

**VIRTUAL
HISTOCOMPATIBILITY SPECIALIST
COURSE**

Sponsored by

The American Foundation for Donation & Transplantation

ACHI Approved



June 7-11, 2021

June 14-18, 2021

and

June 21-25, 2021

PURPOSE: The curriculum is designed for senior technologists and new laboratory directors to raise the standards of practice in clinical histocompatibility testing by promoting excellence in clinical laboratory medicine and providing a fundamental educational program to prepare for the ACHI CHS or Diplomate certification.

OBJECTIVES: By the end of the course, the successful student will:

1. Recall important topics in histocompatibility science
2. Analyze disparate sets of data to arrive at a decision about a clinical test result
3. Relate covered topics to clinical histocompatibility testing

SYLLABUS: Each student is encouraged to print out as needed the lecture outlines and presentations from the platform. The following items will be housed there:

- Lecture videos & outlines
- Procedures with applications
- References and bibliography

CURRICULUM: The curriculum focus is on histocompatibility testing: theory and principle, procedure, application and management. Course presentations will be pre-recorded and available for one week with Q&A sessions on Friday, June 11, 18 and 25. To accommodate all schedules, both AM and PM live Q&A sessions will be held and recorded for future reference.

APPLICANT REQUIREMENTS: Technologist in Histocompatibility Testing, with a minimum (3) years working experience and/or a formal course in immunology or genetics; or a new laboratory director; and active ASHI membership (recommended).

This course will have a limited number of registrants; early registration is recommended.

Call the AFDT Office at 804-323-9890 OR email Arlene Skinner at skinner@afdt.org with program questions.

ORGANIZING COMMITTEE

Amy Hahn, PhD, F(ACHI), Chairman

Director

Albany Medical College

Transplant Immunology Laboratory

Albany, NY

Deborah Crowe, PhD, F(ACHI)

Director

Tulane University HLA Laboratory

New Orleans, LA

Michael Gautreaux, PhD, F(ACHI)

Director

HLA/Immunogenetics Laboratory

Wake Forest University Health Sciences

Winston-Salem, NC

Robert Liwski, MD, PhD, FRCPC

Medical Director, HLA Typing Laboratory

Dalhousie University, Queen Elizabeth II HSC

Halifax, Nova Scotia, Canada

IMPORTANT DATES AND CONFERENCE REGISTRATION INFORMATION

- Contact Arlene Skinner with program questions
804-323-9890
skinner@afdt.org
- Registration Fee per participant is \$650
- Online registration accepted only via Credit Card
(no checks accepted)
- **Pre-recorded Basic Science lectures should be viewed at your leisure
the week of June 7-11, 2021**
Live Q&A sessions will be held for these lectures
Friday, June 11, 2021
10 –11 am ET and 5-6 pm ET
- **A second set of pre-recorded Lab Science lectures should be viewed at your leisure
the week of June 14-18, 2021**
Live Q&A sessions will be held for these lectures
Friday, June 18, 2021
10 –11 am ET and 5-6 pm ET
- **A third set of pre-recorded Clinical Science & Other lectures should be viewed at your leisure
the week of June 21-25, 2021**
Live Q&A sessions will be held for these lectures
Friday, June 25, 2021
10 –11 am ET and 5-6 pm ET

FEES ARE NON-REFUNDABLE

HISTOCOMPATIBILITY SPECIALIST COURSE—VIRTUAL CURRICULUM 2021

WEEK 1 PRE-RECORDED BASIC SCIENCE LECTURES (JUNE 7-11)

Introduction to Transplant Immunology (Michael Gautreaux)

"Laws" of Transplantation
History and Impact
Immunity
Declaration of Istanbul

Innate Immunity

(Amy Hahn)
Pattern Recognition Receptors
Inflammation
Cytokines and Chemokines
Innate Immune Cells, NK cells and NK Receptors

Adaptive Immunity (Michael Gautreaux)

Immunoglobulin & TCR Gene Rearrangement
TCR, MHC & Accessory Molecule Interactions
T Cell Activation & Effector T cells
B Cell Activation & Antibody Production

Genetic Concepts Applicable to Immunogenetics - Part 1

Basic Genetics
(Loren Gragert)
Gene Regulation and Expression
Gene Transmission - Mendelian Genetics
Genetic Change
Genomics and Proteomics

Genetic Concepts Applicable to Immunogenetics - Part 2

Population Genetics and Statistics
(Loren Gragert)
Calculation of Gene (allele) Frequencies & Phenotype
Frequencies
Hardy-Weinberg Testing
Haplotype Estimation and LD
Tests of Selection
Genetic Distance
Contingency Table Testing and Related Stats
Logistic Regression
Family-based Association Tests

MHC Genetics - Part I (Michael Gautreaux)

MHC Gene Complex - Loci, Gene Classes
Non-MHC Genes
Class I and Class II Genes
Organization, Production-structure
Expression & Regulation

Molecular Basis of Allorecognition (Amy Hahn)

Antigen Processing and Presentation
Allorecognition
Functions of Non-Classical MHC-like Molecules

MHC Genetics - Part II (Michael Gautreaux)

HLA Polymorphism
Variable Sites
Generation
Maintenance
Linkage Disequilibrium

Immunoregulation and Tolerance (Amy Hahn)

Thymic Selection
Activation vs Inhibition
Signals & Pathways
Apoptosis and Activation-Induced Cell Death
Clonal Deletion
Regulatory Cells

Emerging Technologies in the HLA Lab

LIVE Q&A SESSIONS (FRIDAY, JUNE 11)
10-11 AM AND 5-6 PM ET

HISTOCOMPATIBILITY SPECIALIST COURSE—VIRTUAL CURRICULUM 2021, Cont.

WEEK 2 PRE-RECORDED LAB SCIENCE LECTURES (JUNE 14-18)

Molecular Biology Techniques - HLA Typing (Gerald Morris)

DNA Structure and Preparation
Denaturation/Annealing
Oligonucleotide Probe Hybridization
Labeling/Detection
DNA Synthesis, PCR, DNA Sequencing

DNA Based HLA Typing Methods (Gerald Morris)

SSOPH, SSP, RT-PCR, SBT
Techniques to Identify HLA Alleles

Next Generation Sequencing (Gerald Morris)

Wet Lab Preparation and QC of NGS Samples
Analysis and QC of NGS Data
Clinical Utility of NGS Typing for HSCT and Solid Organ Transplant

HLA Informatics (Loren Gragert)

Accessing the Tools on the IMGT/HLA and Other Websites
Matching Within a Family
Resolution of Typing for Unrelated Search
Results of Unrelated Donor/Cord Blood Search
Mismatched Donor Based on DP Epitope Matching
Other Useful Tools

ABO Basics and Blood Bank Issues for the HLA Lab (Robert Liwski)

ABO Grouping, Subgrouping and Titers
ABO Incompatible Solid Organ Transplant
Other Blood Bank Issues Involving HLA lab - TRALI, Platelet Refractoriness, Platelet Donor Selection

Chimerism (Peter Lalli)

What Chimerism Is
Chimerism Testing in Cellular Therapeutics
Current Technologies used to Quantify Donor Chimerism
How Chimerism Data Influences Clinical Decisions

Solid Phase Assay Basics (Annette Jackson)

Interpretation Issues
Problems and Pitfalls
Defining Unacceptable Antigens
Virtual Crossmatches

Optimizing Solid Phase Assays (Robert Liwski)

SAB Optimization
Role of Standardization
Denatured Epitopes
Interference
Serum Treatment

Antibodies: Mechanism of Action & New Tools (Annette Jackson)

Antibody and Complement
C4d, C3d and C1q Assays
IgG Subclass Analysis
ABO Incompatible and Accommodation

Basic Principles of Flow Cytometry (Robert Liwski)

Basic concepts of Flow Cytometry
Fluorescence and Fluorochromes
Lasers and Photodetectors
Compensation
Data Analysis
Fluorescence Units and Scales

Advanced Flow Cytometry (Robert Liwski)

Application and Principles of Flow Crossmatch Assay Optimization
Role of Standardization
Correlation with VXM
Cell Isolation and Treatment
Calculating and Validating Cutoffs
Choosing Control Sera

Epitope Analysis for Interpreting HLA Antibody Results (Robert Liwski)

Characterization of HLA Epitopes: TerEps and Eplets
HLA Matchmaker
Epitope Registry
Epitope Analysis Cases

Antibody Issues (Annette Jackson)

Antibodies: The Basics
Therapeutics and Test Interference
Non-HLA Antibodies
Endothelial Crossmatch
HLA Antibodies in HSCT

Emerging Technologies in the HLA Lab

LIVE Q&A SESSIONS (FRIDAY, JUNE 18)
10-11 AM AND 5-6 PM ET

HISTOCOMPATIBILITY SPECIALIST COURSE—VIRTUAL CURRICULUM 2021, Cont.

WEEK 3 PRE-RECORDED CLINICAL SCIENCE & OTHER LECTURES (JUNE 21-25)

Hematopoietic Stem Cell Transplantation (Peter Lalli)

Fatal Blood Diseases Treated with Transplantation
Donor Search Process & Donor Selection Criteria
HSC Transplant Procedure
Sources of Stem Cells
Laboratory Tests - Patient and Donor

HLA Disease Associations and Drug Hypersensitivities (Amy Hahn)

Characteristics of HLA Associated Diseases
Molecular Mechanisms of Common Disease Associations
HLA Association with Drug Hypersensitivity

Transplanting the Sensitized Patient (Annette Jackson)

Desensitization Strategies
Crossing DSA Barriers (Solid Organ & HSCT)
Quantifying HLA-Specific B Cell Memory
Kidney Paired Donation- HLA Perspective
KAS: New Transplant Opportunities

Solid Organ Transplant Immunology - Part 1 (Millie Samaniego)

Allograft Rejection: Types and Diagnosis
Clinical Approaches to Tolerance Induction
Immunomodulation

Solid Organ Transplant Immunology - Part 2 (Millie Samaniego)

Pathology
Allograft Pathology
Methods of Assessing Graft Function
KPD Programs

Clinical Intervention in Transplantation (Millie Samaniego)

Causes of ESRD, Indications and Contraindications for Txp
Immunosuppression Protocols: Standard and New Drugs, Steroid Sparing
Targets of Immunosuppression
Role of Lab in Supporting Clinical Practice

Laboratory Management (Walter Herczyk)

Lab Management
Safety and Risk Management

Cost Report (Amy Hahn)

Interim Reimbursement Rates
Cost Report for Independent Labs

Lab Accreditation (Zahra Kashi)

Inspection Process - ASHI & CAP
Other Regulatory Agencies - CMS, JC, UNOS, NMDP, FACT, OSHA, FDA

Implementing an Effective QA Program (Walter Herczyk)

Designing a QA Program
Quality Indicators and Monitoring
Root Cause Analysis
QAPI
Competency Assessment

Directors Tutorial for ACHI Diplomate

Emerging Technologies in the HLA Lab

**LIVE Q&A SESSIONS (FRIDAY, JUNE 25)
10-11 AM AND 5-6 PM ET**