



MEDICAL LABORATORY SCIENCE

Nate Harden MS, MLS(ASCP)^{CM}

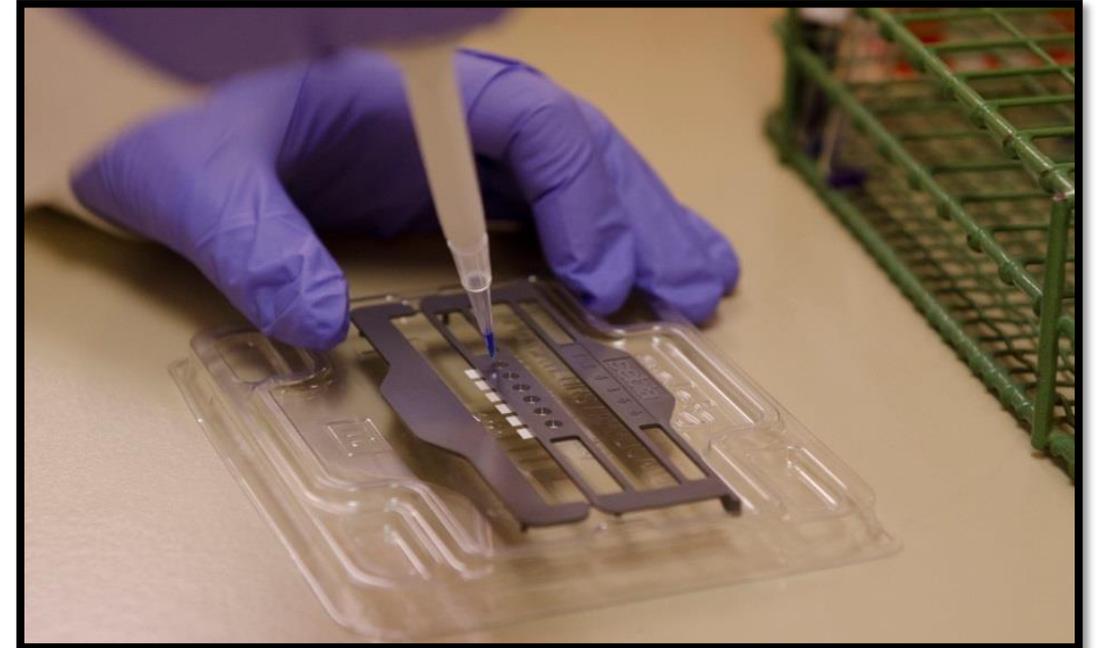
Program Director

Saint Francis Health System



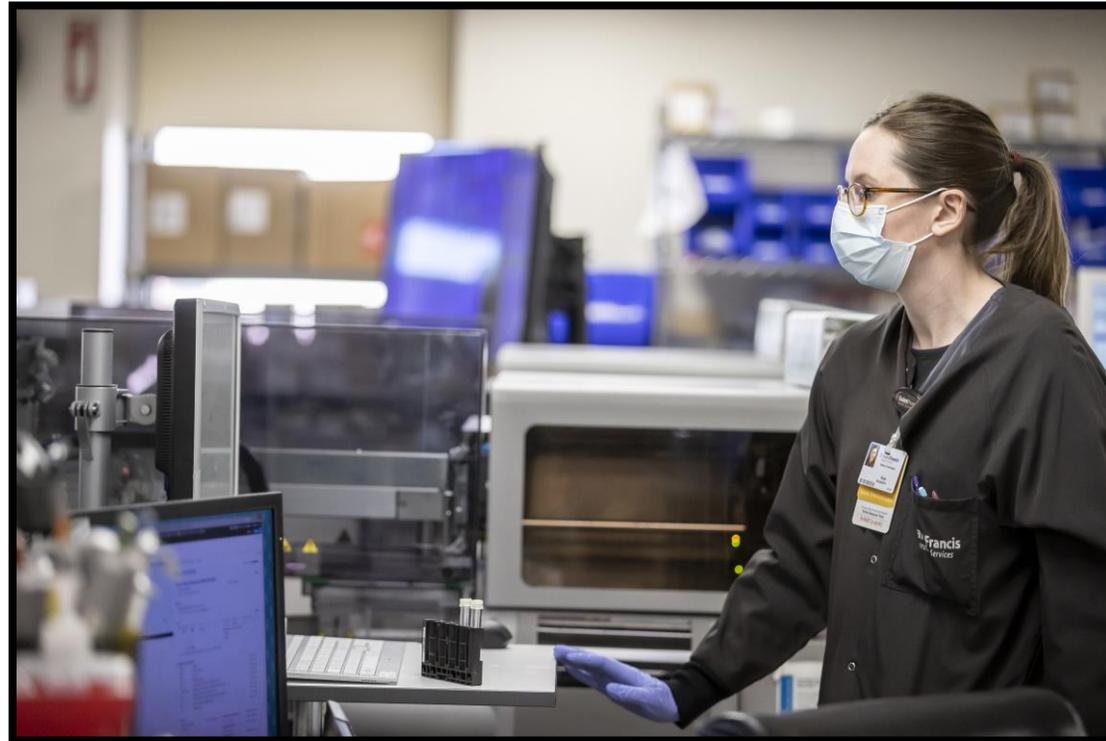
Medical Laboratory Science Profession

- Medical laboratory science is a diagnostic science that involves the performance of simple to complex testing procedures in a clinical laboratory.
- Medical technologists perform lab testing on blood specimens by applying biology and chemistry principles to aid in the diagnosis of disease.
- Other names for Medical Laboratory Science: Medical Technology, Clinical Laboratory Science



Medical Laboratory Science Profession

- The profession links technology and information to health and medicine.
- Lab results account for approximately 70% of the objective information used by physicians for the diagnosis, management, and resolution of patient health problems.

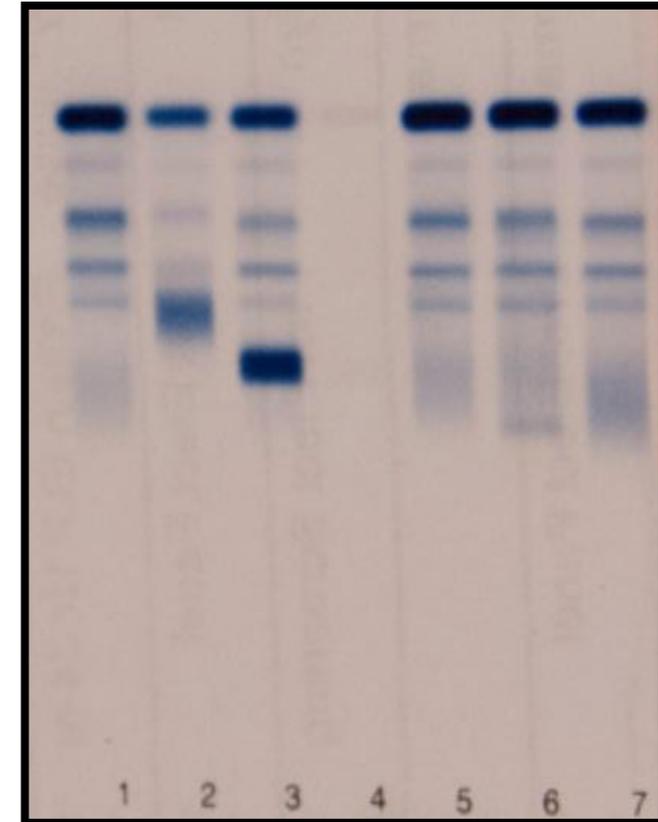


*Kara Priest,
Medical Technologist*

Medical Laboratory Science Profession

What skills are needed?

- Problem solving skills
- Critical thinking skills
- Effective communication
- Multitasking
- Detail-oriented
- Work well both independently and as part of a team
- Commitment to the patient



Serum Protein Electrophoresis

Medical Laboratory Science Profession

What kinds of diseases do laboratory tests detect?

- Cancer
- Heart attacks
- Diabetes
- Bacterial and viral infections (COVID-19)
- Drugs of abuse
- Therapeutic drugs

Blood Bank

Chemistry

Hematology/Flow Cytometry

Genetics

Immunology

Microbiology

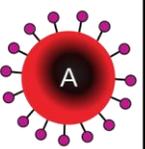
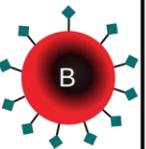
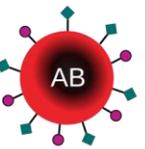
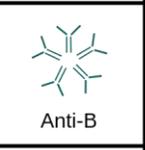
Laboratory Departments



Medical Laboratory Science Profession

Blood Bank

- Blood Bank performs pre-transfusion testing on red blood cells and serum to ensure that donated blood products are compatible with the recipient.

	Group A	Group B	Group AB	Group O
Red blood cell type				
Antibodies in plasma	 Anti-B	 Anti-A	None	 Anti-A and Anti-B
Antigens in red blood cell	 A antigen	 B antigen	 A and B antigens	None

https://en.wikipedia.org/wiki/File:ABO_blood_type.svg

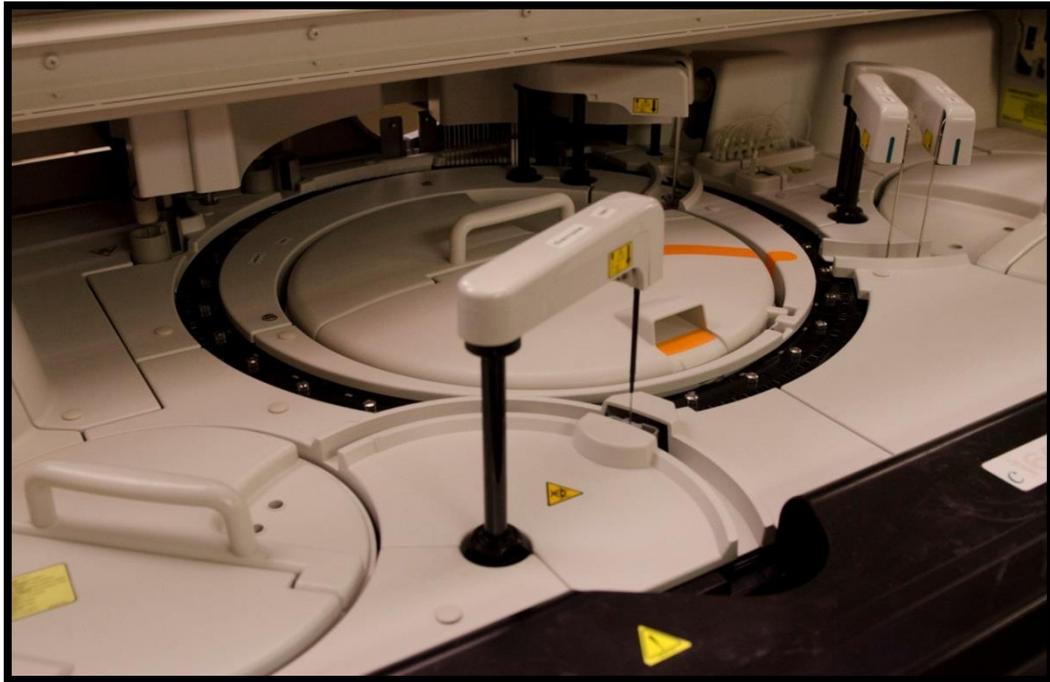


Ayo Oloruntola, Medical Technologist

Medical Laboratory Science Profession

Chemistry

- Biochemical analysis of blood to assess metabolic disorders and organ function (sugar, proteins, enzymes, electrolytes, etc.)

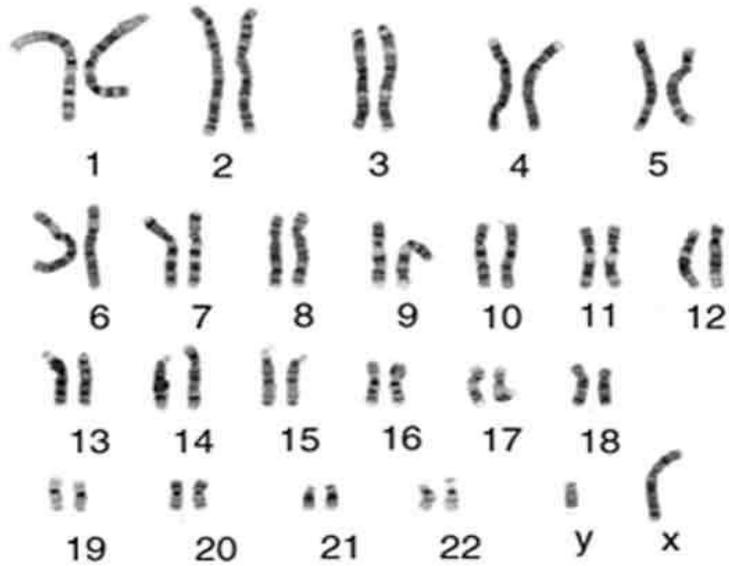


Janna Dierker, Medical Technologist

Medical Laboratory Science Profession

Genetics

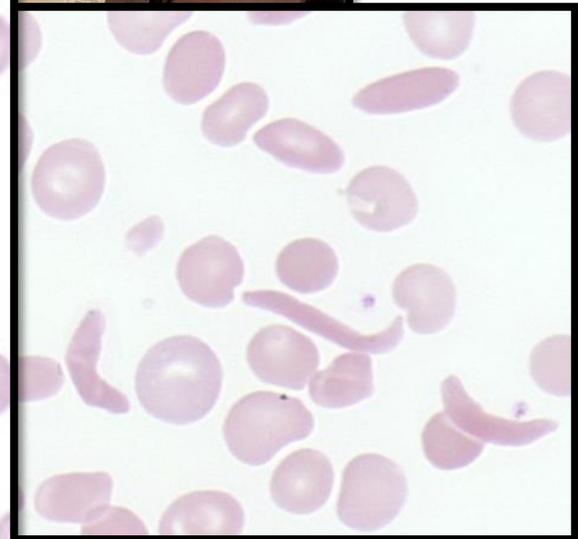
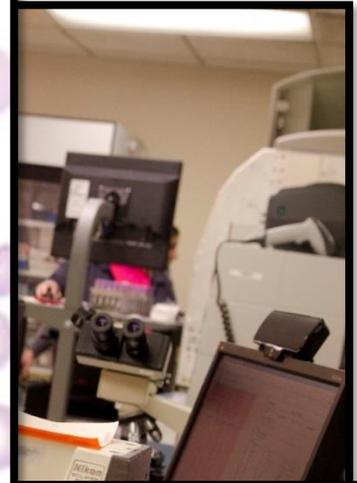
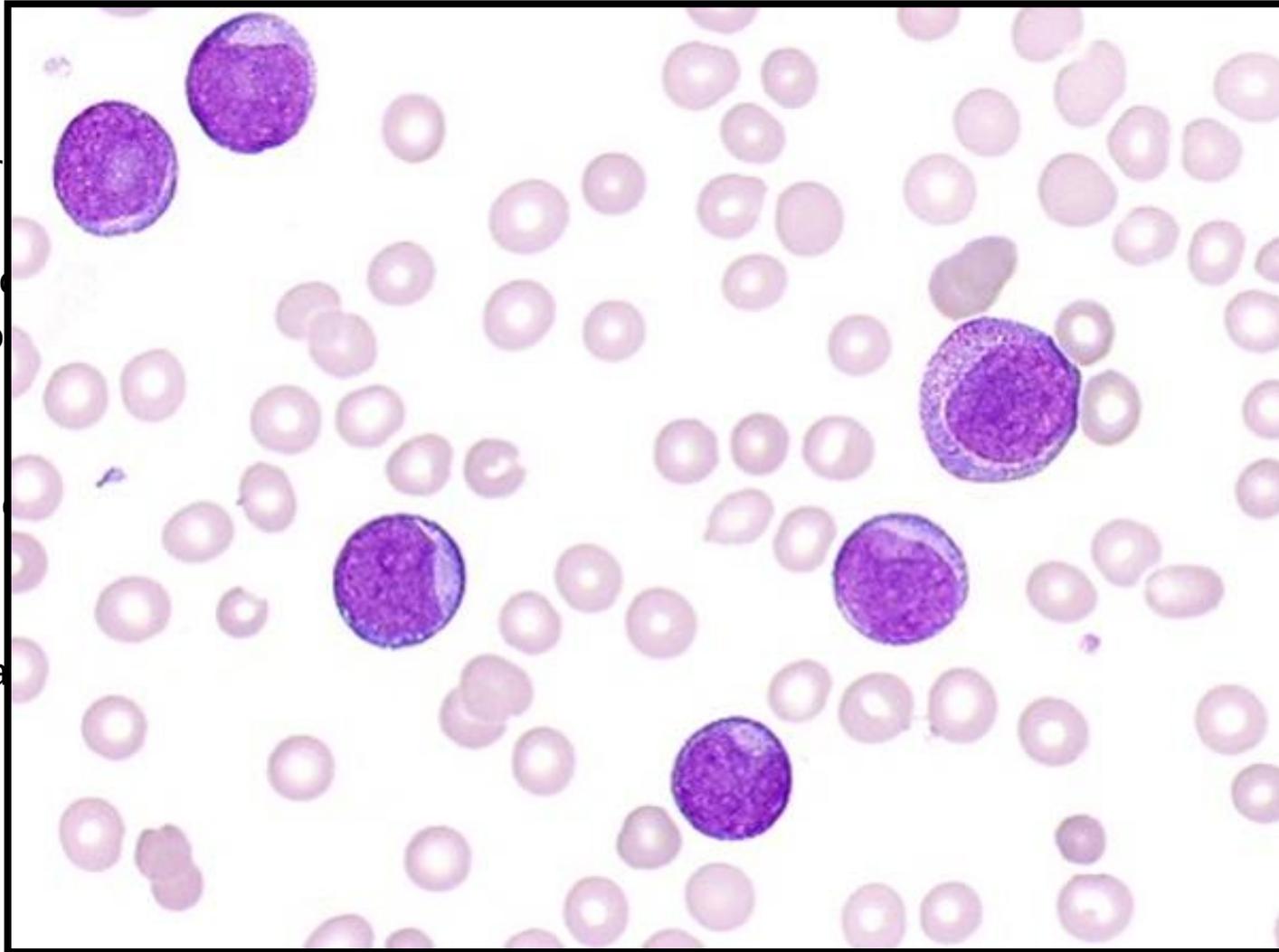
- Molecular genetics involves amplification of DNA to detect genetic disorders and infections.
- Cytogenetics consists of chromosome analysis.



Genetics Department, Saint Francis Hospital

Medical Laboratory Science Profession

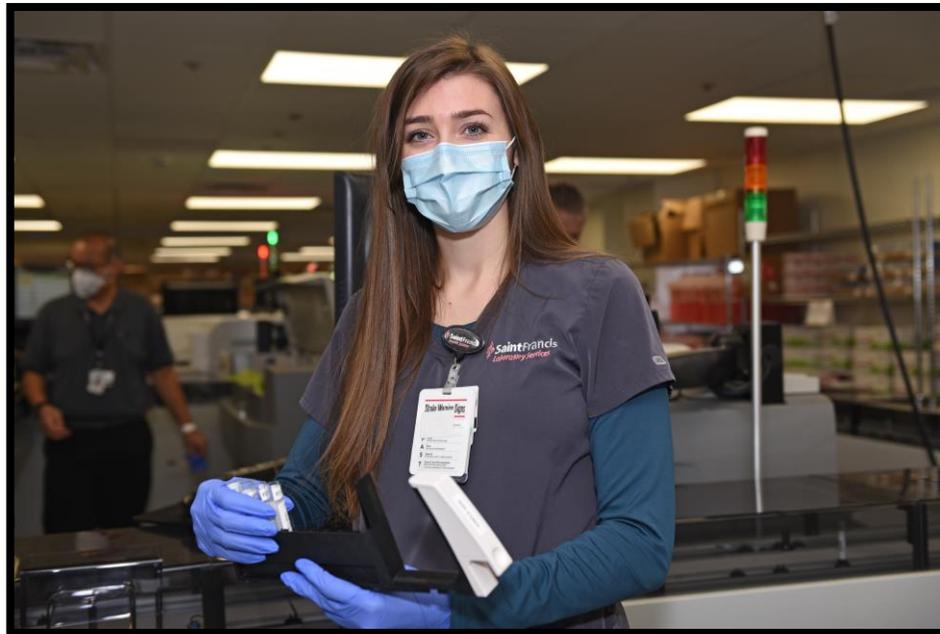
- Evaluate normal and abnormal hematology
 - White blood cells
 - Red blood cells
 - Platelets
- Assessment of clinical significance
 - Monitor patient health
 - Detect factors of disease



Medical Laboratory Science Profession

Immunology

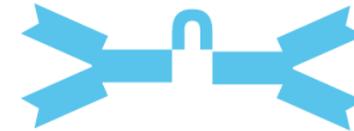
- The immune system is constantly being bombarded by all sorts of microbes.
- Through immunologic techniques, we can detect specific antibodies involved in allergies, autoimmune diseases, and infectious diseases.



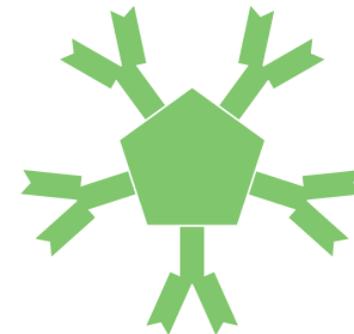
Alexa Pederson, Medical Technologist



Monomer
IgD, IgE, IgG



Dimer
IgA



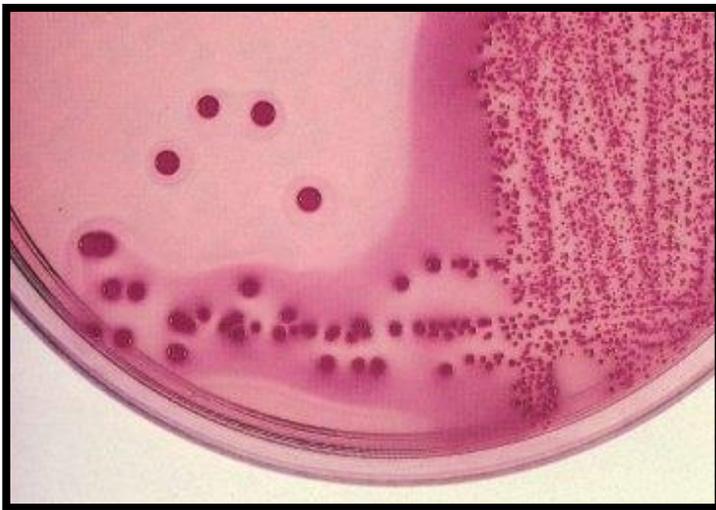
Pentamer
IgM

Medical Laboratory Science Profession

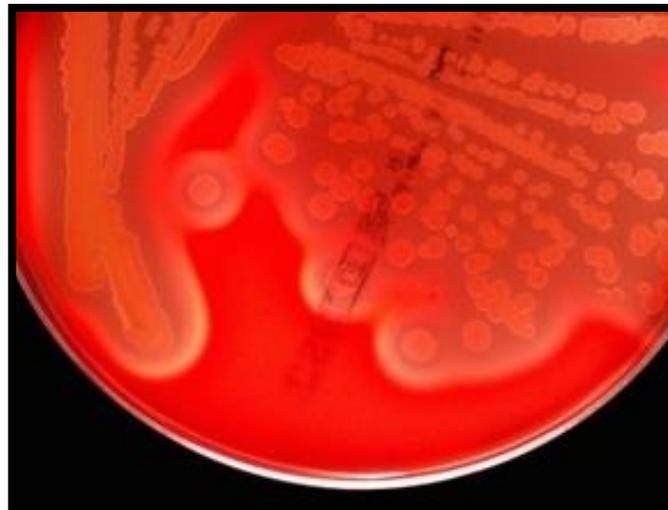
Microbiology

- Isolates, identifies, and performs antibiotic susceptibility testing on microorganisms.

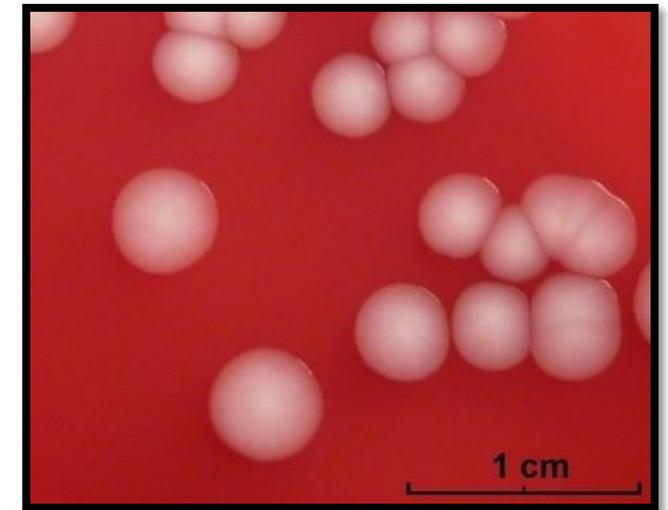
E. Coli



Staphylococcus



Salmonella



Medical Laboratory Science Profession

What are the educational requirements?

1. College

- Bachelor of Science degree

2. Medical Laboratory Science (MLS) Program

- NAACLS Accredited
- Trains students in the classroom and in clinical rotations
- Prepares students for a national certification examination

3. National Certification Examination

- Medical Laboratory Scientist (MLS), American Society of Clinical Pathology (ASCP)



School of Medical Laboratory Science

Clinical Education

- Located onsite at Saint Francis Health System in Tulsa, Oklahoma
- 51 week clinical internship starting in mid-May
- Full-time program
 - 60% in clinical rotations within Saint Francis Health System
 - 40% in a classroom setting at Saint Francis Hospital, Yale



Cindy Hupp, Microbiology Instructor

School of Medical Laboratory Science

What are the admission requirements?

- Applicants must be one of the following:
 1. Baccalaureate Candidate (**3** + **1** Option)
3 years of college + **1** year MLS internship
Degree will be in Medical Laboratory Science
 2. Post Baccalaureate Candidate (**4** + **1** Option)
Baccalaureate degree + **1** year MLS internship
Degree will be in a Biology, Chemistry, or related science



School of Medical Laboratory Science

What are the admission requirements?

- Applicant must meet the minimum GPA for admission:
 1. 2.50 cumulative GPA and 2.50 science GPA
 2. Grade of C or better in prerequisite classes
- Average incoming GPA is approximately 3.30



School of Medical Laboratory Science

What are the academic prerequisites?

- Biology (minimum of 16 credit hours)
 - Microbiology
 - Immunology
 - Anatomy and/or Physiology
- Chemistry (minimum of 16 credit hours)
 - General Chemistry (2 courses)
 - Organic Chemistry
 - Biochemistry
- Math
 - College Algebra or higher



School of Medical Laboratory Science

- Application Process: **Step 1**
 - Apply in the fall of the year preceding entry into the program.
 - Application and official transcripts are due by **October 15th**.
 - Online applications are available from www.occlsa.org
- Application Process: **Step 2**
 - Two online Academic Reference forms
 - Employer reference (if applicable)
 - Criminal background report through www.castlebranch.com



School of Medical Laboratory Science

- Selection Criteria
 - Interview (oral and written)
 - Career motivation
 - Knowledge of profession
 - Communication skills
 - Academic references
 - Background check



School of Medical Laboratory Science

- Employment/Scholarships/Events
 - Volunteer opportunities, networking events, conferences are available throughout the year.
 - Part-time employment as a student lab tech is available on a limited basis during the year.
 - Scholarship opportunities are available from Saint Francis Health System, American Society for Clinical Pathology (ASCP), American Proficiency Institute (API), and American Society for Clinical Laboratory Science (ASCLS).



*Saint Francis Health System
Stroke and Trauma Symposium, 2023*

School of Medical Laboratory Science

- Completion of the program
 - All program graduates receive a certificate of completion and graduation pin and are eligible to take the national ASCP Board of Certification exam.
 - Baccalaureate candidate (3+1 student) will earn 30 hours of college credit to complete a B.S. degree from the university.



Graduating Class of 2023

School of Medical Laboratory Science

Three Year Average Program Outcomes		
	Saint Francis Health System	NAACLS Benchmarks
Graduation Rate	100%	70%
Certification Pass Rate	92%	75%
Job Placement Rate	100%	70%

Reflects graduating classes 2021-2023



School of Medical Laboratory Science

- Perfect blend of science, medicine, and technology
- Challenging, interesting, continuously changing
- Excellent career outlook
- “I wish I heard about this sooner!”



For More Information...

Saint Francis Hospital

Laboratory Education

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