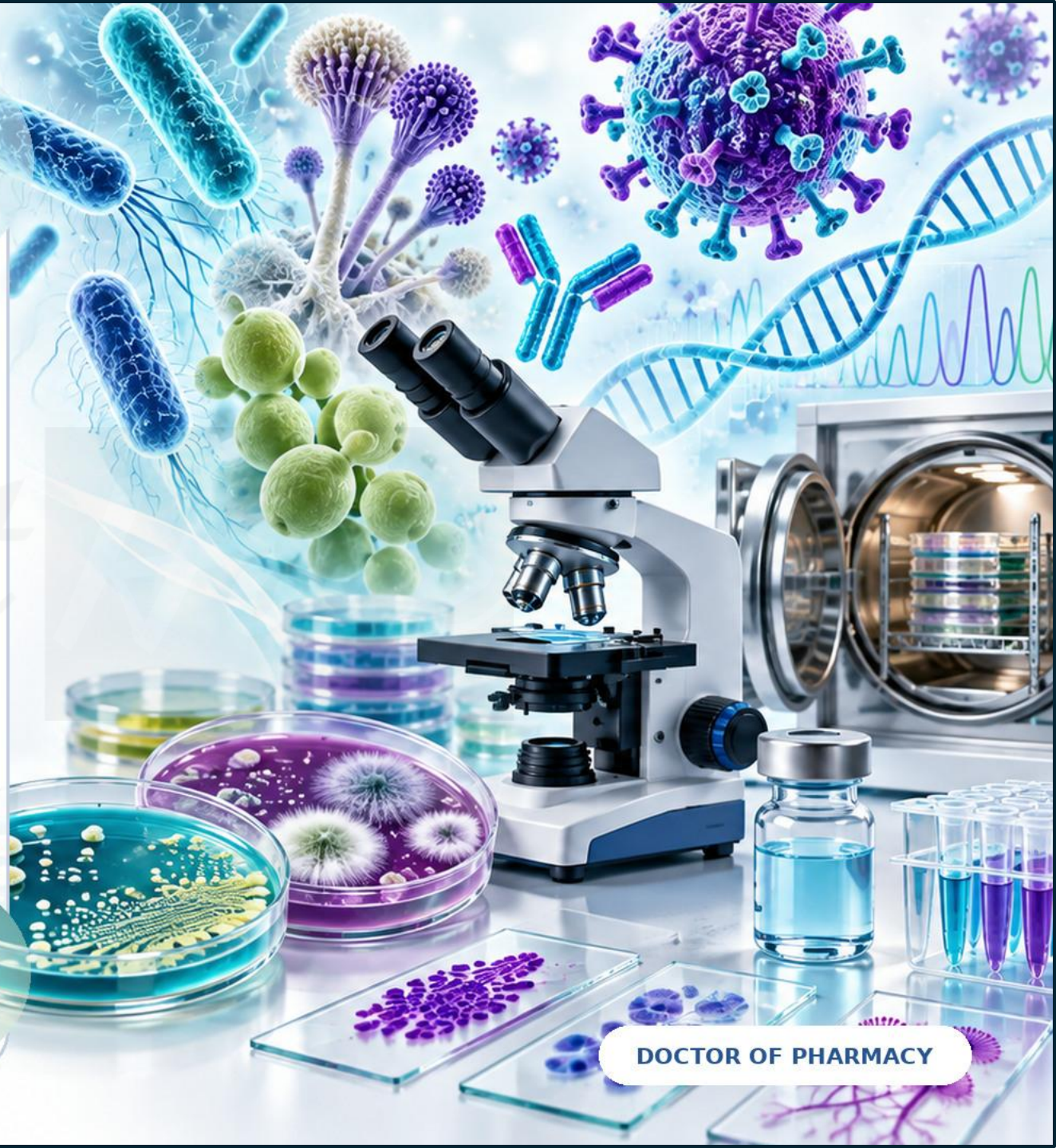
PHARM.D • YEAR 2

Pharmaceutical Microbiology

CHAPTER 8

Diagnostic Tests: Schick's, ELISA, Western Blot and PCR

PPT CHAPTER COVER

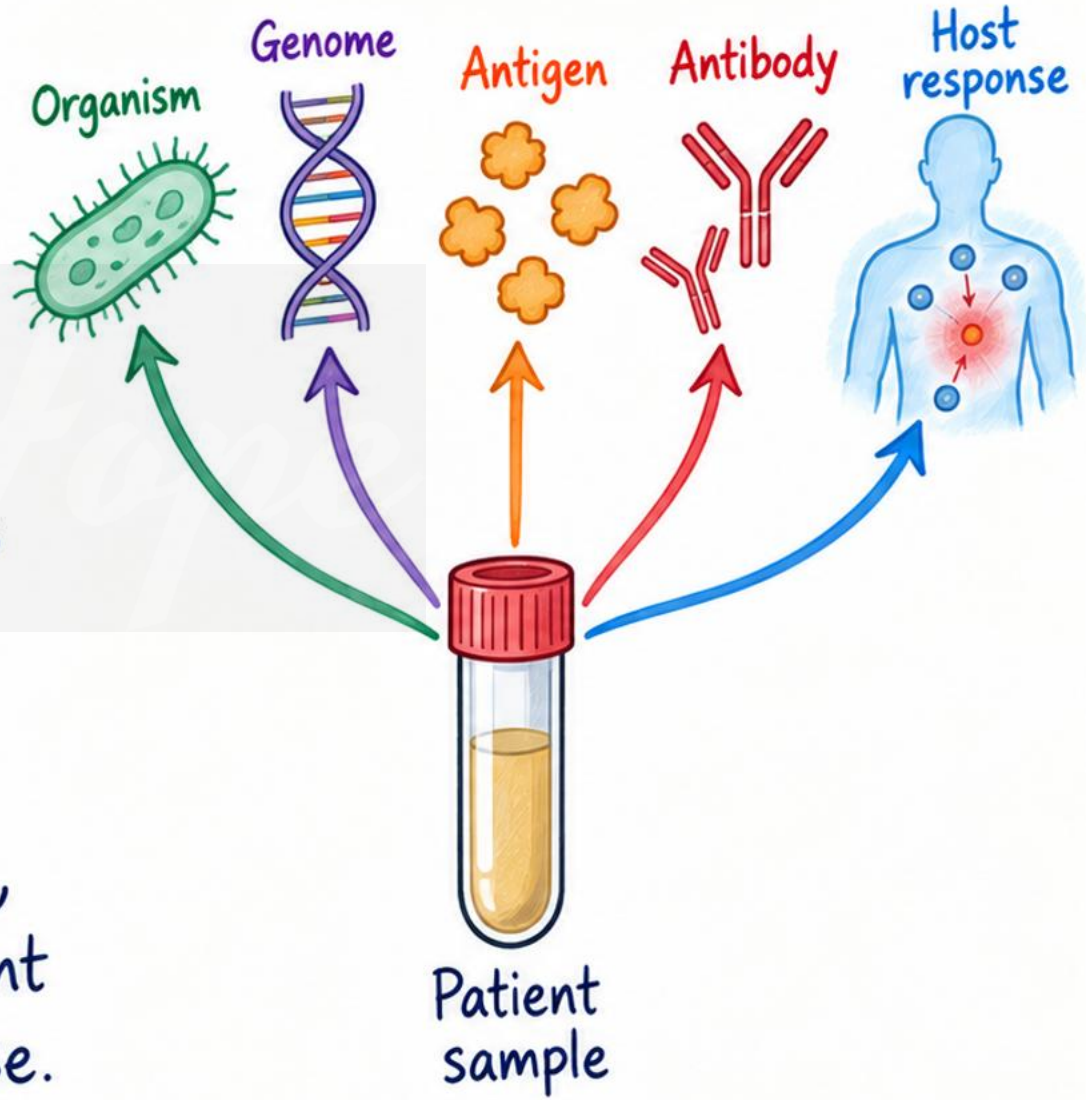


DOCTOR OF PHARMACY

Diagnostic Tests Measure Different Things

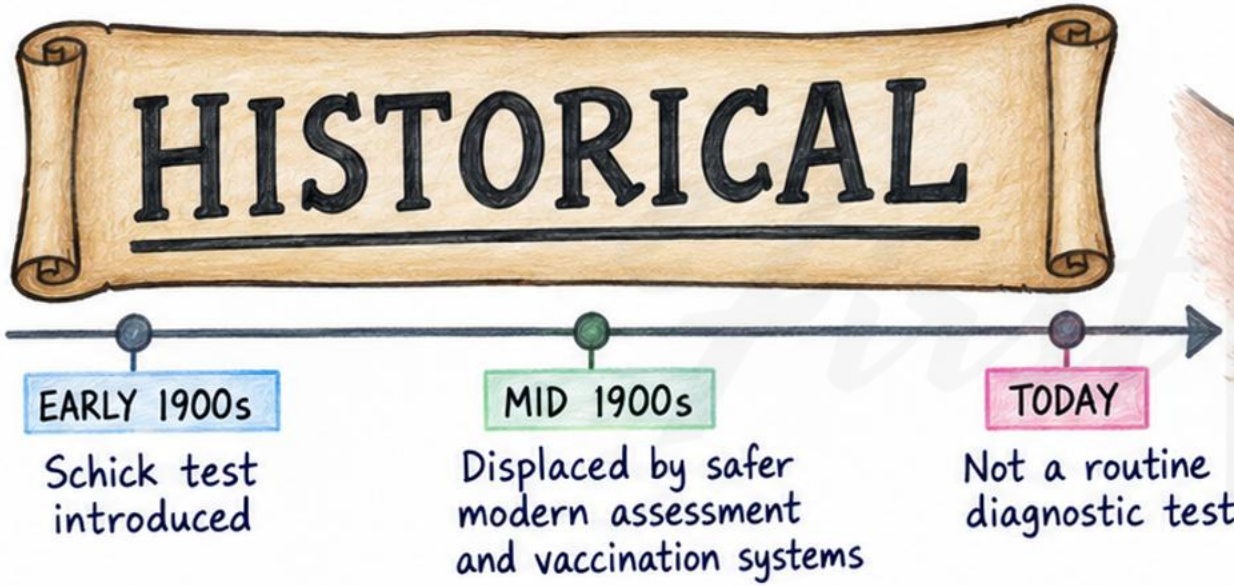
A diagnostic result may detect an organism, its nucleic acid, antigen, a host antibody or a physiological response. These are not interchangeable. A test's usefulness depends on disease stage, specimen, prior treatment and pretest probability. Positive and negative controls, correct timing and reference standards matter. Interpret the finding with symptoms and exposure history.

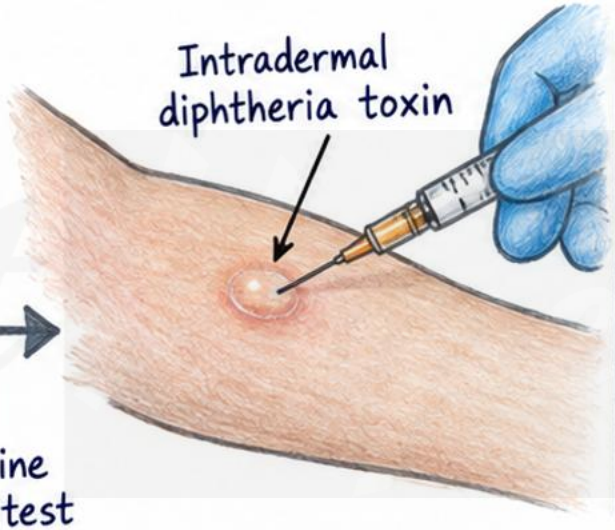
A good report names the analyte and sample, then states whether the result indicates current infection, previous exposure or immune response.

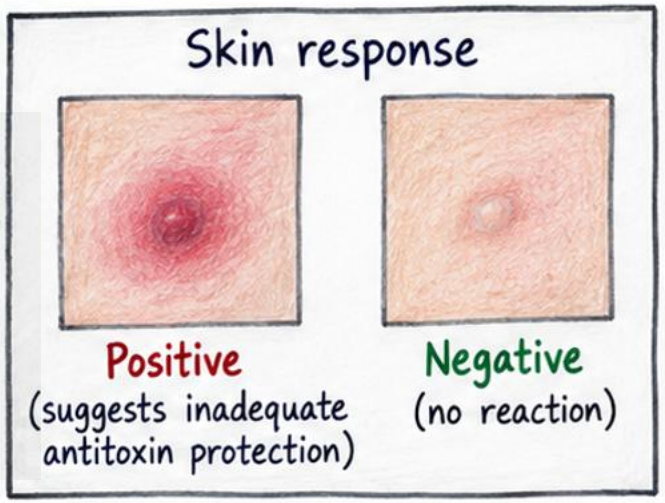


Schick Test: Historical Context

The **Schick test** historically assessed susceptibility to diphtheria toxin by observing a skin response after intradermal toxin. A true positive reaction suggested inadequate antitoxin protection.





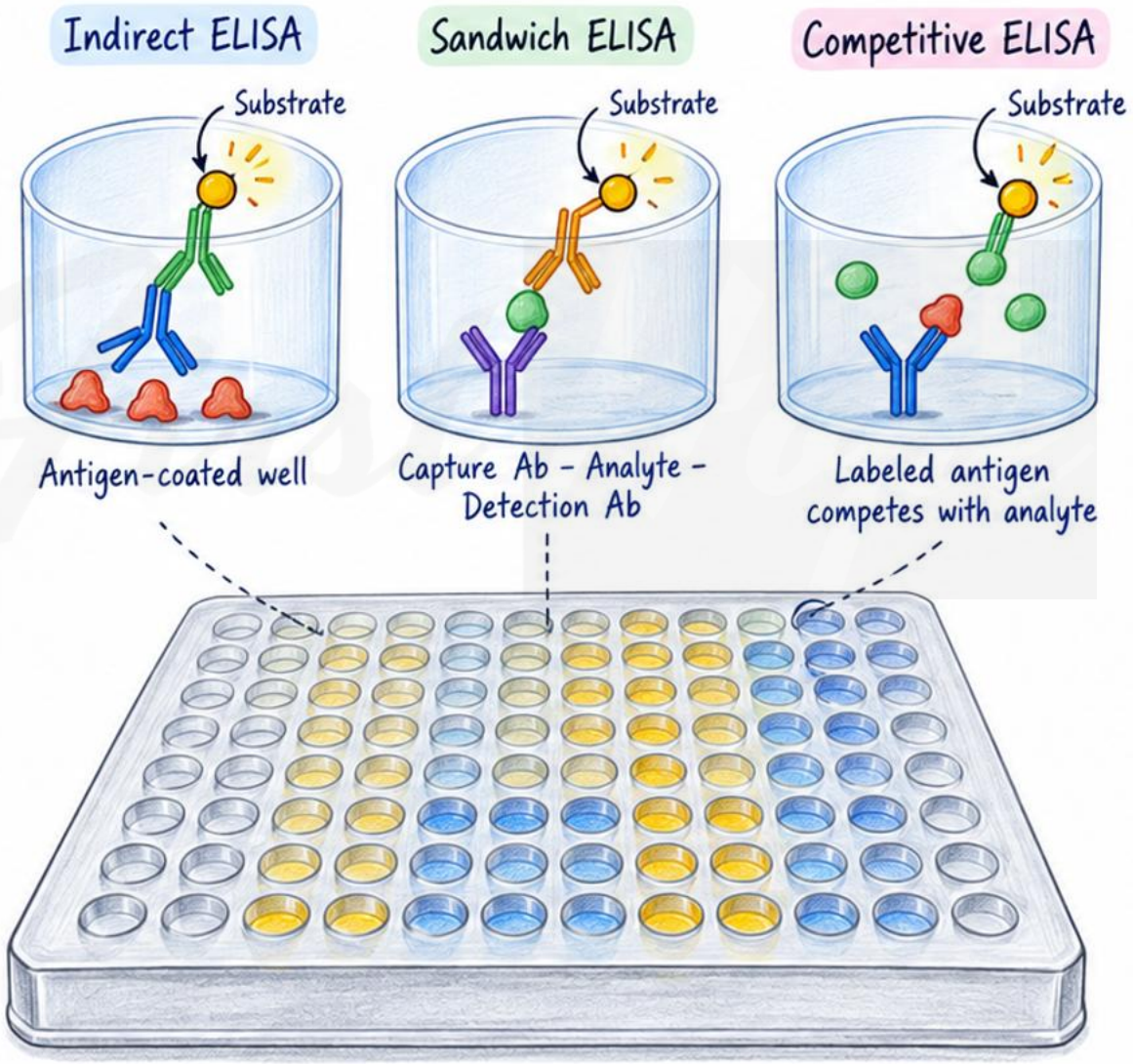


It is not a routine modern diagnostic test for diphtheria or a substitute for current immunization records. Learn its principle and historical purpose without using it to make a present-day vaccination decision.

The test exposed skin to diphtheria toxin, a practice displaced by safer modern assessment and vaccination systems. Treat it as examination history.

ELISA: A Signal from Binding

Enzyme-linked immunosorbent assays use antigen-antibody binding and an enzyme-driven signal. Direct and indirect formats commonly detect different targets; sandwich assays capture an analyte between antibodies, while competitive assays infer analyte from a competing reaction.



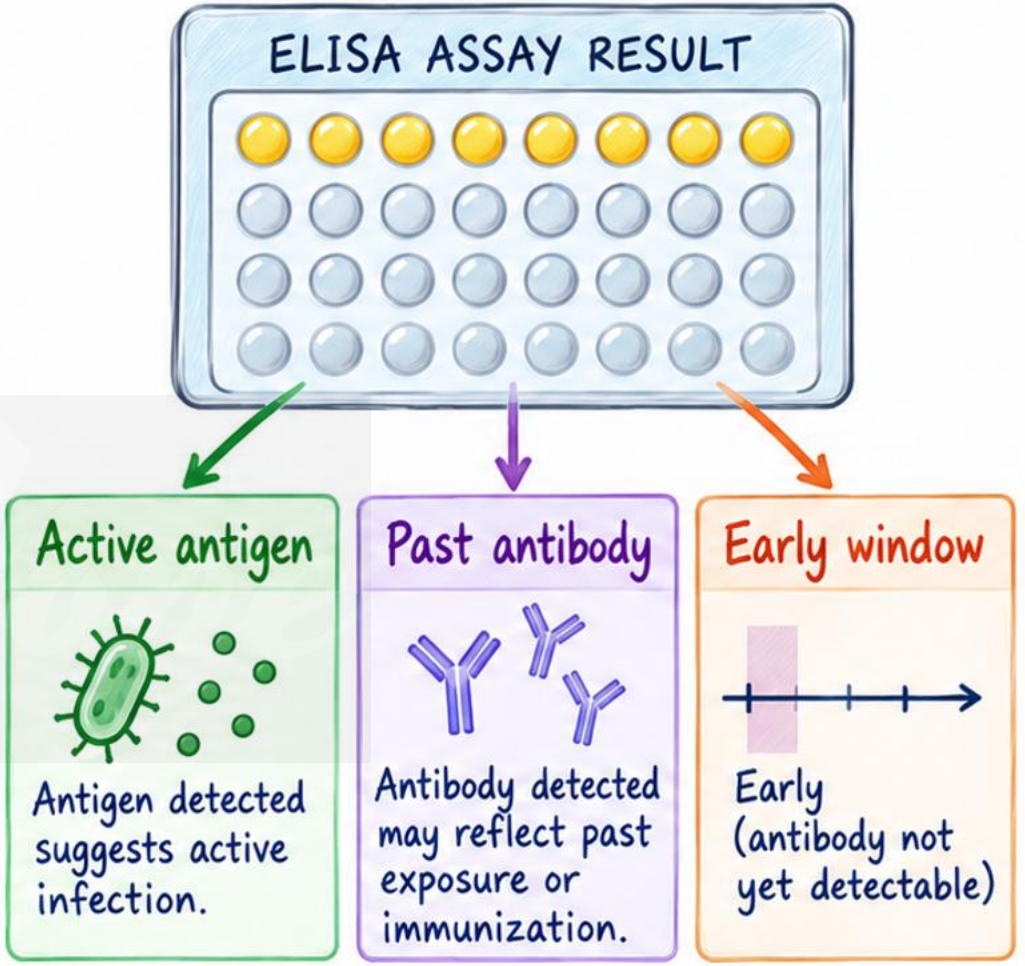
A colored well is meaningful only against standards and controls. Cross-reactivity and timing can affect interpretation.

In a sandwich assay, more captured analyte usually yields more signal; in many competitive formats, signal falls as analyte rises.

ELISA Uses and Limitations

ELISA can screen for microbial antigens or host antibodies and can quantify selected analytes with calibration. It supports **high-throughput testing**, but a screening result may need a defined confirmatory algorithm.

Antibody detection may reflect **past exposure** or **immunization** rather than active infection.
An **early negative result** may precede detectable antibody.
Match the assay target to the clinical question.



Test Performance Considerations

Sensitivity concerns detection when disease is present;
Specificity concerns exclusion when absent.
Predictive value also changes with disease prevalence.

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