ULTIMATE KCET

CRASH COURSE 2026

(Zoology) | Lecture - 01

Biotechnology Principles and Processes Biotechnology and its Application

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Recap *of previous lecture*

1. Human Health and Diseases - Synopsis
2. Most Important MCQs

4 questions

Topics *to be covered*

1. Biotechnology: Principles and Processes - Synopsis
2. Biotechnology and its Applications - Synopsis
3. Most Important MCQs

5-6 questions
In KCET

Biotechnology – Principles

- Biotechnology deals with microorganisms, plant or animal cells or their enzymes to produce the useful products for human welfare.
- According to **European Federation of Biotechnology (EFB)**, biotechnology is the integration of natural science and organisms, cells, parts thereof, and molecular analogues for products and services.
- **Genetic engineering** which is modification of chemical nature of DNA/RNA and their introduction into another host organism to change the phenotypic characters of the host.
- **Sterilization methods** to maintain growth and manipulation of only the desired microbes or cells in large quantities, for the manufacture of biotechnological products like antibiotics, vaccines, enzymes, etc.

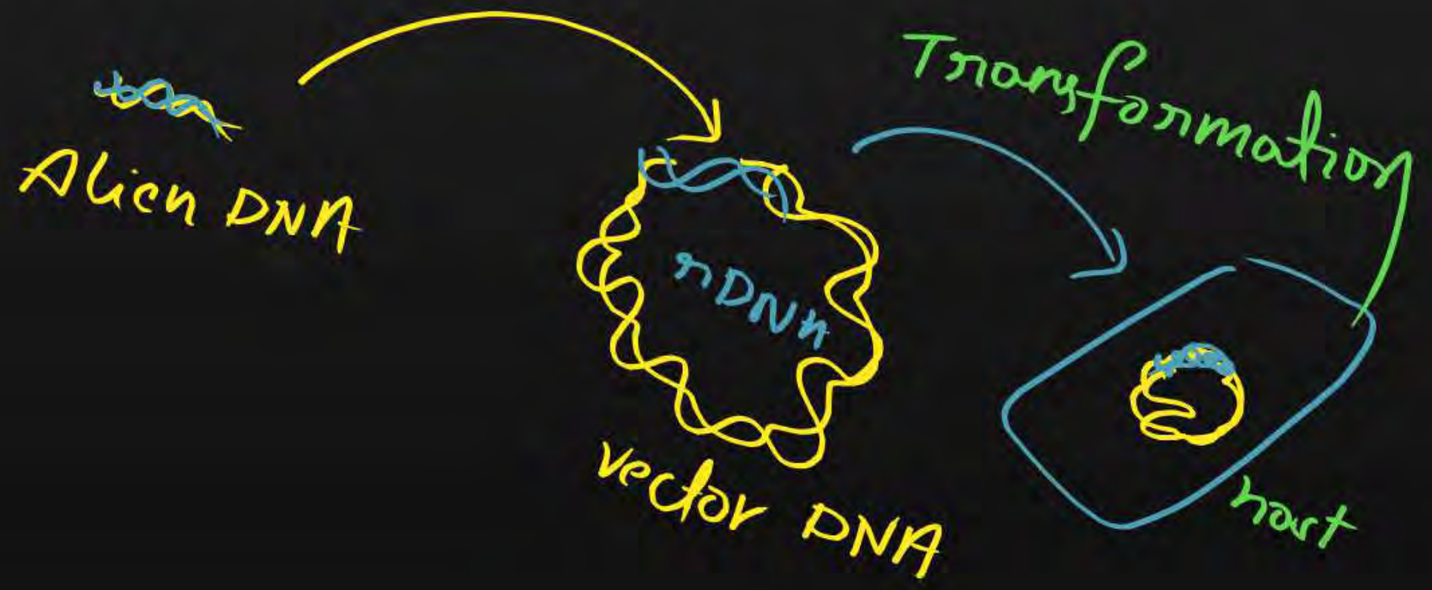
bioprocess engineering

Genetic Engineering - Basic Steps

1. Identification of DNA with desirable genes.
2. Introduction of the DNA into host to form recombinant DNA (rDNA).
3. Maintenance of introduced DNA in host and gene cloning. multiple copies.
4. Transfer of the DNA to its progeny.

In 1972, Stanley Cohen and Herbert Boyer constructed the first recombinant DNA.

Sequential



Tools of rDNA Technology

1963 — 900 REN from 230 strains

The key tools required for the recombinant DNA technology are:

1. Restriction enzymes → cut the DNA at specific location.
   - Exonucleases
   - Endonucleases
     - 6 bp
     - palindromic sequence

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5'-GAATTC-3'
3'-CTTAAG-5'
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2. Ligases - DNA ligase - Join the DNA molecule
3. Host organism/cell → Gene cloning
4. Polymerase enzymes → polymerization.
5. Vectors → To carry a foreign gene.
   - plasmid

Cloning Vectors

ori, selectable markers, cloning sites.

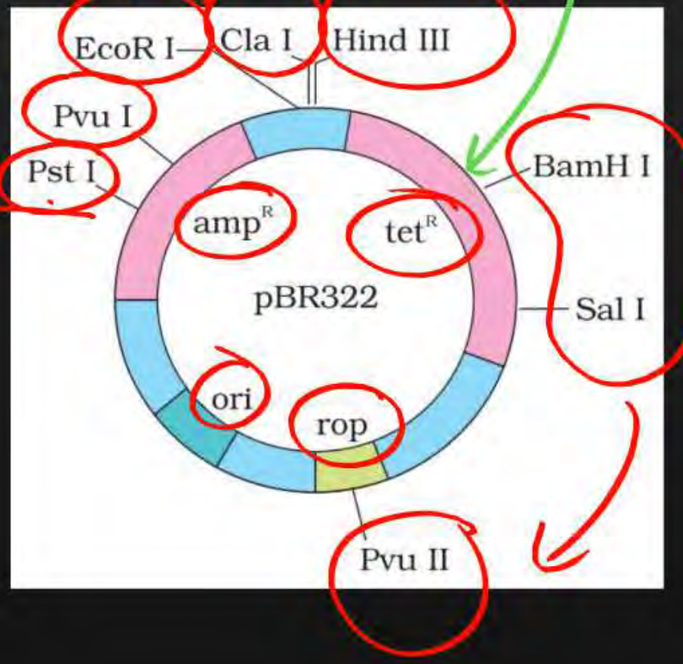
The vectors are the DNA molecules that can carry a foreign DNA segment into the host cell.

Vectors may be: small, circular, double stranded

a. Plasmids: These are autonomously replicating circular extrachromosomal DNA.

b. Bacteriophages: These are viruses infecting bacteria.

Copy number: It is defined as the number of copies of vectors present in a cell. It varies from 15- 100 copies per cell. The best-known vector is the plasmid vector.



Steps involved in rDNA Technology

Sequential.

- Isolation of DNA. - by using certain enzymes.
- Fragmentation of DNA by restriction endonucleases.
- Isolation of a desired DNA fragment. - Separation of DNA - Gel electrophoresis.
- Amplification of the gene of interest. - PCR - Taq polymerase.
- Ligation of the DNA fragment into a vector. - DNA ligase → rDNA
- Insertion of recombinant DNA into the host. - Transformation
- Culturing the host cells on a suitable medium at a large scale. - Bioreactors
- Extraction of the desired gene product. → Separation, purification, formulation, preservation.
- Downstream processing of the products as finished product, ready for marketing.

Biotechnology and Its Applications

Biotechnology has varied applications, some of which include

- Therapeutics
- Diagnostics
- Genetically modified crops for agriculture
- Processed food
- Bioremediation
- Energy production
- waste treatment

Genetically modified organisms (GMOs)

Crops

1. Increased tolerance against Abiotic stresses (cold, drought, salt, heat).
2. Reduced reliance on chemical pesticides (pest-resistant crops). - Bt cotton, Tobacco
3. Helped to reduce post-harvest losses.
4. Increased efficiency of minerals used by plants (this prevents early exhaustion of fertility of soil).
5. Enhanced nutritional value of food, e.g., vitamin 'A' enriched rice (Golden rice). (β-carotene)
6. Creation of tailor-made plants to supply alternative resources such as starches, fuels and pharmaceuticals to industries.

Bt Cotton

1. Some strains of _____ produce proteins that kill some insects.
2. _____ forms _____ which contain a toxic insecticidal protein.
3. Bt toxins are initially inactive pro-toxins but after ingestion by the insect their inactive toxin becomes active due to the _____ of the gut, which solublises the crystals.
4. The activated toxin binds to the surface of midgut epithelial cells thus creating pores which causes cell swelling and lysis, further leading to death of the insects.
5. The toxin is coded by a gene called 'cry' which is of various types.
6. Genes cryIAc and cryIIAb control the cotton bollworms & cryIAb control corn borer.

Pest Resistant Plant – Tobacco

- A nematode Meloidogyne incognita infects the roots of tobacco plants which reduces the production of tobacco.
- It can be prevented by using RNA interference (RNAi) process which is checked by silencing of specific mRNA due to a complementary dsRNA.
- dsRNA binds and prevents translation of the mRNA (silencing).

DNA → RNA → protein
(Transcription; Translation)

Pest Resistant Plant - Tobacco

Ti - plasmid

T - DNA

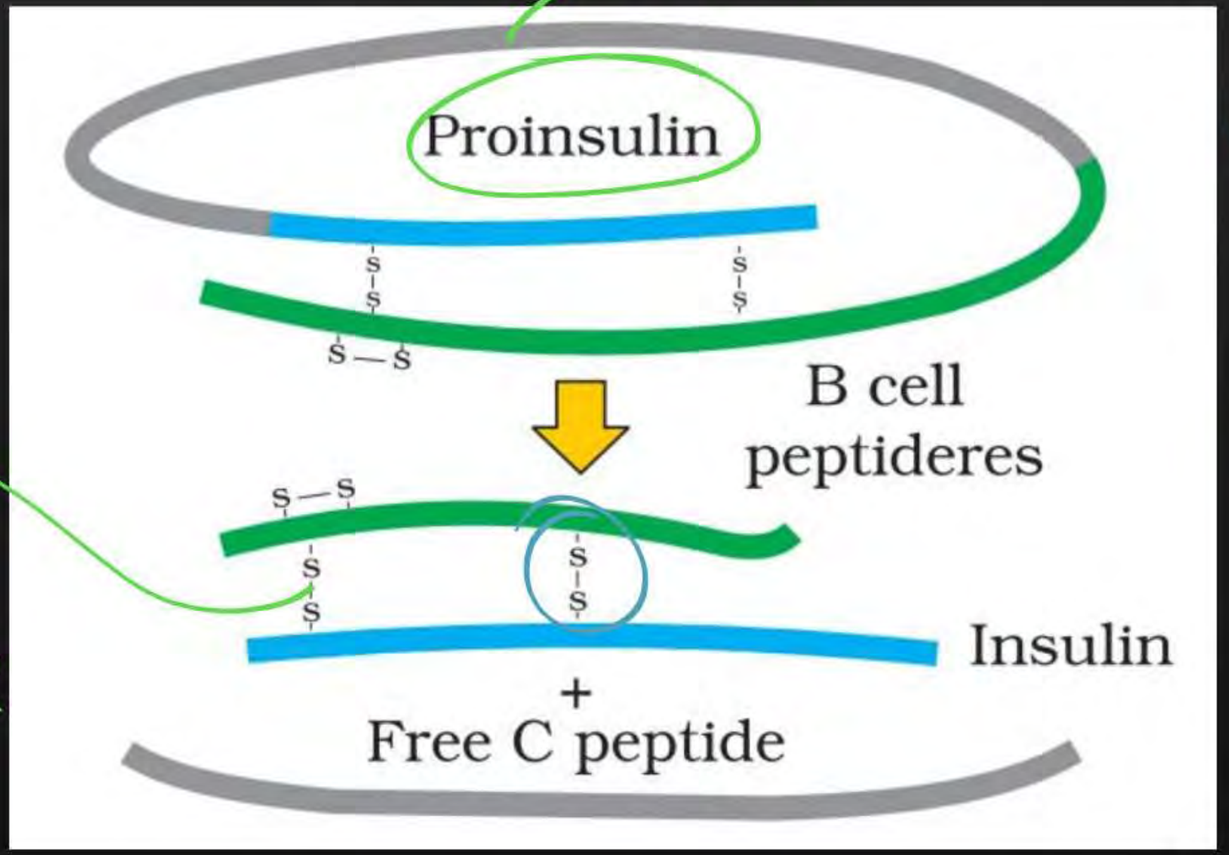
- By using Agrobacterium vectors, nematode-specific genes were introduced into the host plants which produce both sense and antisense RNA in the host cells.
- These two RNAs are complementary to each other and form a double-stranded RNA (dsRNA) that initiates RNAi and hence silence the specific mRNA of the nematode.
- The parasite cannot survive in the transgenic host, so protects the plants from pests.

Genetically Engineered Insulin

1983

Ely Lilly

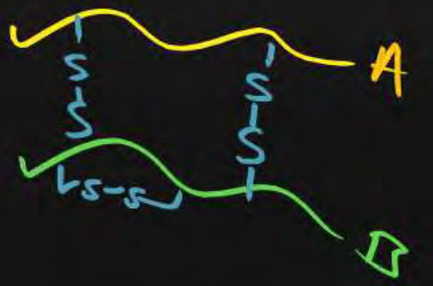
peptide - C



disulphide bridge

E. coli → peptide - A

E. coli → peptide - B



Gene Therapy

- Gene therapy is a collection of methods that allows correction of gene defects, diagnosed in a child or embryo.
- By insertion of normal genes, the defective mutant allele of the genes are replaced and non-functional gene is compensated.
- For the first time in 1990, M. Blease and W. F. Andresco of National Institute of Health, attempted gene therapy on a 4-year-old girl with adenosine deaminase (ADA) deficiency.
- ADA is caused due to deletion of gene for adenosine deaminase.
- In some cases, it can be cured by bone marrow transplantation and enzyme replacement therapy, but it is not fully curative.

Molecular Diagnosis

- Polymerase chain reaction: Used to detect very low concentration of a bacteria or virus by amplification of their nucleic acid.
- Recombinant DNA technology: A single stranded DNA or RNA, tagged with a radioactive molecule (probe) is allowed to hybridise to its complementary DNA in a clone of cells followed by detection using autoradiography. The clone having the mutated gene will hence not appear on the photographic film, because the probe will not have complementarity with the mutated gene
- Enzyme linked immunosorbent assay (ELISA): is based on the principle of antigen-antibody interaction. Infection by pathogen can be detected by the presence of antigens (proteins, glycoproteins, etc.) or by detecting the antibodies synthesised against the pathogen.

Benefits of Transgenic Animals

95% are mice

- Study of normal physiology and development. - Gene regulation.
- Study of diseases like a cancer, cystic fibrosis, rheumatoid arthritis, and Alzheimer's disease.
- To obtain biologically improved products e.g., Alpha-1-antitrypsin used to treat emphysema, Rosie the first transgenic cow to produce protein enriched milk.
- To ensure vaccine safety.
- For chemical safety testing - mice are the most commonly used organisms for transgenic experiments.

1997 human α-lactalbumin → sheep

2.4 Oms / Hi

Biopiracy

- **Biopiracy** is defined as the use of bioresources by multinational companies and other organisations, without proper authorisation from the countries and concerned people, without compensatory payment.
- In 1997, an American company got patent rights for Basmati rice through the US Patent and Trademark office and was allowed to sell a 'new variety' in US and abroad.
- A **patent** is a set of exclusive rights granted by a state (national government) to an inventor or their assignee for a limited period of time in exchange for a public disclosure of an invention.

Question (KCET - 2020)

A student while extracting DNA from Aspergillus fungus requires _____ enzyme to break open the cell wall.

chitinase

chitin

A. Cellulase ✗

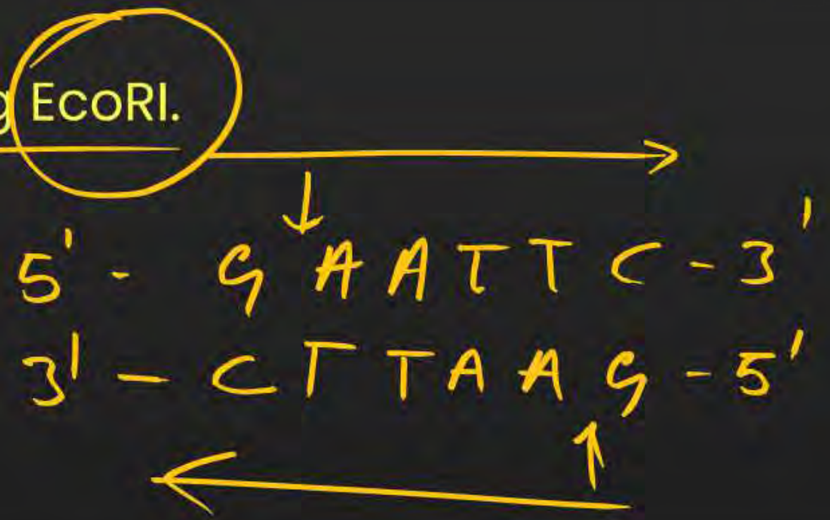
B. Lysozyme ✗

C. Pectinase ✗

D. Chitinase ✓

Question (KCET - 2020)

Identify the DNA sequence which can be cut using EcoRI.



A
5' TGCTTAAGTA 3'
3' ACGAATTCAT 5'

B
5' ACGAATTCAT 3'
3' TGCTTAAGTA 5'

C
5' TACTTAAGCA 3'
3' ATGAATTCGT 5'

D
3' ACGAATTCAT 5'
5' TGCTTAAGTA 3'

Question (KCET - 2020)

From the given combinations of steps in PCR, identify the enzyme dependent step/s.

A Extension only

B Annealing and extension

C Annealing and denaturation

D Denaturation and extension

DNA Taq polymerase

Denaturation

Annealing - primers (3 end)

Extension

Question (KCET - 2022)

Gel electrophoresis is used for

A. Separation of DNA fragments according to their size

B. Construction of recombinant DNA by joining with cloning vectors

C. Cutting of DNA into fragments

D. Isolation of DNA molecule

Question (KCET - 2022)

An antibiotic resistance gene in a vector usually helps in the selection of

Selectable markers

A. Non-recombinant cells

B. Competent cells

C. Non-competent cells

D. Transformed cells. ✓ → contains the rDNA.

Question

Genetic engineering is the;

Manipulation of DNA.

A. Formation of new gene naturally

B. Formation of RNA from DNA artificially

C. Modification of genes artificially

D. Formation of DNA from non- DNA material

Question

There are three basic steps in genetically modifying an organism. Arrange these steps in the correct sequence.

I. Introduction of the identified DNA into the host.

II. Maintenance of introduced DNA in the host and transfer of the DNA to its progeny.

III. Identification of DNA with desirable genes.

III → I → II

A. I → II → III

B. II → III → I

C. III → II → I

D. III → I → II

Question

Native plasmid of _____ was used for the construction of the first recombinant gene. Choose the correct option to fill the blank.

A. *Salmonella typhimurium*

B. *Escherichia coli*

C. *Streptococcus pneumonia*

D. *Haemophilus influenzae*

Question

Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R:

Assertion A: Each restriction endonuclease recognises a specific palindromic nucleotide sequence in the DNA.

Reason R: The palindromic nucleotide sequence in DNA are useful for formation of recombinant molecule of DNA.

In the light of the above statements, choose the correct answer from the options given below:

(A) A is true but R is false.

(B) A is false but R is true.

(C) Both A and R are true and R is the correct explanation of A.

(D) Both A and R are true but R is NOT the correct explanation of A.

Question

Match List-I with List-II.

	List – I		List – II
A	Chitinase (II)	I	Joins DNA fragment together
B	DNA ligase (I)	II	Fungus
C	DNA polymerase (IV)	III	Bacteria
D	Lysozyme (III)	IV	Amplifies DNA sequence

(A) A – II, B – I, C – IV, D – III

(B) A – III, B – IV, C – I, D – II

(C) A – II, B – IV, C – III, D – I

(D) A – III, B – I, C – IV, D – II

Question

Match List-I with List-II.

	List - I		List - II
A	ampR (II)	I	Electrophoresis
B	Separation of DNA fragments (I)	II	Selectable marker
C	pBR322 (IV)	III	Escherichia coli RYI3
D	EcoRI (III)	IV	Plasmid

A. A-III, B-II, C-IV, D-I

B. A-III, B-I, C-II, D-IV

C. A-II, B-I, C-IV, D-III

D. A-III, B-I, C-IV, D-II

Question

'Restriction' in Restriction enzyme refers to

Nucleases
Endo & Exonucleases

A. Cleaving of phosphodiester bond in DNA by the enzyme

B. Cutting of DNA at specific position only

C. Prevention of the multiplication of bacteriophage by the host bacteria

D. All of the above

Question

Which of the following is not an ideal feature for a cloning vector?

A. It should have a site called the origin of replication.

B. It should have selectable markers.

C. Presence of many recognition sites within the vector.

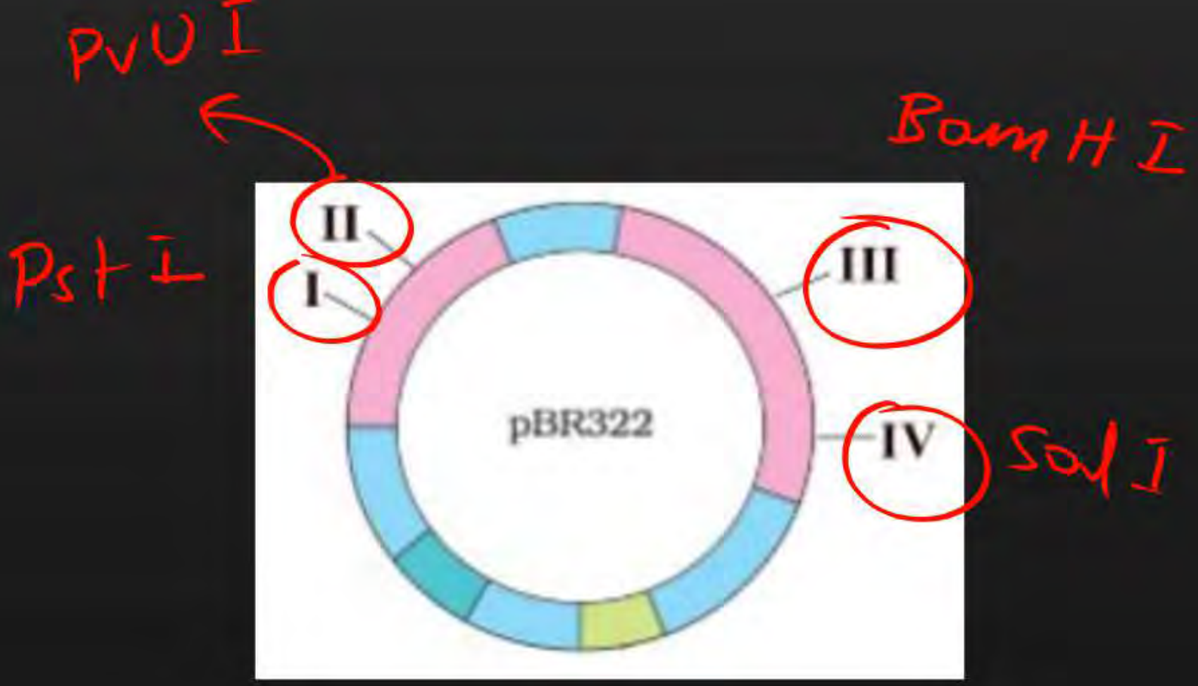
D. All of these

Single

Question

Refer to the given below diagram.

Choose the correct option.



A. I- Pst I, II-Pvu I

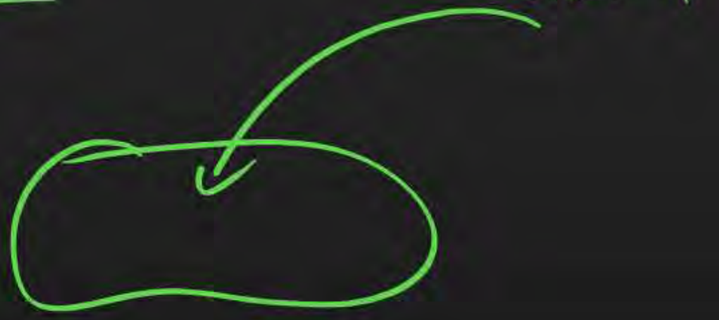
B. II- Pvu I, I-tetR

C. III- Sal I, I-ampR

D. IV- BamHI, I-tetR

Question

What is the purpose of incubating the cells with recombinant DNA on ice and then briefly placing them at 42°C (heat shock) before putting them back on ice?



A. To prevent the cells from taking up the recombinant DNA.

B. To increase the efficiency of the bacteria to take up the recombinant DNA.

C. To inhibit the growth of bacteria in the cells.

D. To destroy the recombinant DNA in the cells.

Question

Read the following statements and identify the correct ones:

A. *Agrobacterium tumefaciens* vector can be used to transform plant cell.

B. Disarmed retrovirus can act as a vehicle to deliver foreign DNA in animal cell.

C. PCR can be used for detection of jaundice.

D. Calcium chloride treatment can make host competent to uptake foreign DNA.

→ chemical method of competent host.

A. A, B and D

B. A, D and C

C. B and C

D. B and D

Question

Given below are two statements:

Statement I: In a method known as micro- injection, recombinant DNA is directly injected into the nucleus of an animal cell.

Statement II: Restriction enzymes belong to a larger class of enzymes called nucleases.

In the light of the above statements, choose the most appropriate answer from the options given below:

A. Statement I is correct but Statement II is incorrect.

B. Statement I is incorrect but Statement II is correct.

C. Both Statement I and Statement II are correct.

D. Both Statement I and Statement II are incorrect.

Question

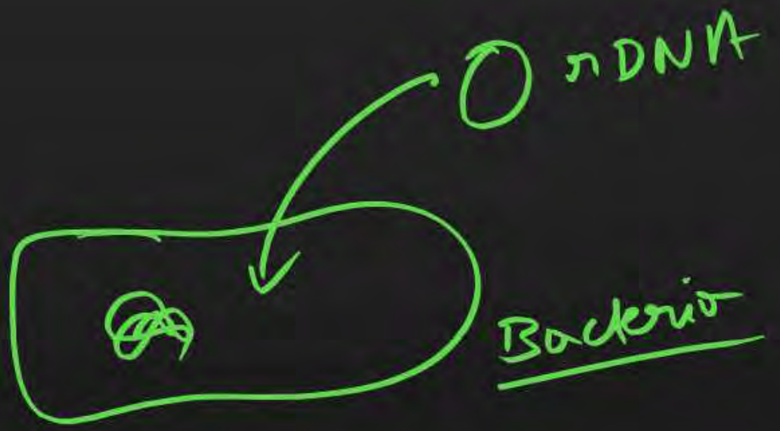
In order induce the bacterial uptake of plasmids, the bacteria are made competent by first treating with

A. Sodium chloride

B. Magnesium chloride

C. Potassium chloride

D. Calcium chloride ✓



Specific conc. of divalent cation

Question

Which of the following is not a method of introducing alien DNA into host cells?

A. Micro injection. → Animal

B. Heat shock method. → Bacteria

C. Gene gun method. → plants

D. Gel electrophoresis.

Question

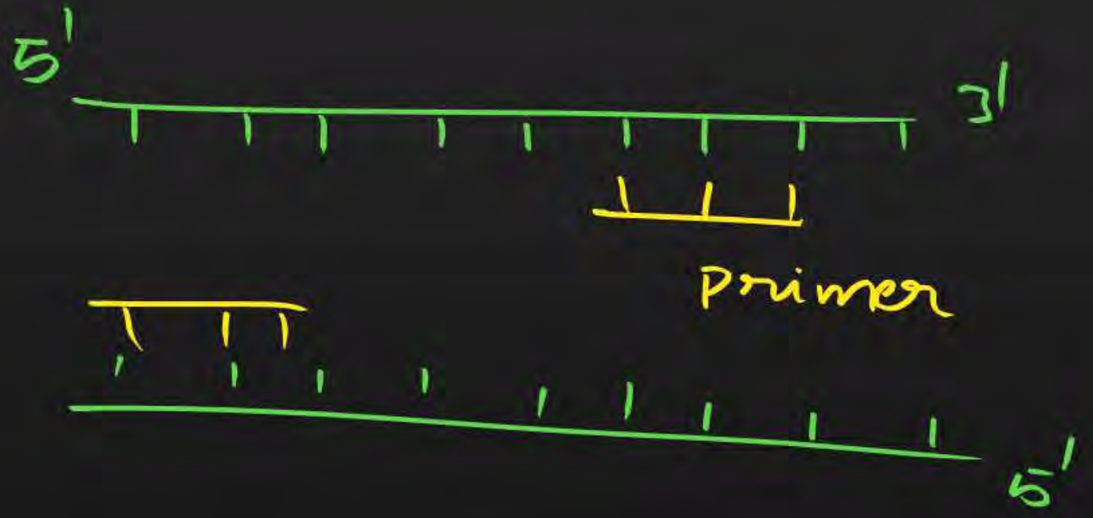
What is the main role of primers in PCR?

A. To separate DNA strands

B. To start DNA synthesis

C. To provide energy

D. To cool the sample



Question

Assertion: Gene amplification can be done by polymerase chain reaction.

Reason: In PCR, multiple copies of the gene of interest is synthesised.

PCR

A. Both Assertion and Reason are True and the Reason is a correct explanation of the Assertion.

B. Both Assertion and Reason are True but Reason is not a correct explanation of the Assertion.

C. Assertion is True but the Reason is False.

D. Assertion is False but the Reason is True.

Question

Match List-I with List-II.

	List - I		List - II
A	PCR (IV)	I	Large scale culture
B	Bioreactor (I)	II	Introduction of alien DNA in host cell
C	Gene gun (II)	III	Restriction endonuclease
D	EcoRI (III)	IV	Amplification of gene of interest

(A) A-IV, B-I, C-II, D-III ✓

(B) A-II, B-I, C-IV, D-III

(C) A-IV, B-I, C-III, D-II

(D) A-I, B-IV, C-II, D-III

Question

During gel electrophoresis, DNA fragments separate according to size through:

A. Attractive force effect

B. Cloning effect

C. Sieving effect

D. Centrifugal force

Question

After staining, DNA fragments are visible under:

A. infrared radiation.

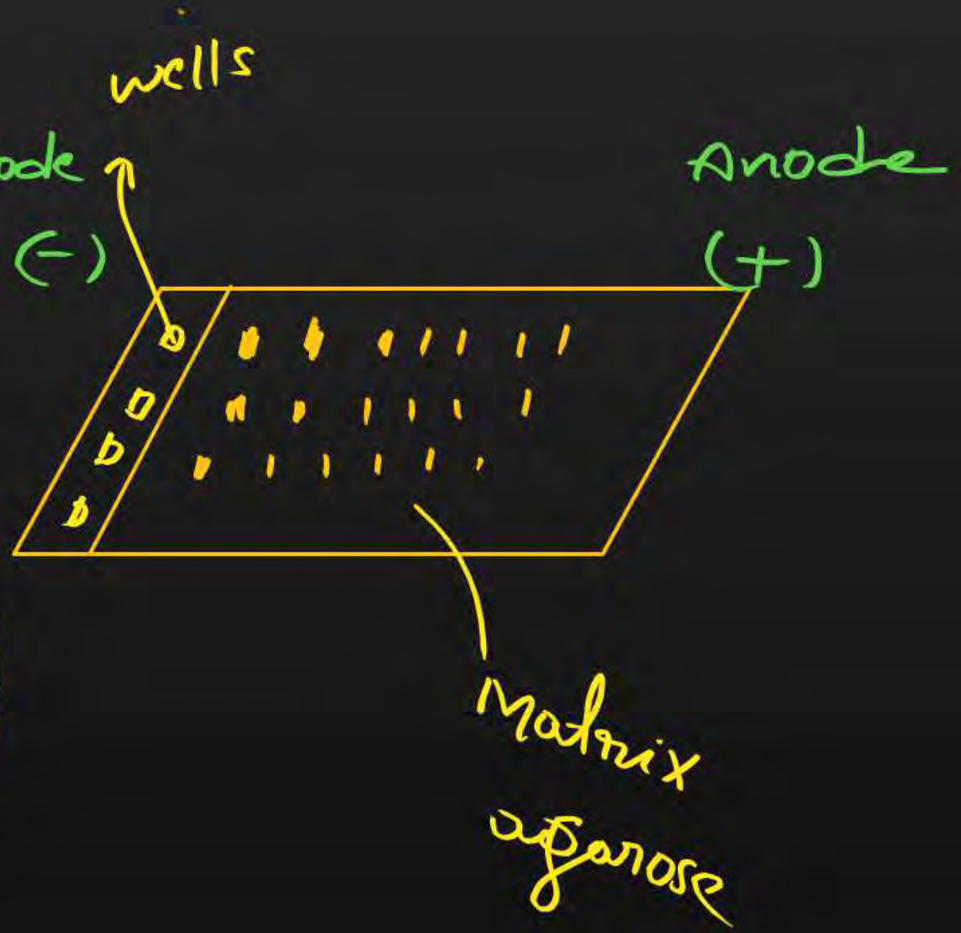
B. X-rays.

C. gamma ways.

D. UV light.

Bright orange colour

Ethidium bromide



Question

Golden rice is enriched with:

A. Vitamin A. ✓ β-carotene

B. iron.

C. Vitamin C.

D. calcium.

Question

What is the criterion for DNA fragments movement on agarose gel during gel electrophoresis?

A. The larger the fragment size, the farther it moves.

B. The smaller the fragment size, the farther it moves.

C. Positively charged fragments move to farther end.

D. Negatively charged fragments do not move.

Question

H. W

In Gel electrophoresis at which end of the gel the sample is loaded?

A. In the wells

B. Towards positive electrode

C. Towards negative electrode

D. Both (A) and (C)

Question

H.W

Bioreactors are useful in:

A. Processing of small volumes of culture.

B. Microinjection.

C. Processing of large volumes of culture.

D. Isolation of genetic material.

Question

H.W

Which of the following is incorrect regarding bioreactors?

A. In bioreactors, large volumes of culture can be processed.

B. A bioreactor provides the optimal conditions for achieving the desired product.

C. A stirred tank bioreactor does not facilitate mixing of reactor content.

D. It yields products in large quantities.

Question

H.W

Which of the following processes include separation and purification?

A. Downstream processing.

B. Scaling up and downstream processing.

C. Upstream processing.

D. Screening for recombinants.

Question

H.W

What materials compose the microparticles that are coated with DNA and utilized in gene guns for transformation?

A. Silver or Platinum

B. Platinum or Zinc

C. Silicon or Platinum

D. Gold or Tungsten

Question (KCET - 2019)

Which of these is not an advantage in genetically modified crops?

A. Increases efficiency of material usage in plants

B. Reduces the reliance on chemical pesticides

C. Enhances the nutritional value of food

D. Increases the post-harvest losses

Reduce

Question

Choose the correct statement about agrochemicals in developing countries.

A. These are expensive for farmers.

B. These have harmful effects on environment.

C. Genetically modified crops are less expensive than agrochemicals.

D. Both (A) and (B)

Question

Which is not correct with respect to agrochemicals?

A. Fertilisers and manures

B. Fertilisers and pesticides

C. Insecticides and pesticides

D. Pesticides and herbicides

Natural

Agrochemicals

Question

The name of Norman Borlaug is associated with:

Father of Green Revolution.

A White revolution (Milk)

B Green revolution

M.S. Swaminathan

C Yellow revolution (Oil seeds)

D Blue revolution – Fishery (aquatic)

Question

Given below are two statements:

Statement I: The Green Revolution increased the food supply.

Statement II: Tissue culture is a technique that allows the regeneration of whole plants from explants.

vegetative part → entire plant

In the light of the above statements, choose the most appropriate answer from the options given below:

Totipotency

A Statement I is correct but Statement II is incorrect.

B Statement I is incorrect but Statement II is correct.

C Both Statement I and Statement II are correct.

D Both Statement I and Statement II are incorrect.

Question

Read the following statements (I-IV) w.r.t. genetic modification in plants.

I. It has reduced reliance on chemical pesticides.

II. It increased post-harvest losses.

III. It has increased efficiency of minerals usage by the plants.

IV. It has made crops more sensitive to cold, heat and drought.

Which of the statements given above are correct?

A. I and III only

B. I, II and III only

C. II, III and IV only

D. III and IV only

Question

Golden rice is enriched with:

A. Vitamin A

B. Iron

C. Vitamin C

D. Calcium

Question

In Bt cotton, the Bt toxin present in plant tissue as pro-toxin is converted into active toxin due to:

A. Alkaline pH of the insect gut

B. Acidic pH of the insect gut

C. Action of gut microorganisms

D. Presence of conversion factors in insect gut

Question

Bacillus thuringiensis forms the protein crystals which contain a toxic insecticidal protein. This protein

A. is activated by alkaline pH of the gut of the insect pest.

B. binds with the epithelial cells of the midgut of the insect pest ultimately killing it.

C. does not kill the carrier bacterium which is itself resistance to this toxin.

Which of the statements given above are correct?

A. A and B only

B. A and C only

C. B and C only

D. A, B and C

Question

Assertion (A): The choice of Bt toxin genes depends upon the crop and the targeted pest.

Reason (R): Most Bt toxins are not related to a specific insect group.

Species - specific

A. Both Assertion (A) and Reason (R) are the true, and (R) is a correct explanation of (A).

B. Both Assertion (A) and Reason (R) are the true, but (R) is not a correct explanation of (A).

C. Assertion (A) is true, and Reason (R) is false.

D. Assertion (A) is false, and Reason (R) is true.

Question

Bt toxin is harmful to insects like:

A. Lepidopterans (tobacco budworm, armyworms)

B. Coleopterans (beetles)

C. Dipterans (flies and mosquito)

D. All of these

Question (KCET - 2022)

H.W

Cry IAC effectively controls

A. Root nematode

B. Cotton bollworms

C. Ringworm

D. Corn borer

Question

H.W

Which of the following vector is commonly used in the transfer of genes in a crop plant?

A. Plasmids of *Salmonella*

B. Bacteriophage

C. Ti-plasmids of *Agrobacterium*

D. *E.coli* cells

Question

H.W

Given below are two statements:

Statement I: The inactive protoxin is toxic to insects in its original form.

Statement II: Genetic modification is now being used to enhance nutritional value of food.

In the light of the above statements, choose the most appropriate answer from the options given below:

A. Statement I is correct but Statement II is incorrect.

B. Statement I is incorrect but Statement II is correct.

C. Both Statement I and Statement II are correct.

D. Both Statement I and Statement II are incorrect.

Question

H.W

Which of the following is the conventional methods of diagnosis?

A. Serum and urine analysis

B. Recombinant DNA technology

C. Polymerase Chain Reaction

D. Enzyme-Linked Immunosorbent Assay

Question

Given below are two statements.

Statement I: RNA interference is a natural process in eukaryotes used to silence specific genes.

Statement II: Insulin was originally extracted from pancreas of slaughtered pigs and cattle.

In the light of the above statements, choose the most appropriate answer from the options given below:

A. Statement I is correct, but Statement II is incorrect.

B. Statement I is incorrect, but Statement II is correct.

C. Both Statement I and Statement II are correct.

D. Both Statement I and Statement II are incorrect.

Question

H.W

Which of the following statements are correct regarding the process of RNA interference?

(i) This is used to prevent the infestation of protozoans.

(ii) It takes place in some eukaryotic and all prokaryotic organisms as a method of cellular defense.

(iii) The method involves silencing of a specific mRNA due to a complementary dsRNA molecule.

(iv) It is a novel strategy to produce pest-resistant plants.

A (iii) and (iv) only

B (i) and (iii)

C (i) and (ii)

D (ii), (iii) and (iv)

Question (KCET - 2021)

H.W

Silencing of a gene could be achieved through the use of

A. Short interfering RNA (RNAi)

B. Antisense RNA

C. By both (A) and (B)

D. None of the above.

Question (KCET - 2020)

H.W

In RNA interference, the dsRNA molecule prevents _____.

A Aminoacylation

B Transcription of mRNA

C Transport of RNA from nucleus to cytoplasm

D Translation of mRNA

Question

+1.w

What challenging obstacle was encountered in the production of human insulin by genetic engineering?

A. Splitting A and B peptide chains.

B. Addition of C-peptide to proinsulin.

C. Getting insulin assembled into mature form.

D. Removal of A-peptide from active insulin.

Question

H-W

Which of the following statement(s) is/are incorrect?

(i) Insulin was originally extracted from pancreas of slaughtered pigs and cattle.

(ii) Animal insulin is difficult to obtain.

(iii) Animal insulin is identical to human insulin.

(iv) Non-human insulin caused some patients to develop allergy.

(v) Recombinant insulin is actually obtained from E. coli in bacterial cell.

A Only (i) and (ii)

B Only (iii) and (iv)

C Only (iii)

D Only (v)

Question

H.W

Insulin consists of:

A. Two short polypeptide chains

B. Two long polypeptide chains

C. Two short oligopeptide chains

D. Two long oligopeptide chains

Question

H.W

C-peptide of human insulin is:

A. Absolutely necessary for its biological activity.

B. Responsible for formation of disulphide bridges

C. Removed during maturation of proinsulin to insulin.

D. An integral part of mature insulin molecule.

Question

H.W

Given below are two statements:

Statement I: Insulin can never be taken orally.

Statement II: Mature insulin consists of disulphide bond.

In the light of the above statements, choose the most appropriate answer from the options given below:

A. Both Statement I and Statement II are correct

B. Statement I is correct but Statement II is incorrect

C. Statement I is incorrect but Statement II is correct

D. Both Statement I and Statement II are incorrect

Question

H.W

Which of the following is a permanent cure for ADA deficiency?

A. Enzyme replacement therapy.

B. Bone marrow transplant.

C. Introduction of a functional ADA cDNA into lymphocytes.

D. Introduction of gene isolated from marrow cells producing ADA into early embryonic cells.

Question

H-W

The adenosine deaminase deficiency results into:

A. Hormonal disorder

B. Neural disorder

C. Dysfunction of immune system

D. None of these

Question

H.W

When a patient with defective ADA was treated, which of the following steps was performed for gene therapy?

I. Lymphocytes were obtained from the patients.

II. Lymphocytes are transferred to culture dishes.

III. Lymphocytes were transfected with normal ADA genes.

IV. The transfected cells are returned to the patients.

A. All

B. Only III and IV

C. Only IV

D. SCID cannot be treated

Question

H.W

Which one of the following vectors is used to replace the defective gene in gene therapy?

A. Adenovirus

B. Cosmid

C. Ri plasmid

D. Ti plasmid

Question (KCET - 2021)

H.W

Rapid antigen test and RT-PCR are the two-diagnosis test for Covid-19 virus. PCR, a molecular diagnostic tool, stands for

A Polymerase Chain Reaction

B Polymerase Chain Reagent

C Physiological Chain Reaction

D Physiological Chain Reagent

Question

Match List-I with List-II.

	List - I		List - II
A	Rosie	I	Tripling the food supply
B	ELISA	II	Produces protein-enriched milk
C	Heat-shock method	III	Test based on antigen- antibody interaction
D	Green revolution	IV	Used for bacterial host cells

A. A-II, B-III, C-IV, D-I

B. A-I, B-III, C-IV, D-II

C. A-II, B-III, C-I, D-IV

D. A-IV, B-III, C-II, D-I

Question

Match List-I with List-II.

	List - I		List - II
A	Medical Termination of Pregnancy (Amendment) Act	I	1981
B	Rosie was produced	II	1972
C	The construction of the first recombinant DNA	III	1997
D	First case of AIDS	IV	1971

(A) A-II, B-I, C-III, D-IV

(B) A-III, B-IV, C-I, D-II

(C) A-IV, B-III, C-II, D-I

(D) A-I, B-II, C-III, D-IV

Question (KCET - 2019)

H.W

Some multinational companies have exploited the traditional knowledge of the indigenous people to produce commercially important bioproducts, without their consent. This is an example for

A Biopatent

B Bioprospecting

C Biopiracy

D Bioremediation

Thank You