StepBridge MD
USMLE REVIEW NOTES

STEP 1 | ORIGINAL SAMPLE

Immunology workflow sample

A response sequence, antigen-presentation map, and original review questions.

$69

FULL PROGRAM PRICE

4	3	17
designed pages	original questions	topic modules

EDUCATIONAL SCOPE

This sample is independently written and designed to demonstrate the StepBridge MD format. It is for exam preparation only and is not clinical advice, official exam content, or a substitute for individualized professional judgment.

Follow the immune response in sequence

Move from the first barrier to recognition, communication, effector function, and memory instead of memorizing isolated cell names.

01

Barrier and innate response

Skin, mucosa, phagocytes, complement, and pattern recognition respond early.

Innate responses are rapid and do not require prior exposure.

02

Antigen presentation

Dendritic cells connect early sensing with T-cell activation.

MHC I presents intracellular peptides to CD8 T cells; MHC II presents extracellularly acquired peptides to CD4 T cells.

03

Adaptive effectors

B cells produce antibody; T cells coordinate or kill target cells.

Specificity expands after antigen recognition and appropriate signals.

04

Contraction and memory

Most effectors decline after control; memory populations remain.

A later encounter can produce a faster, stronger antigen-specific response.

Sources: NIAID, Overview of the Immune System; NIAID Immunology presentation.

A four-step mechanism workflow

Use the same sequence each time so a dense stem becomes a short set of decisions.

1

Locate the antigen

Decide whether the relevant material is intracellular, extracellular, or on a microbial surface.

2

Name the presenter and receptor

Connect MHC class or antibody recognition to the correct lymphocyte or effector.

3

Predict the effector

Choose neutralization, opsonization, complement activity, cytokine coordination, or target-cell killing.

4

Predict the memory response

Ask how prior exposure changes the speed, magnitude, or antibody features of the next response.

FAST CHECK

MHC location cue

Endogenous intracellular peptides usually point to MHC I and CD8 T cells. Exogenous peptides taken up by an antigen-presenting cell usually point to MHC II and CD4 T cells.

Source: NIAID immune-system overview and public immunology teaching materials.

Quick check: Immunology

These independently authored questions pair each answer with a short explanation.

QUESTION 1

A viral peptide is produced inside an infected nucleated cell. Which presentation pathway most directly displays it to a cytotoxic T cell?

Answer: MHC class I presentation to a CD8 T cell

MHC I samples intracellular proteins on nucleated cells and supports recognition by CD8 T cells.

QUESTION 2

Why can a later response to the same antigen be faster than the first response?

Answer: Antigen-specific memory lymphocytes remain after the primary response.

Memory B and T cells can expand and act more rapidly after re-exposure to the same antigen.

QUESTION 3

Which complement fragment is the classic high-yield cue for coating a microbe to improve phagocytosis?

Answer: C3b

C3b deposited on a surface acts as an opsonin and is recognized by complement receptors on phagocytes.

Readable sources: niaid.nih.gov/research/immune-system-overview; niaid.nih.gov Immunology Presentation.