



MEDICAL LABORATORY SCIENCE

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Program Director

Saint Francis Health System

MEDICAL LABORATORY SCIENCE

- 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



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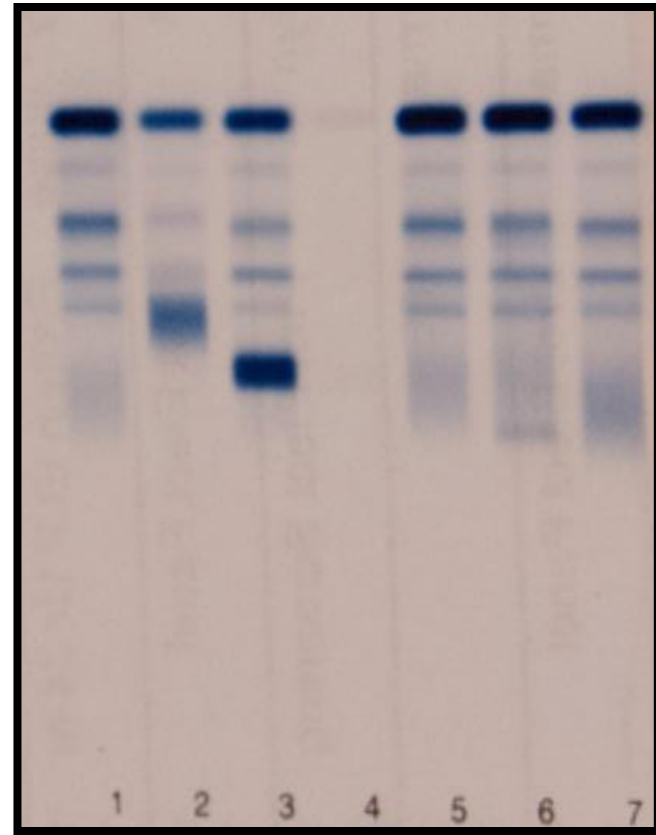
- The profession links technology and information to health and medicine.
- Lab results account for approximately 70% of the objective information used by physicians for the diagnosis, management, and resolution of patient health problems.



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What kinds of diseases do laboratory tests detect?

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

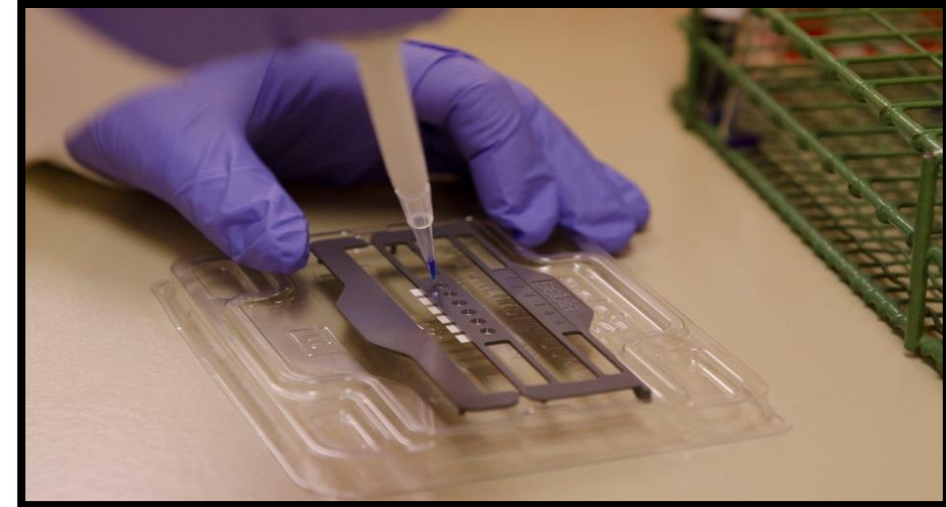


Serum Protein Electrophoresis

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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



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What are the educational requirements?

1. College

- Bachelor of Science degree

2. Clinical Internship

- NAACLS Accredited Medical Laboratory Science Program

3. National Certification Examination

- ASCP



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Does Oklahoma have a NAACLS accredited Medical Laboratory Science program?

1. Saint Francis Health System, Tulsa
2. Comanche County Memorial Hospital, Lawton
3. Mercy Hospital, Ada/Ardmore/OKC



Clinical Education

- Located onsite at Saint Francis Health System in Tulsa, Oklahoma
- 51 week clinical internship: May 23, 2022 – May 11, 2023
- Full-time program
 - 60% in clinical rotations within Saint Francis Health System
 - 40% in a classroom setting at Saint Francis Hospital

Phlebotomy
Hematology/Flow Cytometry
Chemistry
Immunology
Blood Bank
Microbiology
Genetics

Phlebotomy

- Phlebotomy involves the proper collection, handling, and processing of blood specimens.



Hematology

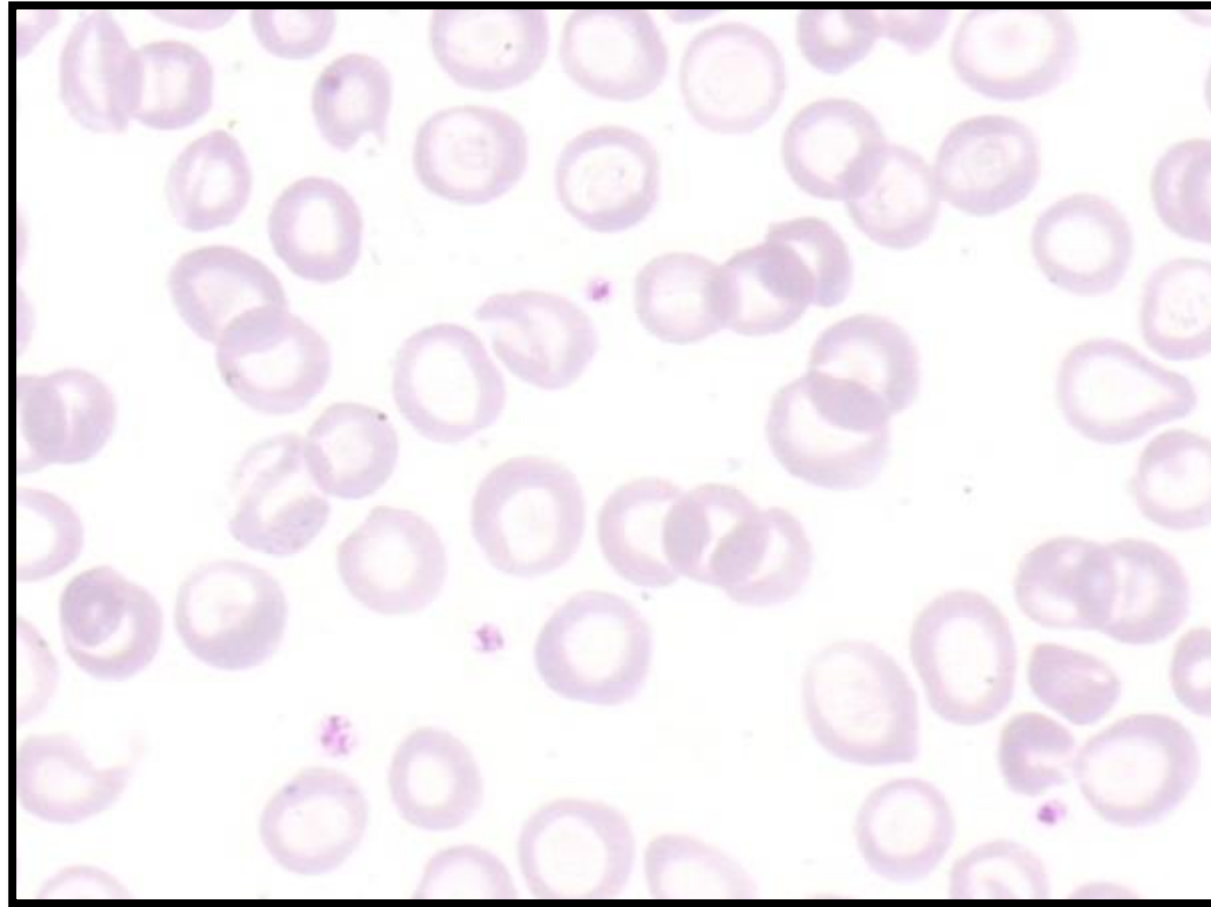
- Evaluate normal/abnormal cells in blood
 - White blood cells
 - Red blood cells
 - Platelets
- Analysis of urine and other body fluids such as cerebrospinal fluid and pleural fluid
- Assessment of the blood clotting system
 - Monitor patients on blood thinner
 - Detect factor deficiencies



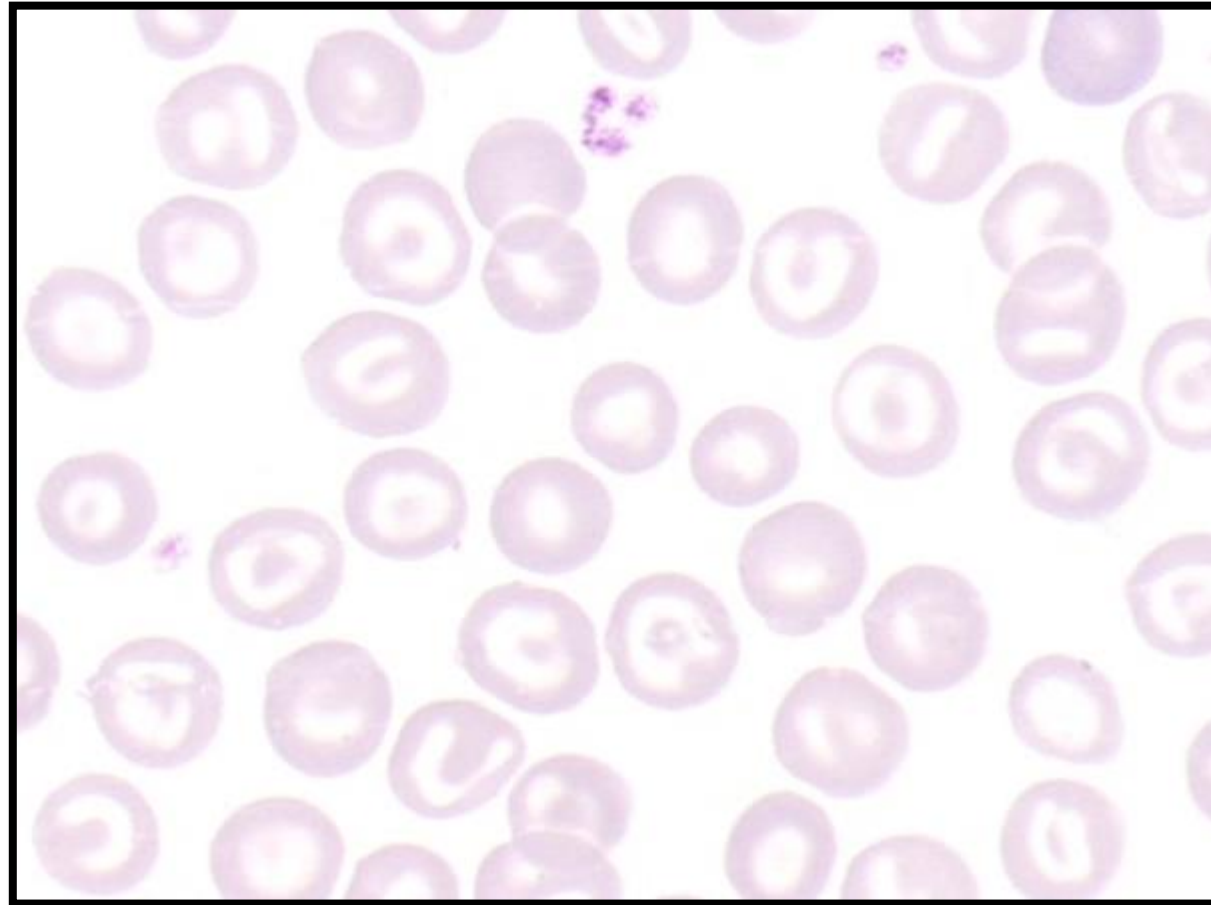
What is in a drop of blood?



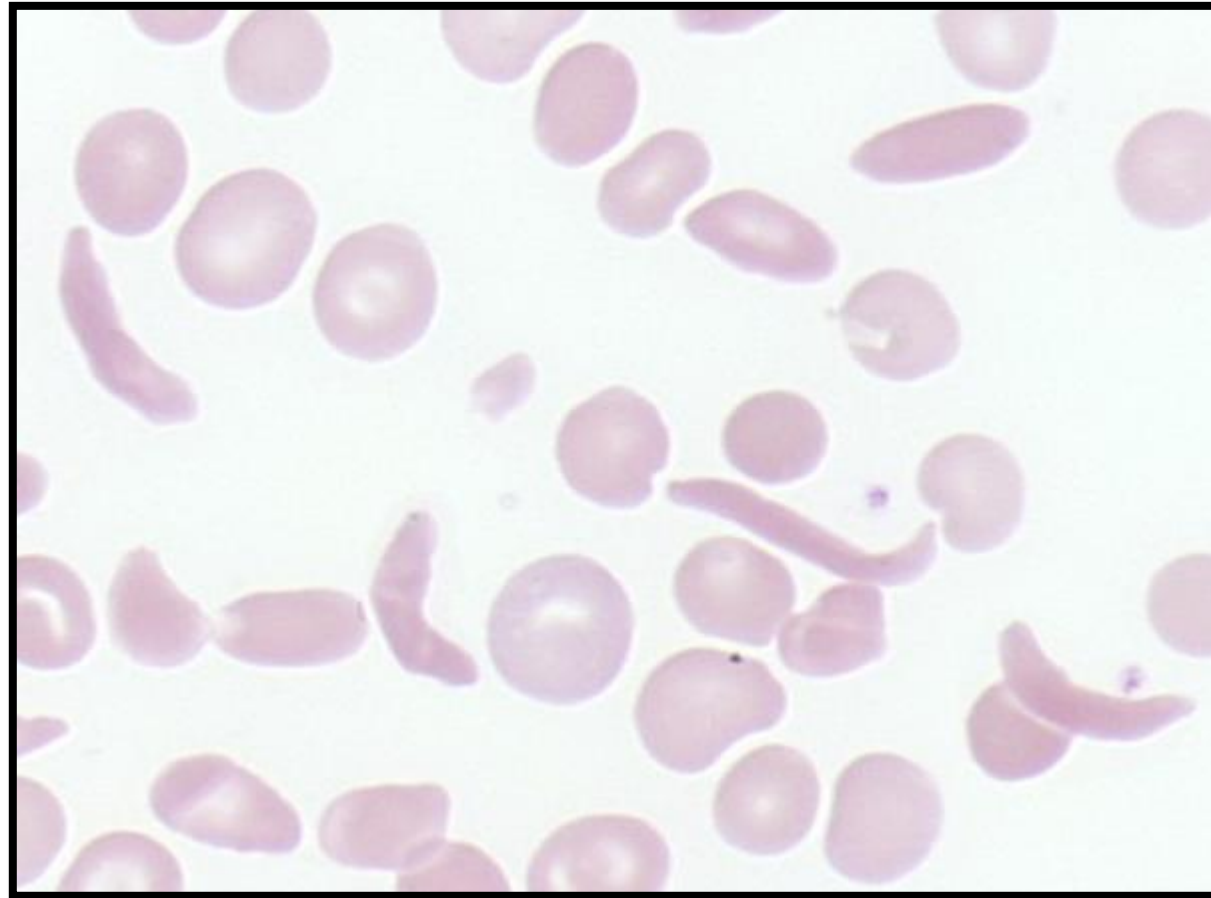
What is wrong with these red blood cells?



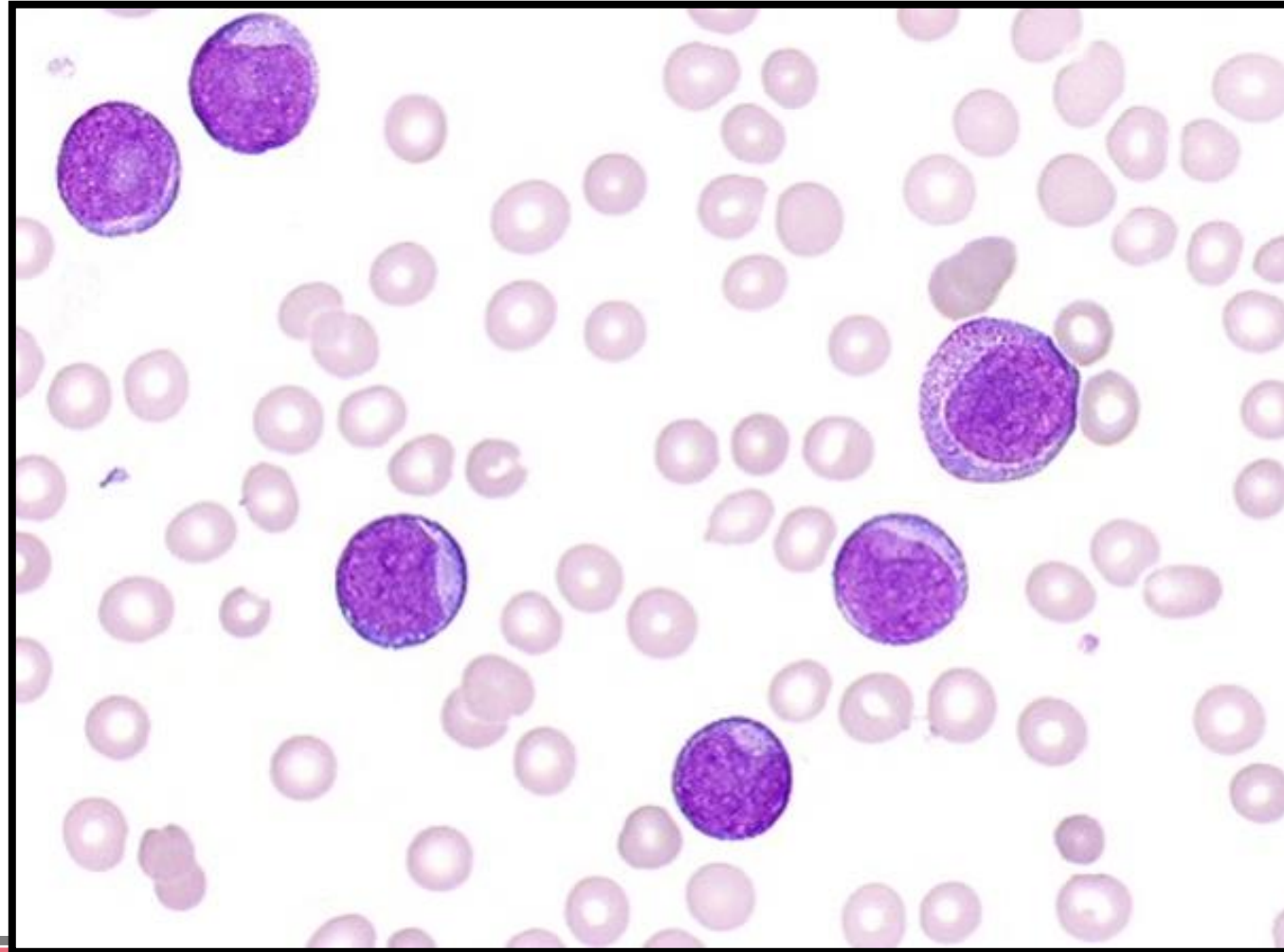
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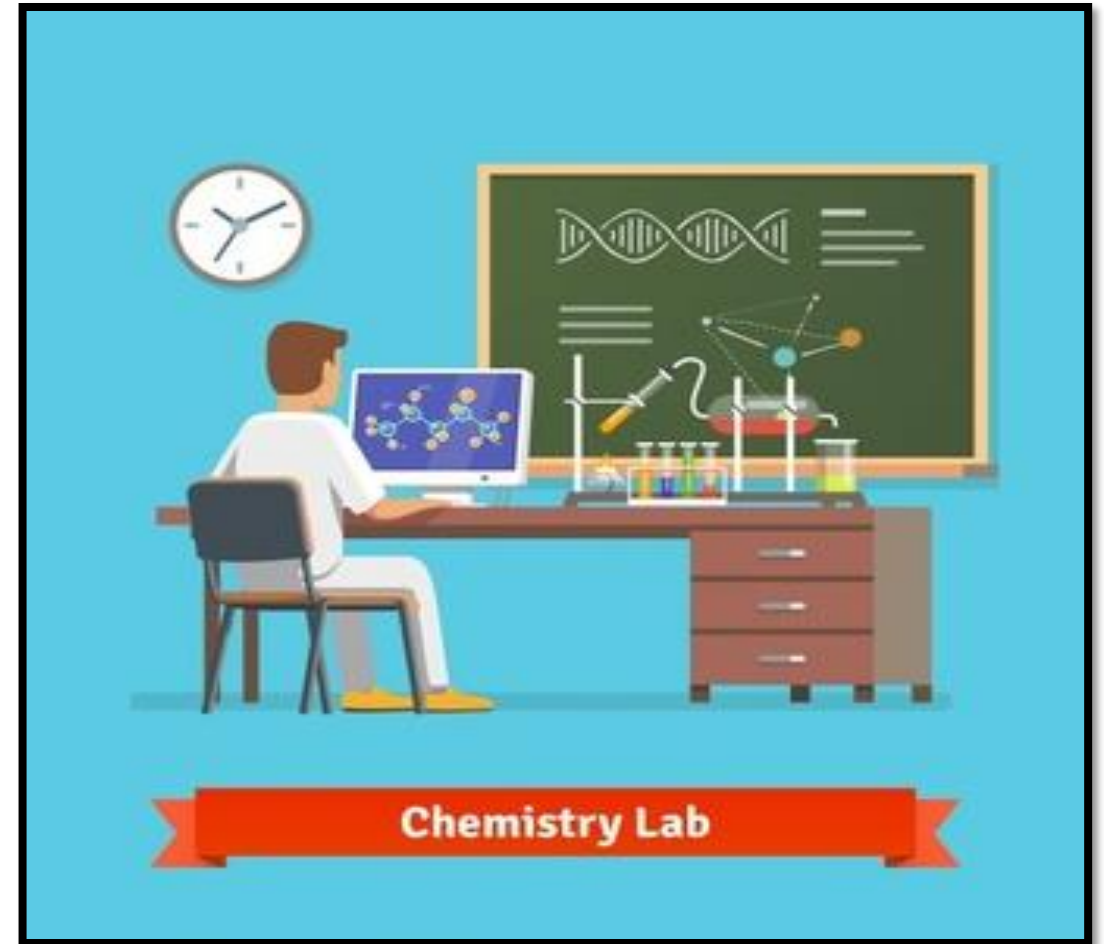
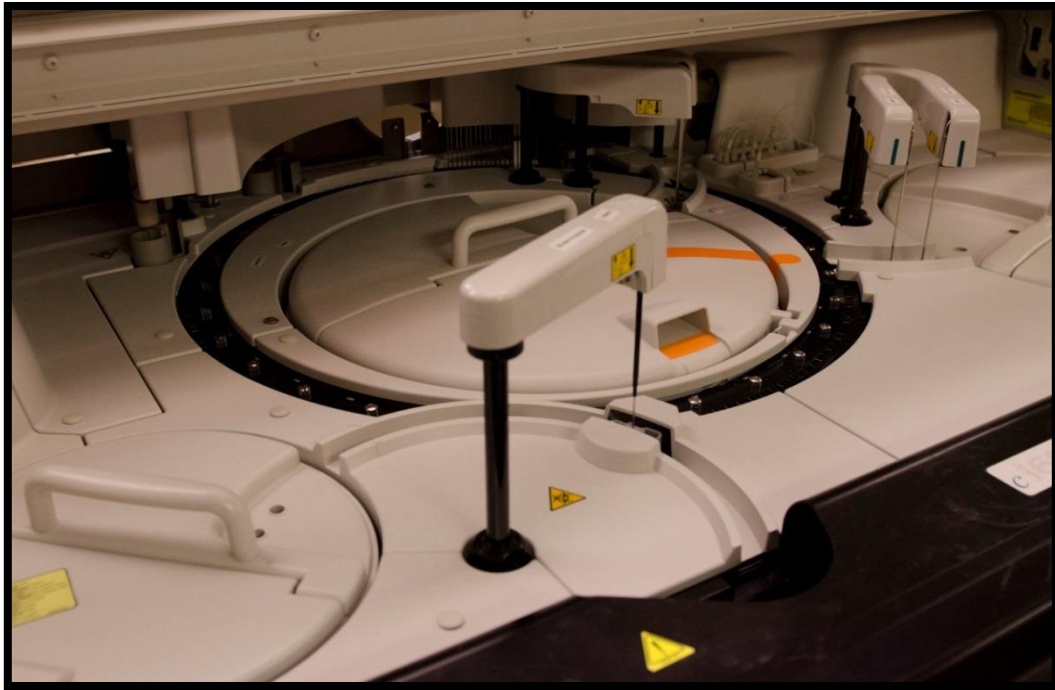
What is wrong with these white blood cells?



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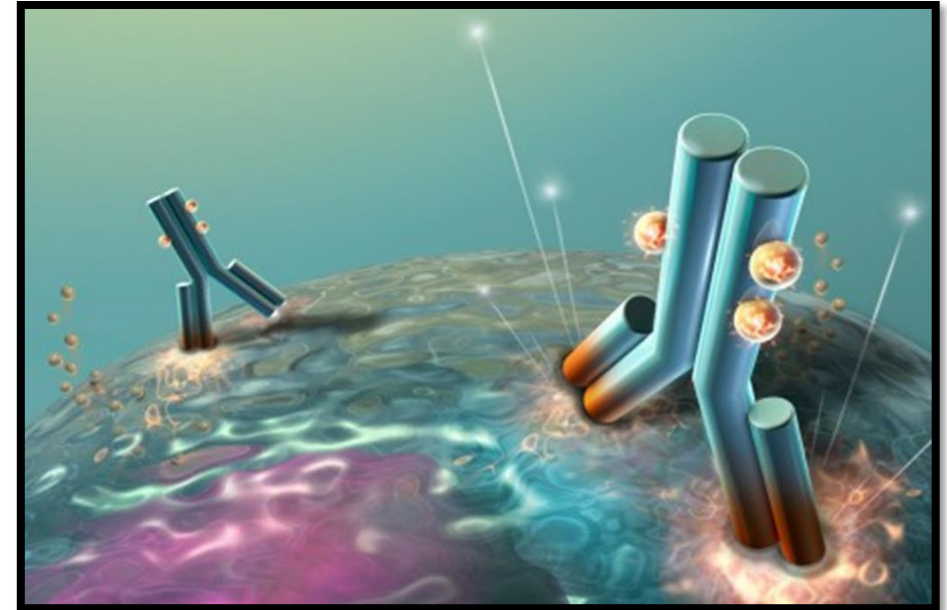
Chemistry

- Biochemical analysis of blood to assess metabolic disorders and organ function



Immunology

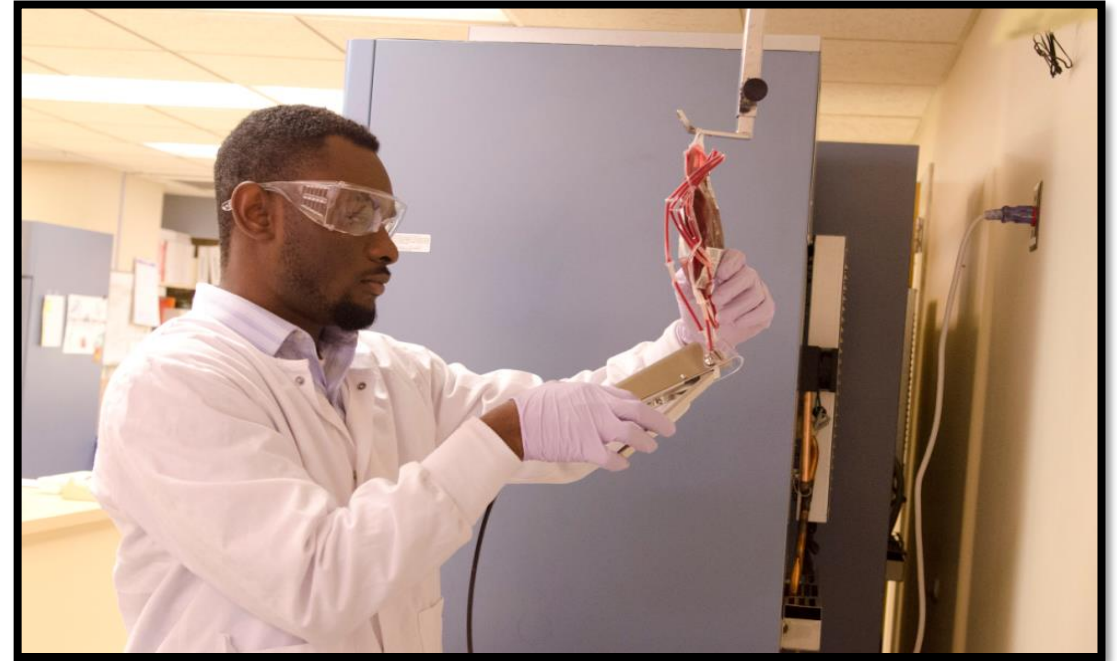
- The immune system is being bombarded by all sorts of microbes all the time.
- Even though we're not aware of it, it is saving our lives every day.
- Through immunologic techniques, we can detect allergies, autoimmune diseases, and infectious diseases.



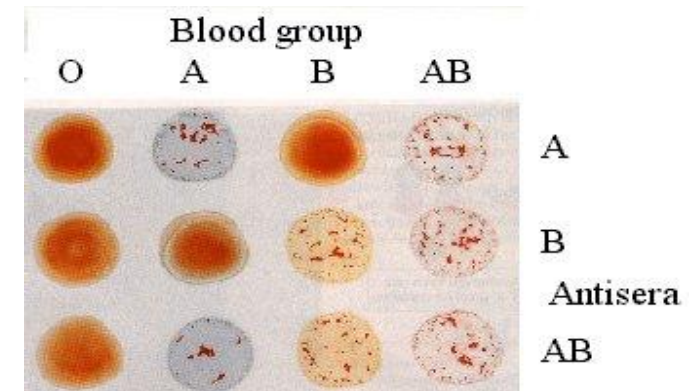
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Blood Bank

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

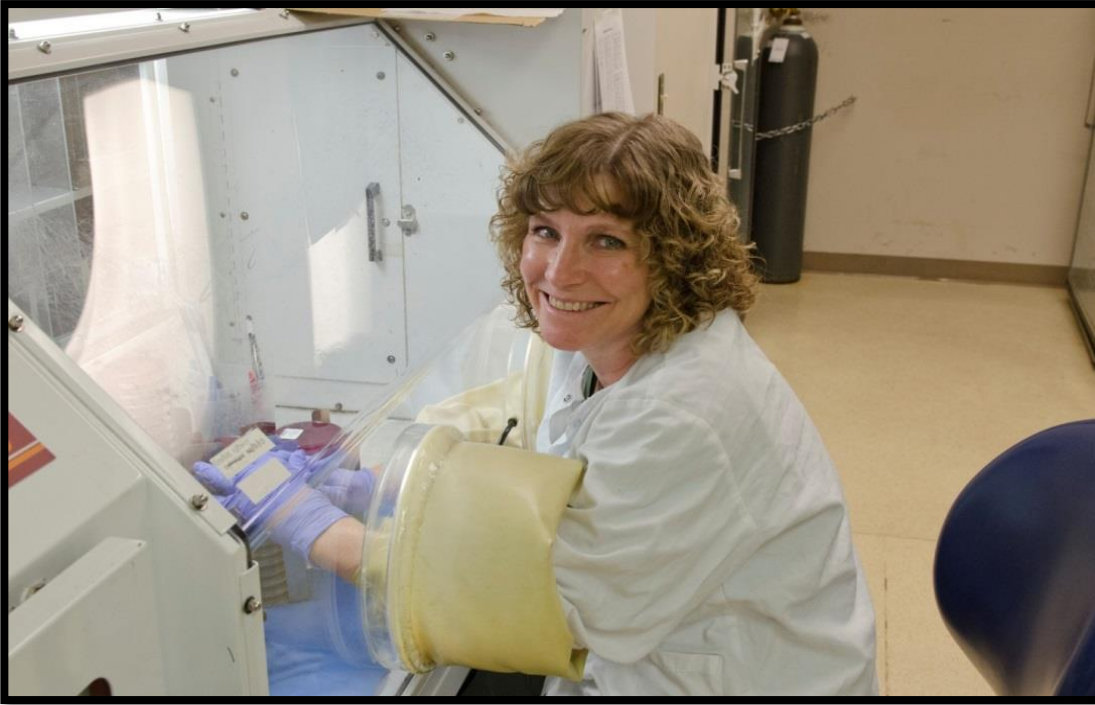


Cell	Rh-hr					Kell					Duffy		Kidd		MNS				P	Xg	Lewis		Lutheran		Test Results				
	D	C	E	c	e	K	k	Kp ^a	Kp ^b	Js ^a	Js ^b	Fy ^a	Fy ^b	Jk ^a	Jk ^b	M	N	S	s	P ₁	Xg ^a	Le ^a	Le ^b	Lu ^a	Lu ^b	Cell	IS	37	AHG
1	+	+	0	0	+	0	+	0	+	0	+	+	0	+	+	0	0	+	0	0	0	0	+	0	+	1	0	0	4+
2	+	0	+	+	0	0	+	0	+	0	+	+	+	0	0	+	0	+	+	+	+	+	0	0	+	2	0	0	4+
3	+	+	0	0	+	0	+	0	+	0	+	+	+	0	0	+	0	+	+	+	0	+	0	0	+	3	0	0	4+
4	+	0	0	+	+	0	+	0	+	0	+	+	0	0	+	+	+	0	0	0	0	0	0	+	4	0	0	4+	
5	0	+	0	+	+	0	+	0	+	0	+	+	0	0	+	+	0	+	+	0	+	0	+	+	5	0	0	0✓	
6	0	0	+	+	+	0	+	0	+	0	+	+	0	0	+	0	+	0	+	0	+	0	+	+	6	0	0	0✓	
7	0	0	0	+	+	+	+	0	+	0	+	+	+	+	+	+	0	+	+	0	+	+	+	+	7	0	0	0✓	
8	0	0	0	+	+	+	0	0	+	0	+	+	+	0	+	+	+	+	+	+	+	0	0	+	8	0	0	0✓	
9	+	+	0	+	+	0	+	0	+	0	+	+	+	0	0	+	0	+	0	+	+	0	0	+	9	0	0	4+	
10	+	0	0	+	+	0	+	0	+	+	+	+	0	0	+	+	0	+	+	+	0	0	0	+	10	0	0	4+	
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Microbiology

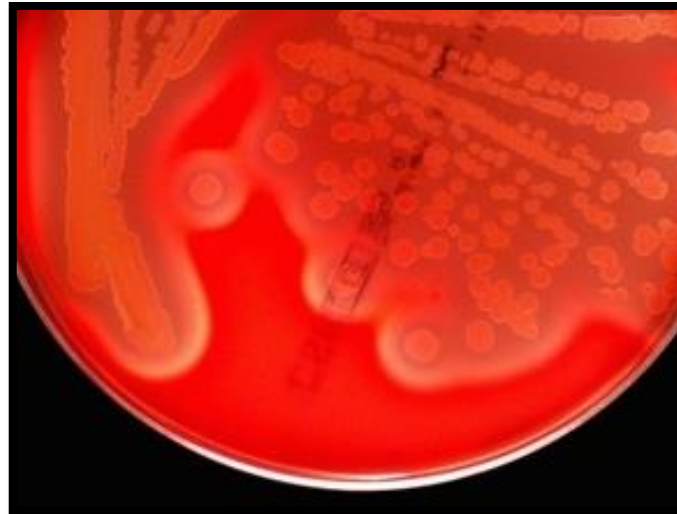
- Isolates, identifies, and performs antibiotic susceptibility testing on microorganisms.



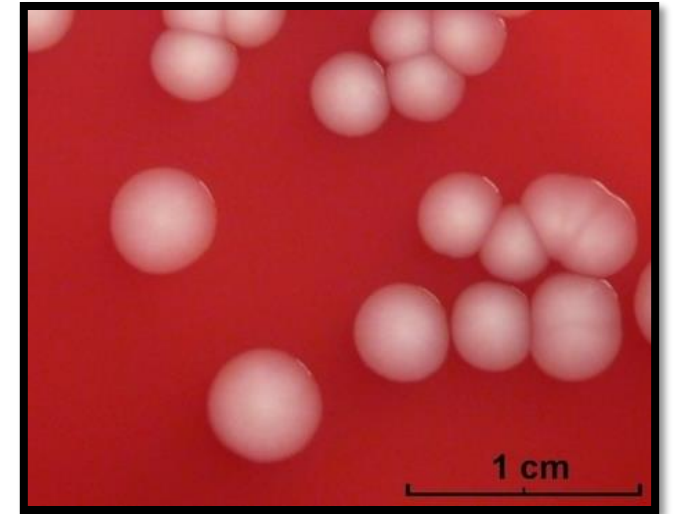
E. Coli



Staphylococcus



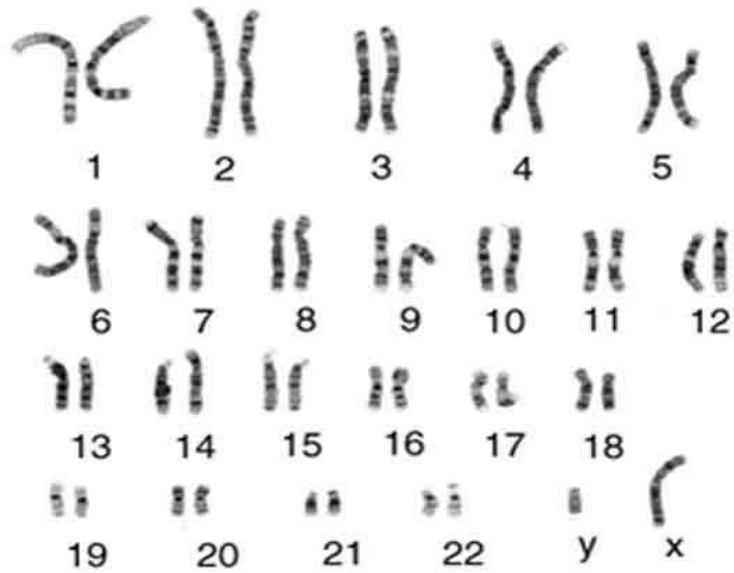
Salmonella



- Microbiology Respiratory Pathogen Panel by PCR
 - Adenovirus
 - Coronavirus (229E, KHU1, NL63, OC43)
 - Human Metapneumovirus
 - Human Rhinovirus/Enterovirus
 - Influenza A and B
 - Parainfluenza
 - Respiratory Syncytial Virus (RSV)
 - Bordetella pertussis
 - Chlamydomphila pneumoniae
 - Mycoplasma pneumoniae
 - Bordetella parapertussis
 - Severe Acute Respiratory Syndrome Coronavirus (SARS-CoV-2)

Genetics

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



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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 major



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What are the admission requirements?

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



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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



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- 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



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



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- Employment/Scholarships
 - 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).



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- Completion of the MLS Program
 - Baccalaureate candidate (3+1 student) will earn 30 hours of college credit to complete a B.S. degree from the university and receive a certificate of completion and pin from the medical laboratory science program.
 - Medical laboratory science program graduates are eligible to take the national ASCP Board of Certification exam.
 - Graduation is not contingent upon passing the national certification exam.



MEDICAL LABORATORY SCIENCE

Three Year Average Program Outcomes		
	Saint Francis Health System	NAACLS Benchmarks
Graduation Rate	100% (36/36)	70%
Attrition Rate	0% (0/36)	N/A
Certification Pass Rate	94% (34/36)	75%
Job Placement Rate	100% (36/36)	70%
Retention Rate at SFHS	89% (32/36)	N/A



MEDICAL LABORATORY SCIENCE

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



CONTACT A HOSPITAL PROGRAM DIRECTOR FOR MORE INFORMATION

Comanche County Memorial Hospital

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Phone: 580-250-5848

Program Director: Stacey Paryag-Stevens MPA, AHI(AMT), MLS(ASCP)^{CM}

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Program Director: Leah Babcock, MS, MT(ASCP)

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