

QUALIFICATION IN IMMUNOHISTOCHEMISTRY (QIHC)

EXAMINATION TOPIC OUTLINE

The Qualification in Immunohistochemistry (QIHC) examination questions encompass different topics or content areas within Immunohistochemistry: General Immunology, Detection Systems, Specimen Handling, Epitope Enhancement (Antigen Retrieval), Staining, and Laboratory Operations. Each of these content areas comprises a specific percentage of the overall 50-question qualification exam.

Exam questions may be both theoretical and/or procedural. Theoretical questions measure skills necessary to apply knowledge, calculate results, and correlate reactions/patient results to histology. Procedural questions measure skills necessary to select/perform appropriate laboratory methods, evaluate laboratory reactions/results, and follow quality assurance protocols. Additionally, regulatory questions are based on U.S. sources (e.g., AABB, FDA, CLIA, etc.). The content areas and percentages are described in detail below.

I. GENERAL IMMUNOLOGY (5 – 10%)

- A. Antigen
- B. Antibody
 - 1. Monoclonal antibodies
 - 2. Polyclonal antibodies
 - 3. Antibody classes
 - 4. Antibody structure

II. DETECTION SYSTEMS (20 – 25%)

- A. Immunofluorescence
- B. Immunohistochemistry and *in situ* Hybridization
 - 1. Substrates
 - 2. Enzymes
 - 3. Chromogens
 - 4. Blocking reactions
 - 5. Polymer/multimer detection
 - 6. Amplification systems

III. SPECIMEN HANDLING (10 – 15%)

- A. Fixation
- B. Processing
- C. Microtomy/Slide Preparation
- D. Cytology Specimens
- E. Immunofluorescence Specimens
- F. Frozen Sections

IV. EPITOPE ENHANCEMENT (ANTIGEN RETRIEVAL) (10 – 15%)

- A. Methods, Principles, and Techniques
 - 1. Heat-induced epitope retrieval
 - 2. Enzyme-induced epitope retrieval
 - 3. Combined heat and enzyme methods

V. STAINING (25 – 30%)

- A. Principles and Mechanisms
 - 1. Direct
 - 2. Indirect
 - 3. Avidin-Biotin
 - 4. *In situ* hybridization
- B. Tissues
 - 1. Morphology/anatomy
 - 2. Cell/component demonstration
 - a. Staining patterns
 - b. Microorganisms
 - 3. Basic concepts in pathology
- C. Stain Components/Characteristics
 - 1. Concentrated antibody
 - 2. Pre-diluted antibody
 - 3. Lyophilized antibody
 - 4. Diluents
 - 5. Titrations
 - 6. Reagents
- D. Troubleshooting
- E. Mounting Procedures
- F. Preliminary Screening

VI. LABORATORY OPERATIONS (15 – 20%)

- A. Quality Control/Quality Assurance
 - 1. Documentation
 - a. Procedures
 - b. Quality control records
 - c. Personnel
 - d. Reagents/antibody lots
 - 2. Selection, utilization, and evaluation of control tissue
 - 3. Slide storage
 - 4. Method selection, optimization, and validation

- 5. Troubleshooting
- B. Safety
 - 1. Storage
 - 2. Disposal
 - 3. Hazards
 - 4. Regulations
 - 5. Procedures
- C. Laboratory Mathematics
- D. Ancillary Equipment/Instruments (e.g., microwave, computers, pH meter, solvent recovery, hybridization chamber)
- E. Regulations
 - 1. Federal government
 - 2. Accrediting agencies

Examples provided (as indicated by e.g.) are not limited to those listed.

END OF TOPIC OUTLINE