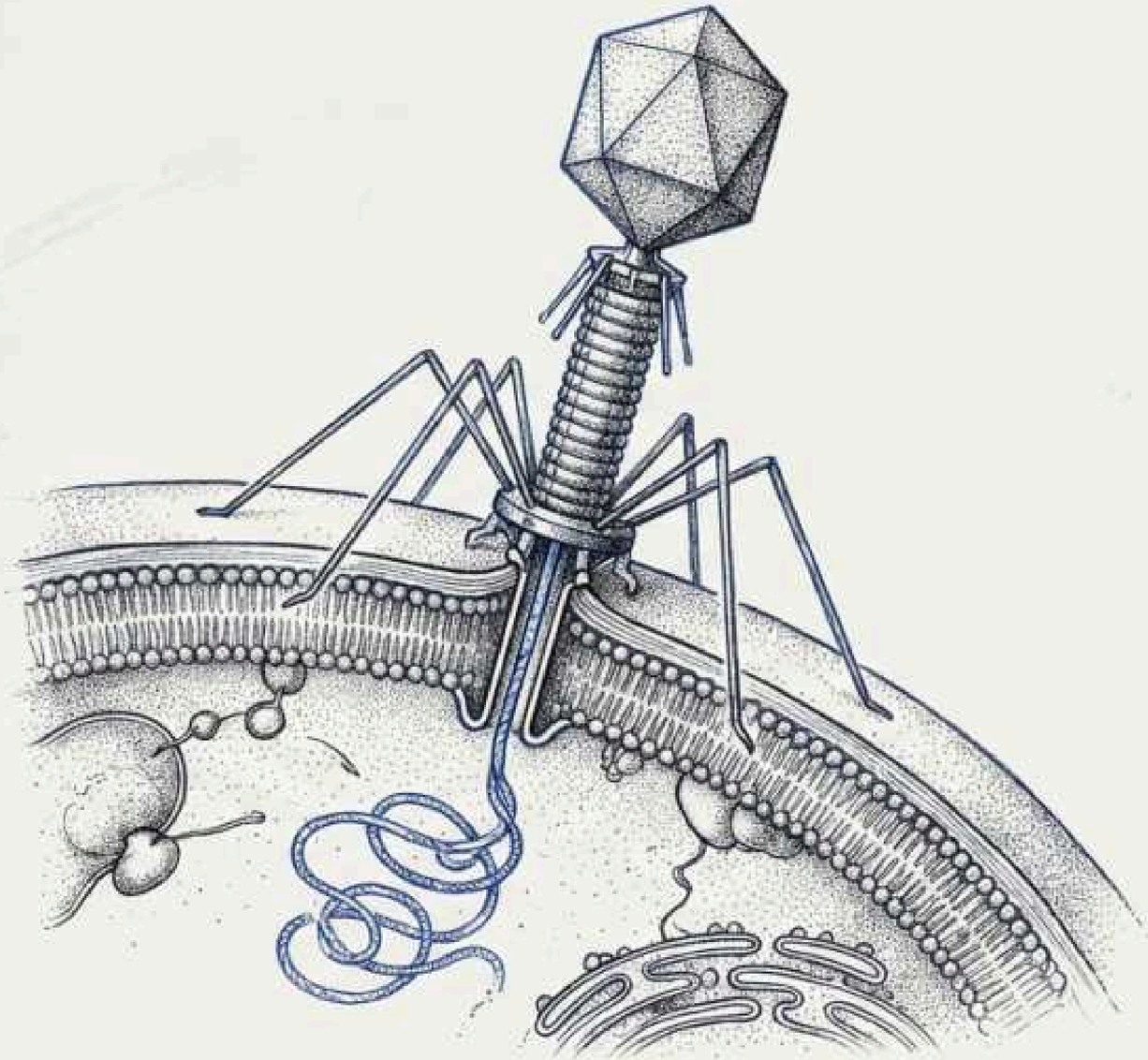
MED 512 B: Mechanisms of Microbial Pathogenesis

¶ 0.1



Harvard-MIT
HST.040 / HST.041

modeled on

MED 512 B: An Original Introduction

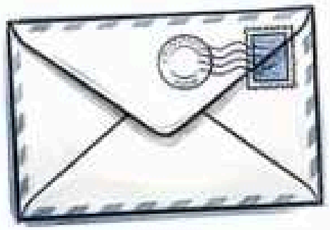
Not a transcript; written for the general undergraduate

- Molecular Mechanisms
- Clinical Features of Illness

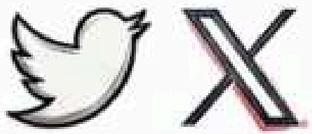
¶0.2

Questions & *Feedback*

Feedback is welcome.



Email: garyanderson [at]
mail [dot] grokbot [dot] com



X (Twitter): @garyanderson

¶0.3

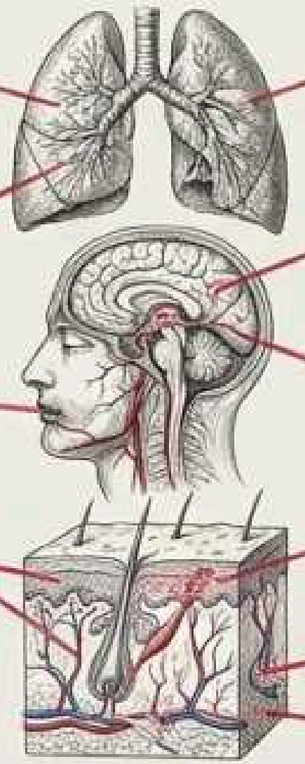
Disclaimer & *Urgent Warning Signs*

DO NOT

- ✗ Not medical training
- ✗ Does not qualify you to diagnose/treat
- ✗ No instructions to make, enhance, culture, or weaponize pathogens.

(Seek a qualified clinician if unwell.)

SEEK EMERGENCY HELP



- Difficulty breathing/ shortness of breath
- Urgane breathing/ chest pain
- Bluish lips/face
- Rapidly spreading non-fading rash
- Unceasing chest pain
- Severe headache + stiff neck + light sensitivity
- Extreme drowsiness/confusion
- Very high fever (especially in infants)
- No urine passed
- Mottled/cold skin

A feeling of impending death.

¶ 0.4

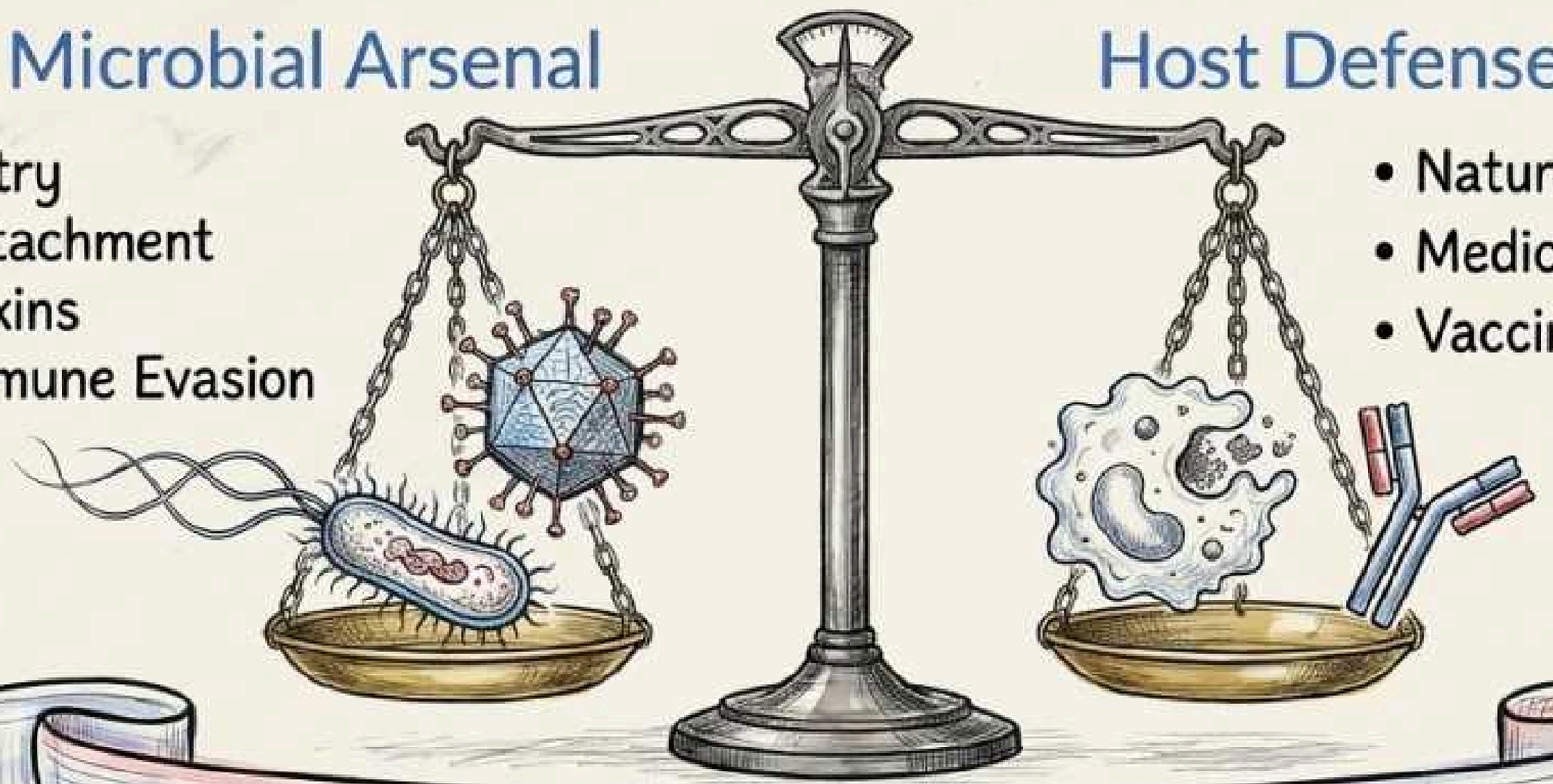
The Core Metaphor:
Microbe vs. Host

Microbial Arsenal

- Entry
- Attachment
- Toxins
- Immune Evasion

Host Defense

- Natural Defenses
- Medicines (Antibiotics)
- Vaccines

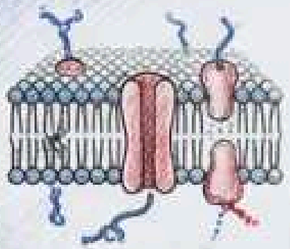


Infectious disease shapes campaigns and history.
Modern countermeasures (sanitation, vaccines)
remain our greatest achievements.

Note: This is NOT a course in military science.

The Course Map: *Six Lectures*

¶ 0.5



Phase 1: Lectures 1–3

The Host's Frontiers

Bacterial Toxins & Inflammation

The Immune Contest & Evasion Strategies





Phase 2: Lectures 4–6

Viral Illness

Fungi & Parasites

Antibiotics, Resistance & Vaccines

Epidemics in History & War
(Encyclopedic level only)



Each lecture ends with pointers for further study.

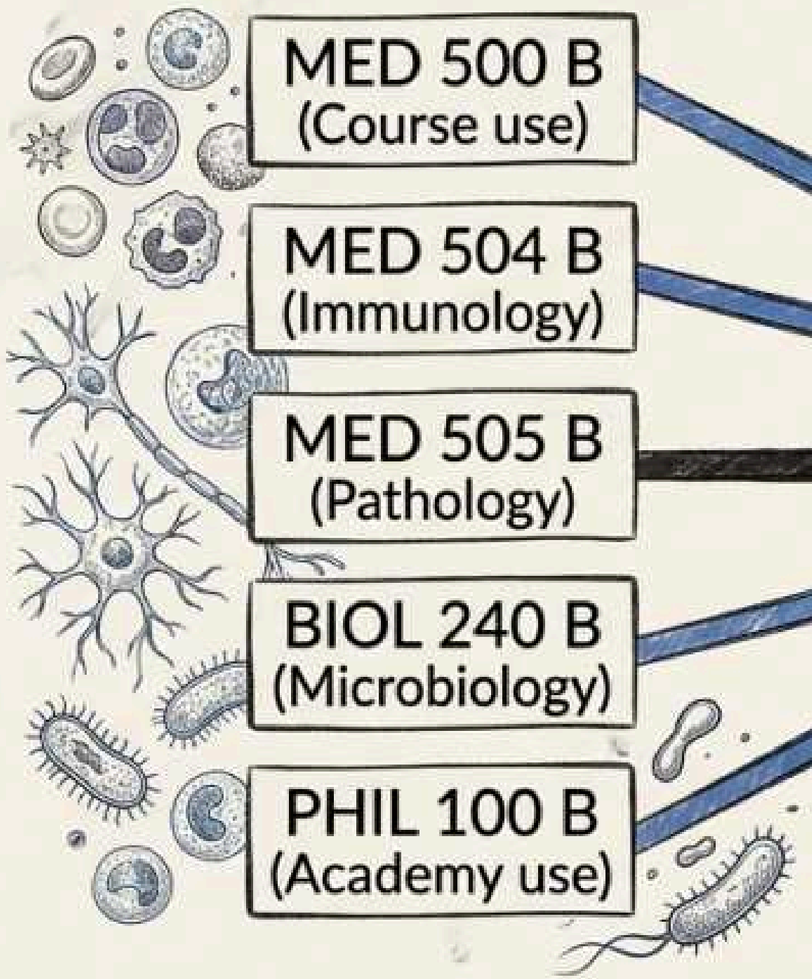
Prerequisites & Academic Pathway

¶ 0.6

Helpful Background

(Not Required)

- MED 500 B (Course use)
- MED 504 B (Immunology)
- MED 505 B (Pathology)
- BIOL 240 B (Microbiology)
- PHIL 100 B (Academy use)



MED 512 B

Plain language.
No lab work required.

Natural Next Steps

- MED 515 B (Clinical Epidemiology)
- PHIL 235 B (Bioethics)



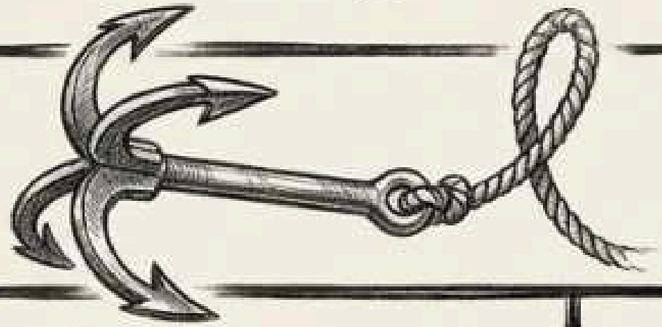
Study Methodology: The Two Lists

¶ 0.7

Read slowly. Keep two running lists throughout the course:



Host's Defenses
(Track these as they appear)



Microbe's Strategies

- Attachment
- Toxin production
- Evasion
- Intracellular hiding
- Surface change
- Drug resistance

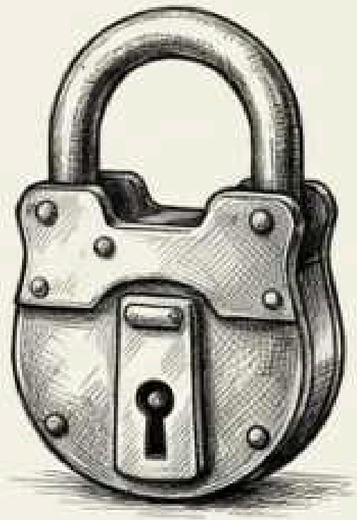
A guide to ideas. Deliberately absent: Laboratory methods, recipes, and doses. Take personal health questions to a clinician.

¶ 0.8

Structural Rules & Course Goals

Lecture 1 → 1.1

Every paragraph is numbered (Lecture.Paragraph) for easy reference and quizzing.



- Objectivity: Contested questions presented fairly, without taking sides.
- Security: Strict prohibition on instructions for making or weaponizing pathogens.
- Resources: Full references provided at the end (official listings, open articles, standard textbooks).

To provide a clear map of host-microbe interactions, fostering a habit of reading with care and restraint.