR is widely used to isolate specific DNA sequences from------- genomic DNA or cDNA

Cloned

Uncloned

Gel treated

357: To isolate specific clone, PCR is carried out with

Simple primers

Unusual primers

Special primers

Gene-specific primers

358": A degenerate primer is a mixture of primers, all of similar sequences but with variations at --- positions

One Two

One or more

Several

359: If DNA library is established using expression vectors, each individual clone can be expressed to yield a

Monopeptide

Polypeptide

Dipeptide

360: Immunochemical screening involves the use of

Antibodies

Antigen

Nucleic acid

RNA

361: The molecular target for recognition is generally an

Antibody

Epitope

Probe

Primer

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362: polyvinyl and that IgG antibodies can be readily labelled with

I125

I108

I127

I129

363: it is much more convenient to use--- because they have high capacity and efficiency to in vitro packaging

Bacteriophage simple insertion vector
Bacteriophage Ecoli 1 insertion vector

Bacteriophage-λ insertion vector
Bacteriophage-λ deletion vectors

364; Screening is carried out without using an antibody, by incubating the membranes with radiolabelled ----------

Ss DNA probe
ds DNA probe
Ss RNA probe

365: is the process by which a particular DNA sequence compensates for a missing function in a mutant cell and thus restores the wild type phenotype

Functional complementation
Functional analysis Functional genomics
Non Functional complementation

366: Functional complementation is also possible in

Transgenic animals and plants
Transgenic animals Transgenic plants Transgenic bacteria

367: Functional complementation used for complementation in--------to isolate the Shaker - 2 gene

Transgenic cat

Transgenic mice
Transgenic bacteria

368: depends upon transcription of appropriate gene, efficient translation of mRNA and in many cases, posttranslational processing and compartmentalization of nascent polypeptide Synthesis of functional DNA

Synthesis of functional RNA

Synthesis of functional protein

369: Gram-negative bacteria such as E. coli have a Complex wall-membrane mitochondria Simple wall-membrane

Complex wall-membrane
Difficult wall-membrane

370: The bacterial inner membrane, periplasmic space and outer membrane all contain proteins found in the cytoplasm

True

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False

371: ABC pathway of protein export and type II secretion pathway are use for
Chromosome trafficking

DNA trafficking
RNA trafficking
Protein trafficking

372: In E.coli foreign protein are
Stable

Instable
Dissolved
Submerged

373: In the case of somatostatin, degradation was prevented by producing a---------consisting of somatostatin and β-galactosidase
Simple protein

Fused protein
Complex protein
Hybrid DNA

374: Expression from a strong promoter can represent------- of cloned gene product of toral cell protein
30-40% 10-40%

20-40%
20-30%

375: Complementarity of Shine-Dalgarno (S-D) sequence with 16s rRNA can affect the
Rate of transcription

Rate of translation
Rate of enzyme
Rate of cell cycle

376: Composition of triplet immediately preceding the AUG-------also affects the efficiency of translation

Start codon Stop
codon
Termination site

377: The rate of synthesis of a particular protein will depend on the----------in the cell
Steady-state of RNA
Steady-state of DNA
Steady-state of mRNA
Mobile-state of mRNA

378: usually proceeds by a combination of endonuclease and 3'exonuclease attack
Synthesis of mRNA

Degradation of mRNA
Degradation of DNA
Degradation of protein

379: One way of increasing the expression of a cloned gene is to increase the
Temperature

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Plasmid copy number
Enzyme
pH

380: The loss of plasmids due to defective partitioning is called
Segregative stability

Segregative instability Non-
Segregative stability Non-
Segregative instability

381: Structural instability of plasmids may arise by deletions or rearrangements of

RNA
mRNA

DNA
rRNA

382: Techniques for DNA sequencing became available in the
Early 1970s

Late 1970s
Early 198s
Late 1980s

383: Maxam-Gilbert method for DNA sequencing makes use of chemical reagents to bring about ------

of the DNA Base-
specific addition

Base-specific cleavage
Digestion
Rearrangement

384: DNA synthesis is carried out in the presence of the four deoxynucleoside triphospahtes, one or more of which is labelled with---------- and in four separate incubation mixes

N^{15}

P^{32}

N^{14}

P^{35}

385: The combination of chain terminator and M13 vectors to produce------- is very powerful

dsDNA

ssDNA
dsRNA
ssRNA

386: Sequences that were read beyond 4oo bp contained an average of------ error

2.3%

3.2%

3.4%

4.4%

387: Sequences that were read less than 4oo bp contained an average of------ error

2.3%

2.8%

3.2%

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4.4%

388: is a process to change the genetic information of an organism
Hybridization
Autoradiography
Mutagenesis
Genetic library

389: Mutagenesis sources
Occur naturally Exposure to mutagens Inducedin laboratory **All ofabove**

390: different methods of site-directed mutagenesis
2
3
4
5

391: A synthetic DNA fragment containing the desired mutant sequence is used to replace the corresponding sequence in the wild-type gene
Cassette mutagenesis
Primer extension
Procedures based on PCR

392: In method, the product of the first PCR is used for the second PCR
Site directed PCR
Megaprimer
Basic PCR

393: The----- of a PCR based mutagenic protocol is that the desired mutation is obtained with 100% efficiency
Advantage
Disadvantage

None

394: PCR can also be used to generate DNA fragments for gene cloning by using----- with specific restriction sites
Probes
Primers
Both
None

395: Nucleotides are building block of
Proteins
Lipids
DNA
All of above

396: Taq polymerase is a------ DNA
Thermostable

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Thermoinstable
Binding resistant

397: is a short strand of oligonucleotide that serves as a starting point for DNA synthesis
Probes
Primers
Both

398: was designed to amplify RNA sequences (mainly mRNA) through synthesis of cDNA by reverse transcriptase
RT-PCR q
PCR Nested
PCR Inverse
PCR

399: It is used to measure starting amounts of DNA, cDNA, or RNA
RT-PCR
q PCR
Nested PCR
Inverse PCR

400: In--------- two sets of primers are used in two successive PCRs
RT-PCR
q PCR
Nested PCR
Inverse PCR

401: is used to identify the flanking sequences around genomic inserts
RT-PCR q
PCR Nested
PCR
Inverse PCR

402: ultiplex PCR is used to amplify several different DNA sequences simultaneously
True
False

403: is a type of PCR reaction but the segments of DNA that are amplified are random
AFLP
RAPD
SNPs
RFLP

404: AFLPs-Amplified fragment length polymorphisms are differences in restriction fragments length caused by
AFLP
RAPD
SNPs
RFLP

405: PCR has applications in the fields of life sciences
Genetic engineering
Medical

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Forensic

All of above

Both a b

406: PCR has been used in gene cloning and--------- of genomic libraries

Sequencing

Screening

Construction

Degradation

407: DNA profiling or DNA fingerprinting have---------- meaning

Different

Same

408: DNA profiling or DNA fingerprinting is a forensic technique used to identify individuals by characteristics of their..

Protein

RNA

DNA

cDNA Genomic library

409: Assigning of a specific gene to particular region of a chromosome and determining the location of and relative distances between genes on the chromosome is called

Chromosome jumping

Chromosome walking

Chromosome mapping

410: Any identifiable feature of the genome cannot serve as a marker in mapping, but specific

True

False

411: The landmarks on genome map might include

Short DNA sequences

Regulatory sites

Genes themselves

All of above

412: Genetic linkage maps illustrate the order of genes or genetic markers on a chromosome and the relative distances between those genes

DNA finger printing

Physical mapping

Genetic linkage mapping

413: give the DNA base pair distances from one landmark to another

DNA finger printing

Physical mapping Genetic linkage mapping

414: exploits variations in homologous DNA sequences

AFLP

RAPD

SNPs

RFLP

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415: Botstein et al. (1980) were the first to recognize that----- that target RFLPs can be used for mapping

DNA probes
DNA primers
RNA primers

416; Sequence-tagged sites (STS) are more convenient markers than RFLPs because they do not use

RT-PCR
Southern blotting
Restriction enzyme
DNA polymerase

417: SNPs are--------base-pair positions in genomic DNA at which different sequence alternatives (alleles) exist in a population

Single Double
Triple
Complementry

418: Amplified fragment length polymorphisms (AFLP) is a diagnostic fingerprinting technique that detects genomic

Amplified fragment
Restriction fragments
Complemenrtry fragment

419: FISH is a cytogenetic method that used------ probes

Scanning
Fluorescent
Radio active

420: RH mapping used X-ray breakage of chromosomes to determine the distances between------as well as their order on the chromosome

DNA probes
DNA primers
DNA markers

421: Happy mapping is an-------technique

In vivo
In vitro
None

422: The process of determining the exact order of nucleotides within a DNA or RNA molecule is called

Screening
Sequencing
Mapping

423: Shotgun sequencing is used for sequencing---------- DNA strands

Short
Long
Fragmented
Digested

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424: a map of each chromosome of the genome is made before the DNA is split up into fragments for sequencing

Chromosome sequencing

In clone-by-clone sequencing

Physical mapping

Genetic linkage mapping

425": Orthologs are homologous genes in different organisms that encode proteins with the Different functions

Same function

Non functional

426: Genome of bacteria may be of variable in size. For example, it may vary from 0.39Mb to 8.1Mb

0.49 Mb to 9.1 Mb

0.49Mb to 1.9Mb

427: Mitochondrial genomes exhibit an amazing Genomic diversity

Structural diversity

Functional diversity

Phenotypic diversity

428: are used to study the expression of many genes at once

Comparative genomics

Microarrays

Filamentous bodies

429: Which is the DNA array used in expression analysis Spotted DNA arrays

Printed oligonucleotide chips

Both

None

430: The predominate application of DNA microarray has been to measure

Gene expression levels

Gene synthesis level

Genetic difference

431; Microarrays have been widely used as---------- genotyping platforms

AFLP

RAPD

SNP

RFLP

432: Phage display is the technology that allows expression of exogenous-------- on the surface of phage particles

Monopeptide

Dipeptide

Polypeptides

Nucleotide

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433: The most common screening method is based on enriching the phage clones with binding affinity for the target by a process called

Epitope

Biopanning

Microarrays

434: Applications of phage display includes Determination of protein to protein interactions, To determine enzyme specificity

To generate target specific antibodies

Both a b

All of above

435: A genetic technique in which one of an organism's gene is made inoperative that is simply called Knocked in

Knocked out

Knocked down

436: refers to a gene manipulation method that involves the insertion of a protein coding cDNA sequence at a particular locus in an organism's chromosome

Knocked in

Knocked out

Knocked down

437: Small interfering RNA (siRNA) is the most commonly used (RNAi) tool for inducing---------- coding genes

Long-term silencing of protein

Short-term silencing of protein

Permanent silencing of protein

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1. Libraries expression in prokaryotes and plasmid? 5

Expression of *Staphylococcus* plasmid genes in *E. coli*

pSC101contain Tetracycline resistance *P1248 from Staphylococcus*

2. YAC and BAC? 10

Bacterial artificial chromosomes (BACs):

Bacterial artificial chromosomes are simply plasmids designed for the cloning of very long segments of DNA

(100,000 to 300,000 bp) Bacterial artificial chromosome as cloning vectors

Yeast artificial chromosomes (YACs):

These vectors replicate in yeast like normal chromosome but they have sites where very large DNA fragments can be inserted.

YACs with inserts more than 150,000 bp are nearly as stable as normal cellular chromosomes

Construction of yeast artificial chromosome

3. How functional complementation is used in higher organisms give example.

Screening by functional complementation

Functional complementation is the process by which a particular DNA sequence compensates for a missing function in a mutant cell and thus restores the wild type phenotype.

Functional complementation is also possible in transgenic animals and plants.

It has been used for complementation in transgenic mice to isolate the Shaker-2 gene.

4. How Fragments Show p1258 and ps101 cs101?

Expression of *Staphylococcus* plasmid genes in *E. coli*

pSC101 contain Tetracycline resistance

P1248 from Staphylococcus

5. OVERVIEW OF CLONING STRATEGIES

Any cell based cloning procedure has 4 essential parts

i). A method of generating DNA fragment for cloning

ii). A reaction that inserts that fragment into the chosen cloning vectors.

iii). A means for introducing that recombinant vector into a host cell wherein it is replicated

iv). A method of selecting recipient cells that have acquired the recombinant

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6. What is the strategy used to synthesis the second cDNA from first strand of cloning?

In nested PCR, two sets of primers are used in two successive PCRs
First set of primers allows a **first amplification**

Product of first PCR is subjected to a second PCR using the **second set of primers**

7. Write down advantages of using low molecular plasmid in cDNA?(5 marks)

8. What is DNA sequencing, type, applications and DNA sequence database?

DNA sequencing: Benefits and Applications

DNA sequencing is the process of determining the precise order ofnucleotideswithin aDNAmolecule. It includes any method or technology that is used to determine the order of the four bases—adenine,guanine,cytosine, andthymine—in a strand of DNA. The advent of rapid DNA sequencing methods has greatly accelerated biological and medical research and discovery.[1]DNA sequence information is a prerequisite for planning any substantial manipulation of the DNA. Information is useful to various fields i.e. molecular & evolutionary biology, metagenomics, medicine, forensics etc. Techniques for DNA sequencing became available in the late 1970s

Maxam-Gilbert method:

This method for DNA sequencing makes use ofchemical reagents to bring about base-specific cleavageof the DNA.

Chain termination or dideoxy procedure

This method was developed by Sanger et al. (1977).It capitalizes on the ability of DNA polymerase to incorporate dideoxynucleoside triphosphates as substrate. DNA synthesis is carried out in the presence of the four deoxynucleoside triphosphates, one or more of which is labelled with 32P and in four separate incubation mixes.

Automated DNA sequencing

To automate the process, it is desirable to acquire sequence data in real time by detecting the DNA bands within the gel during the electrophoretic separation. Automated DNA sequencing offers a number of Advantages.

DNA sequence databases

Since the development of current DNA sequencing technology large amount of sequence data has accumulated that is maintained in 3 data bases

i). National center for Biotechnology Information
ii). DNA Databank of Japan
iii). European Bioinformatics institute-UK

9. Four Steps of cloning:

DNA sequencing: Benefits and Applications

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i). National center for Biotechnology Information

ii). DNA Databank of Japan

iii). European Bioinformatics institute-UK

10. Define plasmid and describe natural plasmid in detail

A plasmid is a small DNA molecule within a cell that is physically separated from a chromosomal DNA and can replicate independently. They are most commonly found in bacteria as small circular, double-stranded DNA molecules; however, plasmidsare sometimes present in archaea and eukaryotic organisms

11. What are plasmids, its types, applications

Plasmids

- Plasmids are mostly circular DNA molecules that replicate separately from the host chromosome.
- Naturally occurring bacterial plasmids range in size from 5,000 to 400,000 bp
- Plasmid help bacteria to survive in stress.

Phenotypic traits exhibited by plasmids

- Plasmids are widely distributed throughout the prokaryotes, vary in size from less than 1 × 106 to greater than 200 × 106 daltons.
- Plasmids can be categorized into conjugative or non-conjugative depending whether or not they carry a set of transfer genes, called tra genes, which promoted bacterial conjugation.

Natural Plasmids:

Plasmids which were not constructed in vitro for the sole purpose of cloning are called natural plasmids

- Col E1 is a natural occurring plasmid
- RSF2124 is a derivative of Col E1
- pSC101 is natural plasmid from Salmonella panama.

12. RT-qPCR?

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The **disadvantages** of **RT**-PCR include its complexity and problems associated with its sensitivity, reproducibility, and specificity. Moreover, it suffers from the problems inherent in traditional PCR when it is used as a quantitative method

13.Yeast and Prokaryotic library?

cDNA libraries are used to express eukaryotic genes in prokaryotes since it does not include introns, and therefore, can be expressed in prokaryotic cells. cDNA libraries remove the large numbers of non-coding regions from the library, and it is also useful for subsequently isolating the gene that codes for that mRNA.

14.How animal restore their lost function?

Screening by functional complementation

Functional complementation is the process by which a particular DNA sequence compensates for a missing function in a mutant cell and thus restores the wild type phenotype.

Functional complementation is also possible in transgenic animals and plants.

It has been used for complementation in transgenic mice to isolate the Shaker-2 gene.

15.Name 2 hemophilic enzymes that are used in PCR? 2

DNA Polymerase

Taq Polymerase

16.Define orthrologs in comparative anatomy?

Orthrology are homologous genes in different organisms that encode proteins with the same function and which have evolved by direct vertical descent..

Orthologs are genes in different species that evolved from a common ancestral gene by speciation, and, in general, **orthologs** retain the same function during the course of evolution. Identification of **orthologs** is a critical process for reliable prediction of gene function in newly sequenced genomes.

Unsolved questions

17.: What are the sequence tagged sites?

18.PCR medicine

19. Short gun sequence?

20.Degenerated primer

21.Resistance 1248???

22.How obligonucleotides are formed

23.wild type phage

24. How the copy no of plasmid can be controlled by RNA?

25.Max method???

26.Explain GEP

27.Plasmid instability

28.Plasmid stability

29.Requirements of E coli

30.Benton and devis plaque

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31. AFLps uses
32. Principal strategy used in siRNA
33. Use of pH mapping
34. Bacteriophage
35. Automated DNA sequencing method
36. Radiation hybrid mapping
37. Shine Dalgarn sequence located
38. use of taq polymerase in OCT
39. Epitope

40. Advantages of cloning with high capacity vector?
41. Note on chain termination
42. what happened during chromosome jumping
43. process of Biopanning
44. orthrology in comparative genomics
45. General exploral pathway
46. DNA synthesis in recombinant technology
47. Primer extension
48. Random amplification of polymorphic DNA.
49. Mutagenesis and its types?
50. Disadvantage of PCR?
51. Spotting DNA?
52. Why taq polymerase use in PCR?
53. Applications of microarrays?
54. Explain PCR? It's Applications.
55. What is pregnancy test?
56. Note on spotted array?
57. What are domains in proteins?
58. Screening by functional complementation?
59. Spotting DNA?
60. How polymerases work?
61. PCR-DNA profiling?
62. Applications of siRNA?
63. Plasmid cloning scheme of Ish-Horowicz and Burke?
64. Comparative genomics of eukaryotes and organelles?
65. Chargaff rules

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66. Griffith experiment
67. Hairpin like structure of RNA
68. Electroporation technique
69. Work of Franklin and Wilkins
70. Euchromatic and heterochromatin
71. Host range of plasmids
72. Use of primase in antibiotics
73. Major techniques used for genome characterization
74. Diff b/ w RT PCR and multiplex PCR
75. What is PCR method for site-directed mutagenesis?
76. How many fragments are formed from digestion of Psc101 and p1225 within E.coli.

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