







Learning Objectives

At the end of this session student should be able to:

- 1. Define polymerase chain reaction technique, describe it's steps & explain the clinical applications
- 2. Integrate Physiological, Biochemical and Clinical aspects
- 3. Correlate and build core knowledge on the basis of latest Research, Family Medicine, Artificial Intelligence & Bioethics.

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CBL-MCQ Assessment 3. In PCR, the step that separates DNA strands is 1. The main purpose of PCR is to: A. Amplify DNA B. Visualize RNA called: C. Remove introns A. Extension D. Sequence proteins E. Cut DNA B. Denaturation C. Replication D. Polymerization E. Annealing

- 2. The enzyme used in PCR is: A. RNA polymerase
 - B. Telomerase
 - C. DNA helicase
 - D. Ligase E. Taq polymerase

4. The building blocks added during PCR to form new DNA are:

- A. ATP molecules B. dNTPs C. tRNAs
- D. Ribosomes
- E. RNA primers

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CBL-MCQ Assessment

- 5. PCR is most useful when you want to: A. Visualize lipids
 - B. Inhibit gene expression
 - C. Increase DNA quantity
 - D. Break down DNA
 - E. Stop translation
- 6. The step in PCR where primers bind to DNA is called: A. Transcription
 - B. Annealing
 - C. Translation
 - D. Folding
 - E. Denaturation

- PCR requires all of the 7. following except: A. DNA ligase
 - B. Primers C. Taq polymerase D. DNA template
 - E. dNTPs
- 8. Tag polymerase is used in PCR because it is:
 - A. Found in human cells
 - B. Heat-stable
 - C. Inactive above 40°C
 - D. RNA-dependent
 - E. Active in acidic pH



- A. 72°C
- B. 55°C C. 25°C
- D. 95°C

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E. 45°C

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	CBL-MCQ Assessment	
1.	A	
2.	E	
3.	В	
4.	В	
5.	C	
6.	В	
7.	А	
8.	В	
9.	E	
10.	. D	
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Interactive Session

A male of age 47 years, presented in Holy Family Hospital Rawalpindi with distended abdomen and yellow discoloration of skin and sclerae. He was diagnosed as a case of HCV infection 5years ago. There was no history of interferon therapy.

On examination

- His sclerae were yellow with multiple bruises on his body.
- Liver was enlarged 3cm below right costal margin.
- Investigations
- Bilirubin, ALT & AST levels were found to be raised.

Advice

• He was advised Quantitative PCR to determine his viral load.

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Vertical Integration PCR- Applications 1. Comparison of a normal gene to its mutant form: PCR allows the synthesis of mutant DNA in sufficient quantities for a sequencing protocol without laborious biologic cloning of the DNA.



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Diagnosis Diagnosis Diatra Guidelines Anti-HCV antibody test is recommended to screen for HCV function Quantitative HCV RNA testing is recommended before initiating therapy to determine the baseline viral load, and testing for HCV genotype is recommended to help guide treatment decisions. Monitoring of treatment effectiveness is assessed by repeated measurement of HCV RNA on PCR Referral

Family Medicine

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Spiral Integration



Ethical Consideration
 Patient Involvement in treatment decisions of HCV & Safeguarding patients privacy (Autonomy)

- Keeping knowledge & skills regarding diagnosis & treatment of HCV current (Non-Maleficence)
- Competent & timely delivery of healthcare to patients infected with HCV (Beneficence)
- Delivering healthcare without prejudice- not to provide treatment to an individual infected with HCV solely on that fact is unethical (Justice)
- Spiral Integration

Spiral Integration

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Bioethics





Spiral Integration

How to use HEC Digital Library

Steps to Access HEC Digital Library

 Go to the website of HEC National Digital Library http://www.digitallibrary.edu.pk

2. On Home Page, click on the INSTITUTES.

3. A page will appear showing the universities from Public and Private Sector and other Institutes which have access to HEC National Digital Library (HNDL).

4. Select your desired Institute.

5. A page will appear showing the resources of the institution

6. Journals and Researches will appear

7. You can find a Journal by clicking on JOURNALS AND DATABASE and enter a keyword to search for your desired journal.

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Learning Resources

- Essentials of Biochemistry Vol 1 Mushtaq Ahmad. 9th edition. Page no 462
- Lippincott illustrated reviews. Biochemistry. 8th edition. Pages 534, 547, 550, 551.
- Google Images

Thank You!