# HISTOCOMPATIBILITY SPECIALIST

# IN-PERSON COURSE

**Sponsored by**

**The American Foundation for Donation & Transplantation**

**ACHI Approved**

## April 12-16, 2026

## Hyatt Centric French Quarter Hotel

## New Orleans, LA

**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 outlines
- Procedures with applications
- References and bibliography

**CURRICULUM:** The curriculum focus is on histocompatibility testing: theory and principle, procedure, application and management. Powerpoint presentations and resources will be available for at least 6 months.

**APPLICANT REQUIREMENTS:** Technologists 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

**Michael Gautreaux, PhD, F(ACHI), Course Chairman**
Director, HLA/Immunogenetics Laboratory
Wake Forest University Health Sciences
Winston-Salem, NC

---

**Walter Herczyk, MT(ASCP), CHS(ASHI)**
Director of Laboratory Services
Gift of Life Michigan
Ann Arbor, MI

**Kelley M.K. Hitchman, MS, PhD, F(ACHI)**
Director, Histocompatibility & Immunogenetics Laboratory
UT Health San Antonio
San Antonio, TX

**Robert Liwski, MD, PhD, FRCPC**
Medical Director, HLA Typing Laboratory
Dalhousie University, Queen Elizabeth II HSC
Halifax, Nova Scotia, Canada

**Arianne Mankey, CHS(ACHI)**
HLA Clinical Lab Operations Manager
Stanford Blood Center
Histocompatibility & Immunogenetics Laboratory
Palo Alto, CA

# IMPORTANT DATES AND CONFERENCE REGISTRATION INFORMATION

Contact Arlene Skinner with program questions
804-323-9890
skinner@afdt.org

Registration Fee per participant is $1499

Online registration accepted only via
Credit Card
(no checks accepted)

**Basic Science Lectures**
**HOURS OF INSTRUCTION: 10.5 (1.58 CECs)**

**Lab Science Lectures**
**HOURS OF INSTRUCTION: 14.0 (2.10 CECs)**

**Clinical Science & Other Lectures**
**HOURS OF INSTRUCTION: 13.75 (2.06 CECs)**

**REGISTRATION FEES ARE NON-REFUNDABLE**

# HISTOCOMPATIBILITY SPECIALIST COURSE—CURRICULUM 2026

## BASIC SCIENCE LECTURES

### Introduction to Transplant Immunology
### (Michael Gautreaux - 1 hr)
"Laws" of Transplantation
History and Impact Immunity
Declaration of Istanbul

### Innate Immunity
### (Kelley Hitchman – 1 hr)
Pattern Recognition Receptors
Inflammation
Cytokines and Chemokines
Innate Immune Cells, NK cells and NK Receptors

### Adaptive Immunity
### (Michael Gautreaux - 1 hr)
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 - 1.25 hrs)
Central dogma of molecular biology – DNA to RNA to Protein
Genetic Change – mutation and recombination
Gene regulation and expression
Gene transmission and Mendelian traits
Genetically-determined disease
Genomics, proteomics, and other '-omics'

### Genetic Concepts Applicable to Immunogenetics - Part 2 Population Genetics and Statistics
### (Loren Gragert - 1.5 hrs)
Allele Frequencies, Phenotype Frequencies and CPRA
Genetic Distance, Evolutionary Models and Tests for Selection
Population Structure and Hardy-Weinberg Testing
Haplotype Frequency Estimation and Linkage Disequilibrium
Chi-Square Contingency Table Testing
Immunogenetic Disease Association Study Design

### MHC Genetics - Part I
### (Michael Gautreaux - 1 hr)
MHC Gene Complex - Loci, Gene Classes Non-MHC Genes
Class I and Class II Genes
Organization, Production-structure
Expression & Regulation

### Molecular Basis of Allorecognition
### (Kelley Hitchman - 1 hr)
Antigen Processing and Presentation
Allorecognition
Functions of Non-Classical MHC-like Molecules

### MHC Genetics - Part II
### (Michael Gautreaux - 1 hr)
HLA Polymorphism
Variable Sites Generation
Maintenance
Linkage Disequilibrium

### Immunoregulation and Tolerance
### (Kelley Hitchman - .75 hr)
Thymic Selection
Activation vs Inhibition
Signals & Pathways
Apoptosis and Activation-Induced Cell Death Clonal Deletion
Regulatory Cells

### Basic Bioinformatics
### (Nicholas Brown – 1 hr)

# HISTOCOMPATIBILITY SPECIALIST COURSE—CURRICULUM 2026, Cont.

## LAB SCIENCE LECTURES

### Molecular Biology
(Peter Lalli - 1 hr)
DNA, RNA & Protein Structure
Denaturation/Annealing
Oligonucleotide Probe Hybridization
Labeling/Detection
DNA Synthesis, PCR, DNA Sequencing

### DNA Based HLA Typing Methods
(Chang Liu - 1 hr)
SSOPH, SSP, RT-PCR, SBT
Techniques to Identify HLA Alleles

### Next Generation Sequencing
(Chang Liu - .75 hr)
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 - .75 hr)
Immune Polymorphism Sequence Databases (IPD-IMGT/HLA)
Analysis of HLA Typing Data using Population Frequencies
Pedigree Analysis of HLA in Families
Typing Resolution and Unrelated Donor Registry Search
HLA Mismatch Metrics – Antigenic vs Molecular
HLA Expression and Epitope-Based Matching (HLA-DP)

### ABO Basics and Blood Bank Issues for the HLA Lab
(Robert Liwski - 1 hr)
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 - 1 hr)
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 - 1 hr)
Interpretation Issues
Problems and Pitfalls
Defining Unacceptable Antigens
Virtual Crossmatches

### Optimizing Solid Phase Assays
(Robert Liwski - 1 hr)
SAB Optimization
Role of Standardization
Denatured Epitopes
Interference
Serum Treatment

### Antibodies: Mechanism of Action & New Tools
(Annette Jackson - 1.25 hr)
Antibody and Complement
C4d, C3d and C1q Assays
IgG Subclass Analysis
ABO Incompatible and Accommodation

### Basic Principles of Flow Cytometry
(Robert Liwski - 1.25 hrs)
Basic concepts of Flow Cytometry
Fluorescence and Fluorochromes
Lasers and Photodetectors
Compensation
Data Analysis
Fluorescence Units and Scales

### Advanced Flow Cytometry
(Robert Liwski - 1.5 hrs)
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 - 1.25 hrs)
Characterization of HLA Epitopes: TerEps and Eplets HLA Matchmaker
Epitope Registry
Epitope Analysis Cases

### Antibody Issues
(Annette Jackson - 1.25 hrs)
Antibodies: The Basics
Therapeutics and Test Interference
Non-HLA Antibodies
Endothelial Crossmatch
HLA Antibodies in HSCT

# HISTOCOMPATIBILITY SPECIALIST COURSE—CURRICULUM 2026, Cont.

## CLINICAL SCIENCE & OTHER LECTURES

### Hematopoietic Stem Cell Transplantation
(Peter Lalli - 1 hr)
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 Pharmacogenomics
(John Gerlach - 1 hr)
Characteristics of HLA Associated Diseases
Molecular Mechanisms of Common Disease Associations
HLA Association with Drug Hypersensitivity

### Transplanting the Sensitized Patient
(Annette Jackson - 1.25 hrs)
Desensitization Strategies
Crossing DSA Barriers (Solid Organ & HSCT)
Quantifying HLA-Specific B Cell Memory
Kidney Paired Donation- HLA Perspective
KAS: New Transplant Opportunities

### Abdominal Organ Transplant Immunology - Part 1
(James Lan - 1.25 hrs)
Basics of Transplantation (Kidney, Pancreas, Liver, Intestine)
Indications and Contraindications for Transplantation
Assessment of Graft Function and Rejection
Immunosuppression, Immunomodulation and Tolerance Protocols

### Abdominal Organ Transplant Immunology - Part 2
(James Lan - 1.25 hrs)
HLA Testing in Pre-Tx Risk Assessment and Post-Tx Monitoring
Special HLA Lab Considerations
KPD Programs

### CHS & Diplomat Examinations
Reviews (2 hrs)

### Clinical Intervention in Transplantation
(James Lan - 1 hr)
Basics of Transplantation
Indications and Contraindications for Transplantation
Assessment of Graft Function and Rejection
Immunosuppression, Immunomodulation and Tolerance Protocols
HLA Testing in Pre-Tx Risk Assessment and Post-Tx Monitoring
Special HLA Lab Considerations

### Lab Management
(Arianne Mankey - 1 hr)
Lab Management
Safety and Risk Management

### Lab Accreditation
(Arianne Mankey - .75 hr)
Inspection Process - ASHI & CAP
Other Regulatory Agencies - CMS, JC, UNOS, NMDP, FACT, OSHA, FDA

### Implementing an Effective QA Program
(Arianne Mankey - .75 hr)
Designing a QA Program
Quality Indicators and Monitoring
Root Cause Analysis
QAPI
Competency Assessment

### TYPING CASE STUDIES (.75 hr)

### ANTIBODY / CROSSMATCH CASE STUDIES (.75 hr)

### EMERGING TECHNOLOGIES IN THE HLA LABORATORY PRESENTATIONS (1 hr)