



Clinical Microbiology

Embark on an Adventure

The Division of Clinical Microbiology provides a comprehensive array of conventional culture, direct exam and antimicrobial susceptibility testing, molecular diagnostic testing, and serologic testing for diagnosing infectious diseases caused by bacteria, fungi, viruses, and parasites. More than one million tests are performed annually by 100+ laboratory technologists and technicians. Molecular diagnostic techniques employed throughout the division include nucleic acid amplification using the rapid polymerase chain method (PCR) and nucleic acid detection using DNA probe and DNA sequencing technologies. These procedures are used to rapidly detect or identify commonly encountered pathogens as well as microorganisms that are difficult or not possible to detect with conventional methods.

Initial Processing and Media Preparation Laboratories

Specimens received for microbiologic testing are triaged, accessioned, processed, and transported to testing laboratories in the division. Specialized media and reagents are prepared according to the unique needs of the lab.

Bacteriology Laboratory

The Bacteriology Laboratory uses a combination of traditional culture-based and molecular methods to identify potentially pathogenic organisms from clinical specimens. Teams of technologists work together to interpret and report culture results. They utilize problem solving skills to implement testing algorithms for identification of bacteria. Antimicrobial susceptibility testing is performed to provide physician's with antibiotic therapy treatment options for their patients.

Hepatitis/HIV Serology Laboratory

This is a full-service, FDA-registered clinical laboratory. The laboratory provides FDA-mandated screening serologic tests for transfusion-transmitted microbial pathogens in blood, tissue, and STAT organ donors, as well as routine diagnostic serologic tests for viral hepatitis and HIV in blood samples from patients. Serologic tests include HAV, HBV, HCV, HDV, HEV, HIV and HTLV-I/II. The laboratory is actively involved in development and evaluation trials of rapid automated new diagnostic tests in addition to participating in "Lean" practices to enhance specimen throughput throughout the laboratory and to meet published turn-around-times.

Hepatitis/HIV Molecular Laboratory

This Laboratory provides routine molecular tests for viral hepatitis and HIV-1 in blood specimens from patients. For patients of Mayo and MML clients, the laboratory provides HIV-1 quantization and mutation/genotyping analysis, hepatitis B virus detection and quantization, and hepatitis C virus detection, quantization, and genotyping. Such testing assists clinicians in monitoring patients that are undergoing anti-retroviral therapy and provides baseline viral loads for newly diagnosed patients.

The Laboratory is actively involved in the development and evaluation of rapid automated nucleic acid purification and detection systems with continued implementation of new diagnostic tests for viral hepatitis (HBV genotyping) and HIV-1 (Proviral DNA).

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Infectious Diseases Serology Laboratory

This is a high volume laboratory that performs a variety of serologic assays to detect antibodies to viruses, bacteria, fungi and parasites. Antigen detection assays for *Cryptococcus* and *Legionella pneumophila* are also performed. Methodologies employed include enzyme immunoassay, immunofluorescence, Western blot, immunodiffusion, complement fixation, and agglutination.

Mycology/Mycobacteriology Laboratory

This laboratory performs culturing, identification, direct examination, and susceptibility testing of yeast, fungi, aerobic actinomycetes, and mycobacteria. Identification methods include hands on macroscopic and microscopic techniques, DNA probes, DNA sequencing, and Real-time PCR. The lab is a Biosafety Level II & III facility.

Virology/Parasitology Laboratory

Tests for *Clostridium difficile* toxins (A & B) and molecular amplification for target nucleic acids of *Neisseria gonorrhoeae* and *Chlamydia trachomatis* are also performed.