

For Students Considering a Career in Science

Different Types of Labs

- **Research Labs**
Research labs focus on a question or series of questions related to a specific topic or area of interest.
- **Core Labs**
While some of the work in core labs may be dedicated to new research, much of it supports the research of others using a specific type of assay or in an area of expertise.
- **Clinical Labs**
The majority of work in clinical labs supports patient care.

Examples of Core Labs

- **Bioinformatics**
These help researchers understand large and/or complex data sets using computer analysis and statistics.
- **Flow Cytometry**
This is a method in which researchers sort cells into groups by labeling them with different colored fluorescent labels. Personnel specialize in the use of flow cytometry equipment and analysis software.
 - » **BSL3 Cell Sorting Center**
Works the same as above, with the exception that samples contain infectious agents, such as HIV, and therefore require special handling to prevent spread of infections to researchers.
- **Lab Animal Services**
Personnel in this area care for animals being used for research; monitor for proper care and treatment; maintain approved protocols and ensure appropriate use of animals per protocols.
- **Mass Spectrometry**
Personnel in mass spectrometry labs perform techniques in which radioactive isotopes are used to measure cell metabolism; e.g., the rate of protein synthesis or the metabolism of a specific chemical, such as glucose.
- **Nuclear Magnetic Resonance (NMR)**
NMR is a series of techniques based on “magnetism” or “spin” in cells that results from electrons and protons surrounding the nucleus. In the lab, scientists use radioactive chemicals, such as carbon-13, to determine chemical structures. Researchers in this lab specialize in the use of the equipment and software related to NMR.
- **Nuclear Acid and Protein Research**
Scientists in these labs are experts in techniques related to isolating and analyzing nucleic acids (DNA, RNA) and proteins.
- **Pathology**
Personnel in the pathology lab prepare, stain and examine tissues microscopically, including using various types of microscopes, web-based data applications and 3-D imaging.
- **Protein**
Personnel in the protein lab are expert in techniques related to protein production, characterization and analysis.

continued ▶

Examples of Clinical Labs

- **Anatomic Pathology**

Pathologists in this lab aid in diagnosis through histology, histochemistry and microscopic examination of tissue samples obtained through surgery or autopsy.

- **Blood Bank**

Personnel in this lab specialize in delivery of and appropriate treatment with blood and blood products.

- **Chemistry**

Personnel in this lab perform tests ordered for patient care and diagnosis including blood gases, glucose testing, general chemistry testing (lipids, proteins, enzymes, electrolytes), drug testing, toxicology screenings and others.

- **Hematology**

Personnel in this lab analyze blood and body fluids from patients, such as blood counts, urinalysis, spinal fluid analysis, and pregnancy testing.

- **Microbiology**

Personnel in this lab analyze samples for pathogens such as bacteria, yeast and molds. In addition to identifying organisms, analyses are completed to help with treatment, such as analysis of antibiotic susceptibility testing.

- **Immunology**

Personnel in this lab perform assays that aid in identifying and quantifying cell populations related to the generation of an immune response, such as T cells, B cells and natural killer cells. Data from these analyses can be used to identify patients with autoimmune disorders, leukemias or lymphomas, as well as monitor patient responses to transplants.

- **Virology**

Personnel in this lab perform assays on samples from patients who are suspected of having viral infections. Staff use the data to aid physicians with diagnosis and treatment of individual patients as well as to monitor trends in disease rates (for example influenza, RSV and rotavirus seasons).

- **Immunogenetics**

Personnel in this lab perform tests associated with HLA-typing to increase successful outcomes following transplants and for diagnosis of diseases for which certain HLA types have been identified as being associated with disease.

- **Molecular Genetics**

Personnel in this lab perform assays that help with diagnosis and treatment of genetic disorders, such as clotting disorders and cancer predisposition syndromes.

- **Stem Cell Lab**

Personnel in this lab prepare progenitor cell populations for transplantation, process and store donor samples, and perform assays to enrich sub-populations of cells within the sample prior to transplant.