



Med-Pathway.com Zoom MCAT Prep Workshop/Class Schedule

1. Thank you for your interest in the med-pathway.com Zoom MCAT Prep Workshops. All registered learners will have access to the med-pathway Q/Passage Bank for 6 months in addition to the Zoom Workshops **that begin August 22, 2021**. All the Content Review, Passage Slides, and Annotations are available on the med-pathway site. This is because the presentations are derived from passages and freely available resources that are on the site. Each passage performed in the workshop is part of the Q/Passage Bank and can be readily accessed as described below. We will go through 44 challenging passages.

2. Your instructor will be Dr. Phillip Carpenter. He has taught hundreds of MCAT classes as an instructor and trainer and has extensive experience in medical school education and curriculum design. Email: pcarpenter@med-pathway.com

3. Each class/workshop begins at 8:00 PM Eastern Standard Time on the dates listed below and will last for up to 2 hours. Make up classes and office hours are available at no additional charge. Zoom passcodes will be available in your account through the Workshop function.

Organic chemistry is a pre-req for all workshops and the med-pathway video <https://www.youtube.com/watch?v=sWS7vXj5jD8> is recommended.

Pre-class work involves content review as well as doing the assigned passages as listed below. Each session has suggested pre-work that directs your attention to topics that will be tested in the passages. Learners are encouraged to familiarize themselves with this material. All subject matter is available in any of several of the free resources (video and PDF format) on the med-pathway site.

4. Test site Navigation. The med-pathway Q/Passage bank follows the AAMC MCAT Content Outline. Topics and Passages (i.e. Chapters) can readily be found as follows.

A. My Tests Page:

Locate test of interest. Sections and chapters are shown. Begin Test in Target Section. Tests can be taken timed/untimed and in the tutor/non tutor mode.

The screenshot shows a test page for 'Microbiology & Immunology'. At the top, there are four buttons: '2 Sections', '7 Chapters', '62 Total Questions', and 'Expires 2021-10-02 18:30:59'. Below this, the page is organized into two main sections:

- I. Bacteria & Viruses (36 questions, 3 chapters)**
[Begin Test Here](#) | [Show Chapters](#)
 - 1. Free Standing Questions (24 questions)
 - 2. Discovery of Host Restriction Modification (5 questions)
 - 3. Arabinose Operon & DNA Looping (7 questions)
- II. Immunity (26 questions, 4 chapters)**
[Begin Test Here](#) | [Show Chapters](#)
 - 1. Free Standing Questions (13 questions)
 - 2. Multiple Myeloma and Immunoglobulins (5 questions)
 - 3. CRISPR and Bacterial Immunity (4 questions)
 - 4. Toll Like Receptors & Inflammation (4 questions)

B. Once inside the desired test section, click on Navigation function at bottom right to locate question numbers and chapters of interest.

The screenshot shows a dark blue navigation bar at the bottom of the page. It contains four buttons: '« Previous Question', 'Navigation', 'Section Review', and 'Next Question »'. A small white dropdown arrow is visible on the right side of the bar.

Section 2 of 2

Bacteria & Viruses

Total Questions : 62 | Section Questions : 1 - 37 | Current Chapter : Free Standing Questions

Question	Flagged	Answered	Question
<p>Question #1 - Current Question A strain of E. coli was grown in media containing both lactose and glucose as shown. Which, if any, of the phases in the... <i>Chapter : Free Standing Questions</i></p>	-	Incomplete	<p>Question #19 Which of the follk transcriptase? <i>Chapter : Free Sta</i></p>
<p>Question #2 If a double stranded plasmid DNA 4.0 kilobases in length is composed of 25% guanine, then how many Eco RI restriction en... <i>Chapter : Free Standing Questions</i></p>	-	Incomplete	<p>Question #20 Which of the follc genomes? <i>Chapter : Free Sta</i></p>
<p>Question #3 Which of the following statements is most accurate with respect to endotoxin? <i>Chapter : Free Standing Questions</i></p>	-	Incomplete	<p>Question #21 Which of the follc transduction? <i>Chapter : Free Sta</i></p>

C. The section review function can be used to move from section to section within any given test through clicking on the view sections link.

Section Review - Chemical & Physical Foundations of Biological Systems

Continue This Section
Rectangular Snip
Advance to Next Section »

Test Section Navigation : [View 4 sections](#)

5. Zoom Sessions (44 Total Passages)

Session 0 Introduction. Sunday Aug 22 8 PM EST

Med School Admissions, Pre-Med Q & A, MCAT approach, practice, and execution

Session A Workshops 1 & 2 Sunday Sept 5 8 PM EST (6 passages)

1. Amino Acids & Proteins

Video link: <https://www.youtube.com/watch?v=4ffg2hTpw6c>

Passages:

A. DNA Polymerase Structure/Function ([AA, Peptides & Proteins Diagnostic](#), Section II, Q63-68).

B. Structure/Function of Hemoglobin ([AA, Peptides & Proteins Diagnostic](#) Section II, Q69-74).

C. Chemical Modification of Histidine Residues in Enzymes ([Chemical & Physical Foundations of Biological Systems #2](#), Section V, Q135-139).

Subjects: Biology, Biochemistry (Biological/Physical), Organic Chemistry
Suggested Pre-Work Review: Amino Acids and Protein Structure/Function including Hemoglobin and DNA polymerase

2. Lab Techniques Including Protein Purification & Separation Techniques

Video link:
https://www.youtube.com/watch?v=GRNl2I_fhcA&feature=youtu.be

Passages:

D. Structure/Function Analysis of a DNA Repair Protein ([AA, Peptides & Proteins Diagnostic](#), Section II, Q75-79).

E. Hypoxia & The Purification of Hypoxia Inducible Factor-1 ([Chemical & Physical Foundations of Biological Systems #2](#), Section II, Q71-76).

F. Mitochondrial Permeability and Separation Chemistry ([Chemical & Physical Foundations of Biological Systems #2](#), Section III, Q77-82).

Subjects: Biology, Organic Chemistry, Biochemistry (Biological/Physical)

Suggested Pre-Work Review: Review Chromatography, Hydrophobic effect, Membrane Diffusion/Transport

Session B Workshops 3 & 4 Sunday Sept. 19 8 PM EST (6 Passages)

3. Enzyme Kinetics & Inhibitors

Video link: <https://www.youtube.com/watch?v=hdFs5LUsFFQ>

Passages:

G. Farnesylation of Proteins ([Chemical & Physical Foundations of Biological Systems #2](#), Section II, Q119-124).

H. Chymotrypsin and The Catalytic Triad of Proteases ([Chemical & Physical Foundations of Biological Systems #2](#), Section II, Q153-157).

I. Altered Catalysis of Subtilisin Mutants Through PCR Mediated Evolution ([Biological and Biochemical Foundations Diagnostic Test #1](#), Section I, Q20-25).

Subjects: Biology, Biochemistry (Biological/Physical), Chemistry & Organic Chemistry

Suggested Pre-Work Review: Amino Acid Structure/Function, Enzyme kinetics & Inhibition, S_N1 & S_N2 reactions

4. Principles of Gene Expression

Video

link:

<https://www.youtube.com/watch?v=BNh3a6qwnMQ&feature=youtu.be>

Passages:

J. Inducible Gene Expression and Analysis with qPCR ([Biological and Biochemical Foundations Diagnostic Test #1](#), Section III, Q82-87).

K. cDNA Expression Libraries ([Biological and Biochemical Foundations Diagnostic Test #1](#), Section III, Q98-101).

L. Arabinose Operon & DNA Looping ([Microbiology & Immunology](#), Section I, Q30-36).

Subjects: Biology, Molecular Biology

Suggested Pre-Work Review: Prokaryotic & Eukaryotic Gene Expression, RT-PCR, Chromatin Structure

Session C Workshops 5 & 6 Sunday Oct. 3 8 PM EST (6 Passages)

5. Virology

Video link: <https://www.youtube.com/watch?v=pUYold-QNmk>

Passages:

N. Discovery of Host Restriction Modification ([Microbiology & Immunology](#), Section I, Q25-29).

O. Structure & Function of Poliovirus ([Chemical & Physical Foundations of Biological Systems #2](#), Section V, Q140-145).

P. Coronavirus Spike Protein ([Full Length Test](#), Section III, Q113-117).

Subjects: Biology, Biochemistry (Biological/Physical)

Suggested Pre-Work Review: Virus structure/function, RNA viruses

6. DNA Metabolism & Cancer Biology

Video

link:

<https://www.youtube.com/watch?v=Q5WnU9ABl18&feature=youtu.be>

Passages:

Q. DNA Replication ([Full Length Test](#), Section III, Q165-168).

R. BRCA Genes in Homologous Recombination & Cancer ([Biological and Biochemical Foundations Diagnostic Test #1](#), Section II, Q61-66).

Xeroderma pigmentosa ([Biological and Biochemical Foundations Diagnostic Test #1](#), Section II, Q67-71).

Subjects: Biology, Cell Biology, Genetics, Biochemistry (Biological)

Suggested Pre-Work Review: Cell Cycle, Homologous Recombination, Flow Cytometry

Session D Workshops 7 & 8 Sunday Oct. 17 8 PM EST (5 passages)

7. Genetic Analysis

Video link: <https://www.youtube.com/watch?v=wY3myshFyNk>

Passages:

T. Genetics of Yeast Secretory Pathway ([Biological and Biochemical Foundations Diagnostic Test # 1](#), Section IV, Q130-136).

U. Pedigree Analysis of a Neurological Disorder ([Biological and Biochemical Foundations Diagnostic Test # 1](#), Section IV, Q137-142).

V. Genetics of Lactose Metabolism in E. coli ([Biological and Biochemical Foundations Diagnostic Test # 1](#), Section IV, Q143-148).

Subjects: Genetics, Cell Biology

Suggested Pre-Work Review: Meiosis/Mitosis, Secretory Pathway, Mendelian Genetics

8. The Fed State: Insulin & Fatty Acid Synthesis

Video link: <https://www.youtube.com/watch?v=48gD62S2d9c>

Passages:

W. Role of Fructose in Fat Synthesis ([Med-pathway Free MCAT Exam](#), Section III, Q130-134).

X. Regulation of Insulin Secretion ([Biological and Biochemical Foundations Diagnostic Test # 2](#), Section III, Q74-78).

Subjects: Biology, Cell Biology, Biochemistry (Biological)

Suggested Pre-Work Review: Hormonal Control & Metabolism of Fats, Cell Biology of Secretory Pathway

Session E Workshops 9 & 10 Sunday Oct. 31 8 PM EST (5 Passages)

9. The Fasted State: Hormonal Control of Gluconeogenesis & Fatty Acid Degradation

Video link:
<https://www.youtube.com/watch?v=IpDqBFSQ7Qg&feature=youtu.be>

Passages:

Y. Hypoketotic Hypoglycemia ([Biochemistry & Metabolism](#), Section I, Q50-54).

Z. Type I Diabetes and The RAAS System ([Biochemistry & Metabolism](#) Section I, Q55-60).

AA. Metformin & Sensing Cellular Energy Levels ([Biochemistry & Metabolism](#), Section I, Q61-65).

Subjects: Biology, Cell Biology, Biochemistry (Biological)

Suggested Pre-Work Review: Metabolism in Fasted State, Insulin Control

10. Glycogen Metabolism

Video link: <https://www.youtube.com/watch?v=zOTLBGL3WW8>

Passages:

BB. Hormonal Control of Glycogenolysis, [Biological and Biochemical Foundations Diagnostic Test # 2](#), Section III, Q79-83).

CC. Glycogen Synthesis ([Biological and Biochemical Foundations Diagnostic Test # 1](#), Section I, Q39-44).

Subjects: Biology, Cell Biology, Biochemistry (Biological)

Suggested Pre-Work Review: Glycogen Metabolism

Session F Workshops 11 & 12 **Sunday Nov. 14 8 PM EST** (5 Passages)

11. Bioenergetics of Metabolic Pathways

Video link: https://www.youtube.com/watch?v=VBGRzt9I7_s

Passages:

DD. Pyruvate Kinase Isoforms ([Med-pathway Free MCAT Exam](#), Section III, Q121-125).

EE. Fatty Acid degradation ([Biochemistry & Metabolism](#) Section I, Q66-69).

Subjects: Biology, Biochemistry (Biological/Physical)

Suggested Pre-Work Review: Warburg effect, Glycolysis, Beta oxidation

12. Spectroscopy & Radiochemistry

Video link: <https://www.youtube.com/watch?v=Ygfl3USzytY>

Passages:

FF. Detecting Botulism with Forster Resonance Energy Transfer ([Med-pathway Free MCAT Exam](#), Section I, Q5-9)

GG. Hyperbilirubinemia & Jaundice ([Chemical & Physical Foundations of Biological Systems #2](#), Section IV, Q184-189).

HH. Treatment of Grave's Disease with Radiolabeled Iodine ([Chemical & Physical Foundations of Biological Systems #2](#), Section IV, Q190-196).

Subject: Biology, Biochemistry (Biological/Physical), Physics

Suggested Pre-Work Review: Fluorescence, Thyroid hormones, Radiochemistry

Session G Workshops 13 & 14 Sunday Dec. 5 8 PM EST (6 Passages)

13. Acid/Base Chemistry in Physiology & Disease

Video link: <https://www.youtube.com/watch?v=7nbOzxdvMaU>

Passages:

II. pH and Drug Efficacy in Cancer ([Full Length Test](#), Section III, Q18-22).

JJ. Kidney Glutaminase ([Chemical & Physical Foundations of Biological Systems #2](#), Section I, Q26-31).

KK. Role of pH in Cancer Chemotherapy ([Chemical & Physical Foundations of Biological Systems #2](#), Section I, Q32-37).

Subjects: Biology, Chemistry, Biochemistry (Biological/Physical)

Suggested Pre-Work Review: Acid/Base chemistry, hypoxia

14. Solubility in Biological Systems

Video link: <https://www.youtube.com/watch?v=ZnbOmRXQK5>

Passages:

LL. Treating Glaucoma with Medical Marijuana ([Full Length Test](#), Section I, Q1-4).

MM. Bile Salts & Gallstones ([Chemical & Physical Foundations of Biological Systems #2](#), Section I, Q38-43).

NN. Gout & Purine Degradation ([Chemical & Physical Foundations of Biological Systems #2](#), Section I, Q38-43).

Subjects: Biology, Chemistry, Biochemistry (Biological/Physical) Organic Chemistry, Physics

Suggested Pre-Work Review: Solubility, Bile salts

Session H Workshops 15 & 16 Sunday Dec. 19 8 PM EST (5 Passages)

15. The Immune System

Video link: <https://www.youtube.com/watch?v=I5RDoHmhm6Y>

Passages:

OO. Multiple Myeloma and Immunoglobulins ([Microbiology & Immunology](#), Section II, Q50-54).

PP. Autoimmunity & Thyroid Disorders ([Full Length Test](#), Section III, Q6-9).

QQ. Toll Like Receptors & Inflammation ([Microbiology & Immunology](#), Section II, Q59-62).

Subjects: Biology, Molecular Biology, Biochemistry (Biological)

Suggested Pre-Work Review: Antibody structure, Western blotting

16. Biochemistry of Vitamins & Cofactors

Video link: <https://www.youtube.com/watch?v=qlpUdFmtJBE>

Passages:

RR. Relationship between Vitamin B12 & Folate ([Biological and Biochemical Foundations Diagnostic Test # 2](#), Section V, Q127-132).

SS. Pyruvate Dehydrogenase Complex Deficiency ([Biological and Biochemical Foundations Diagnostic Test # 1](#), Section I, Q32-38).

Subject: Biology, Organic Chemistry, Biochemistry (Biological)

Suggested Pre-Work Review: O Chem Reactions, Biochemistry of Vitamins