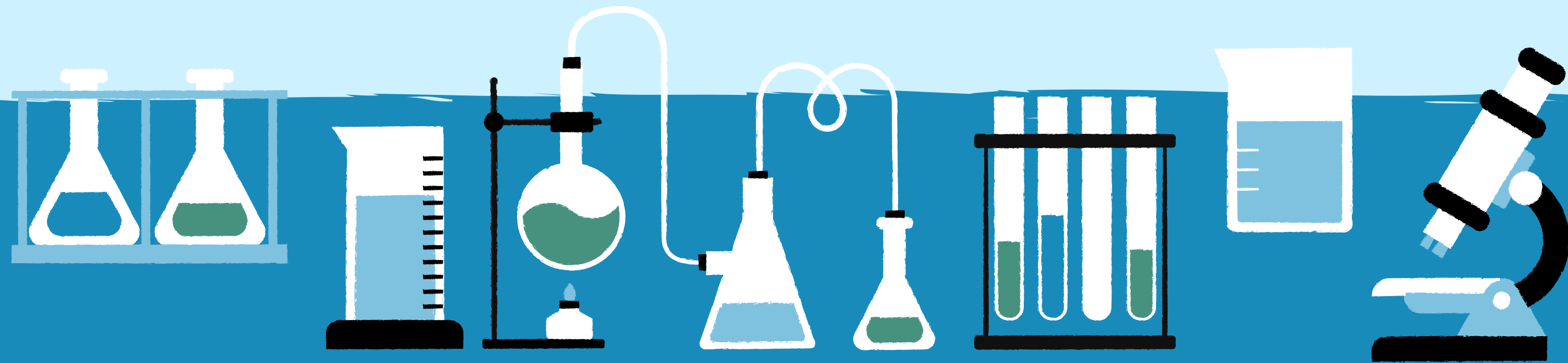


Nobel Prize in Chemistry



Faculty of Medicine of University of Rijeka, Croatia

Department of Medicinal Chemistry, Biochemistry and Clinical Chemistry, Faculty of Medicine, University of Rijeka

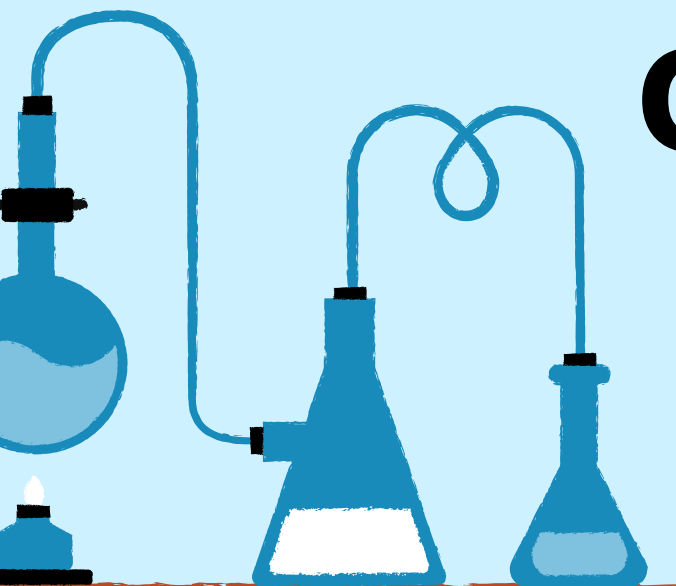
Authors: Lara Batičić ¹, Emilia Köpcke ², Antea Kršek ²

¹ Department of Medical chemistry, biochemistry and clinical chemistry of Faculty of Medicine, University of Rijeka

² Students of Faculty of Medicine, University of Rijeka

1909 - Wilhelm Ostwald

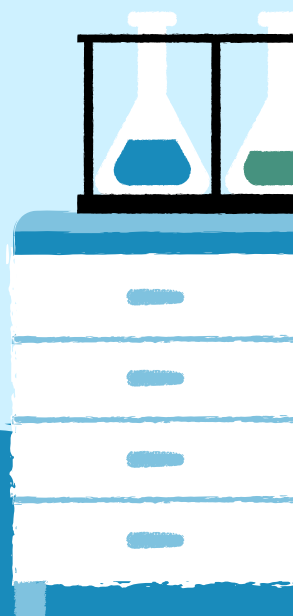
**Catalysis, chemical equilibria and
chemical reaction velocities**





Wilhelm Ostwald

- Born: 2 September 1853, Riga, Russian Empire
- Died: 4 April 1932, Leipzig, Germany
- Researched at: Leipzig University
- Prize motivation:
“in recognition of his work on catalysis and for his investigations into the fundamental principles governing chemical equilibria and rates of reaction”



Types of Chemical Reaction

Catalysis

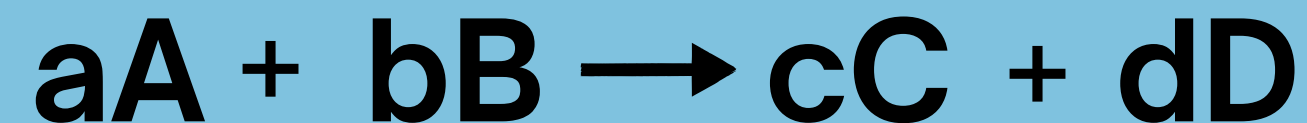
In 1894 he revealed what happens: a substance—a catalyst—can affect a chemical reaction's speed, but is not included in its end-products

Chemical reaction velocities

Chemical reactions proceed at vastly different speeds depending on the nature of the reacting substances, the type of chemical transformation, the temperature, and other factors

Chemical equilibrium

A condition in the course of a reversible chemical reaction in which no net change in the amounts of reactants and products occurs



TASK 1

Do you know that you have catalysts at home?
Can you think of some?

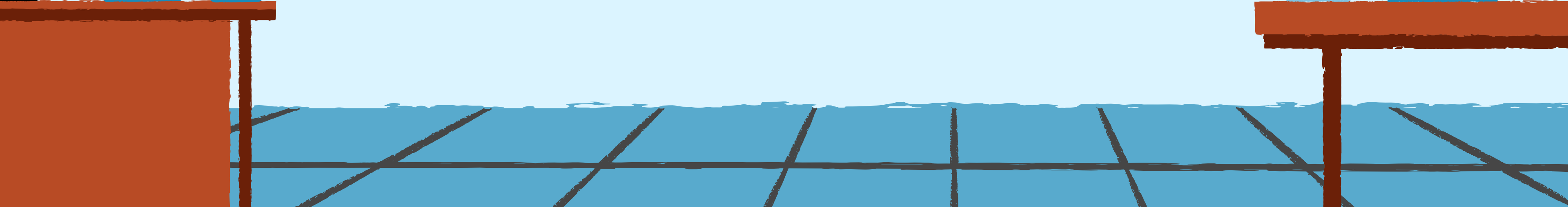
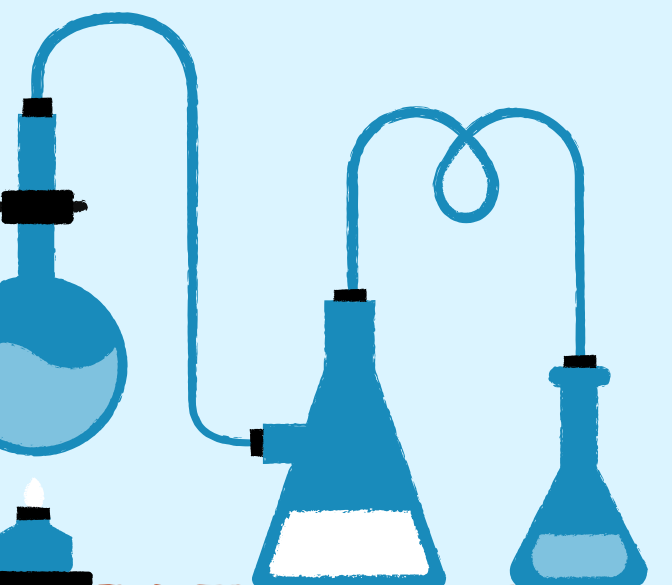
Why do you think is the knowledge about chemical equilibrium so important for modern science?



1937 - Walter Norman Haworth



Carbohydrates and Vitamin C





Walter Norman Haworth

- Born: 19 March 1883, Chorley, United Kingdom
- Died: 19 March 1950, Birmingham, United Kingdom
- Researched at: Birmingham University
- Prize motivation:
“for his investigations on carbohydrates and vitamin C”

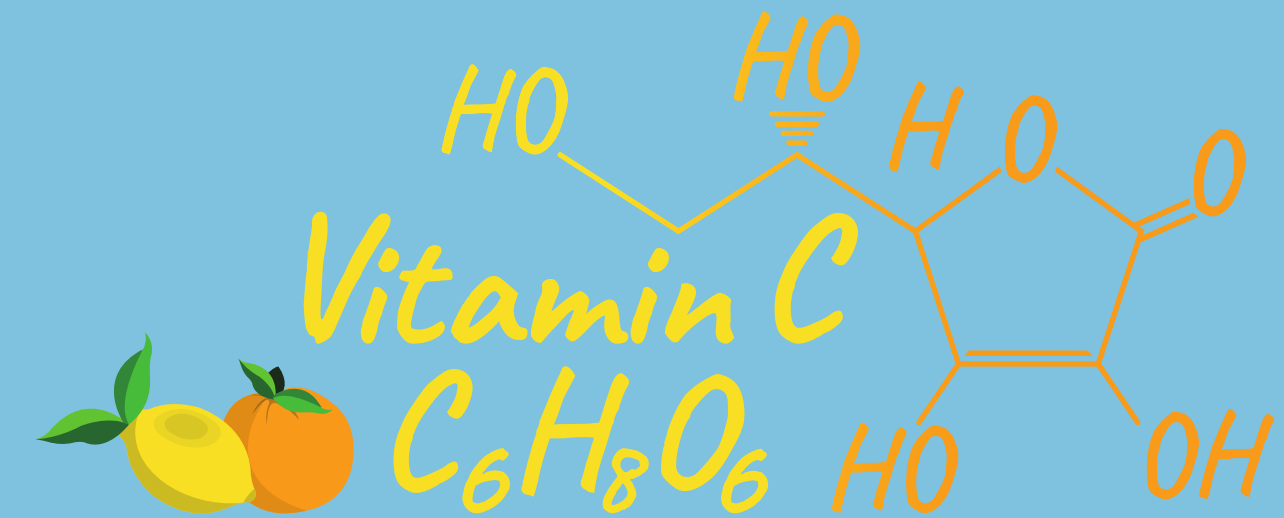


Types of Chemical Reaction

Carbohydrates

Carbohydrates, which means “watered carbon.” are a class of naturally occurring compounds. Substances composed mainly of molecules containing atoms of carbon (C), hydrogen (H), and oxygen (O).

General formula: $C_x(H_2O)_y$



Vitamin C

Also called ascorbic acid, water-soluble, carbohydrate-like substance that is involved in certain metabolic processes of animals. First isolated in 1928, vitamin C was identified as the curative agent for scurvy in 1932.

TASK 2

Where would you start looking for vitamin C?

How would you come to the same discoveries?

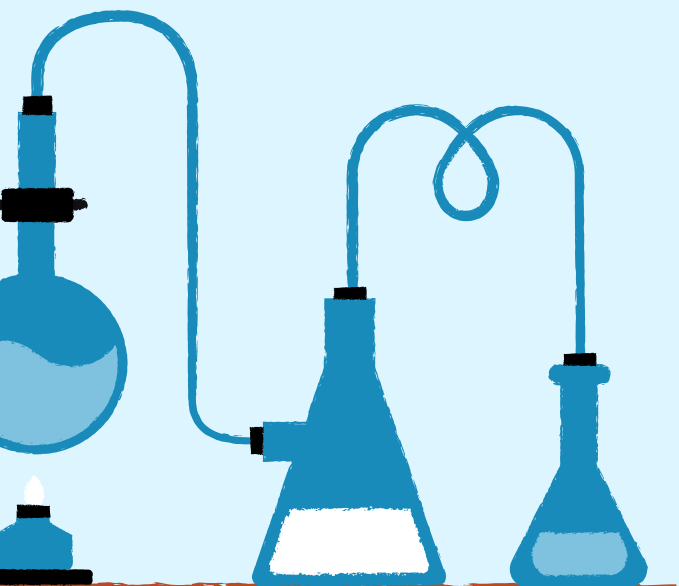


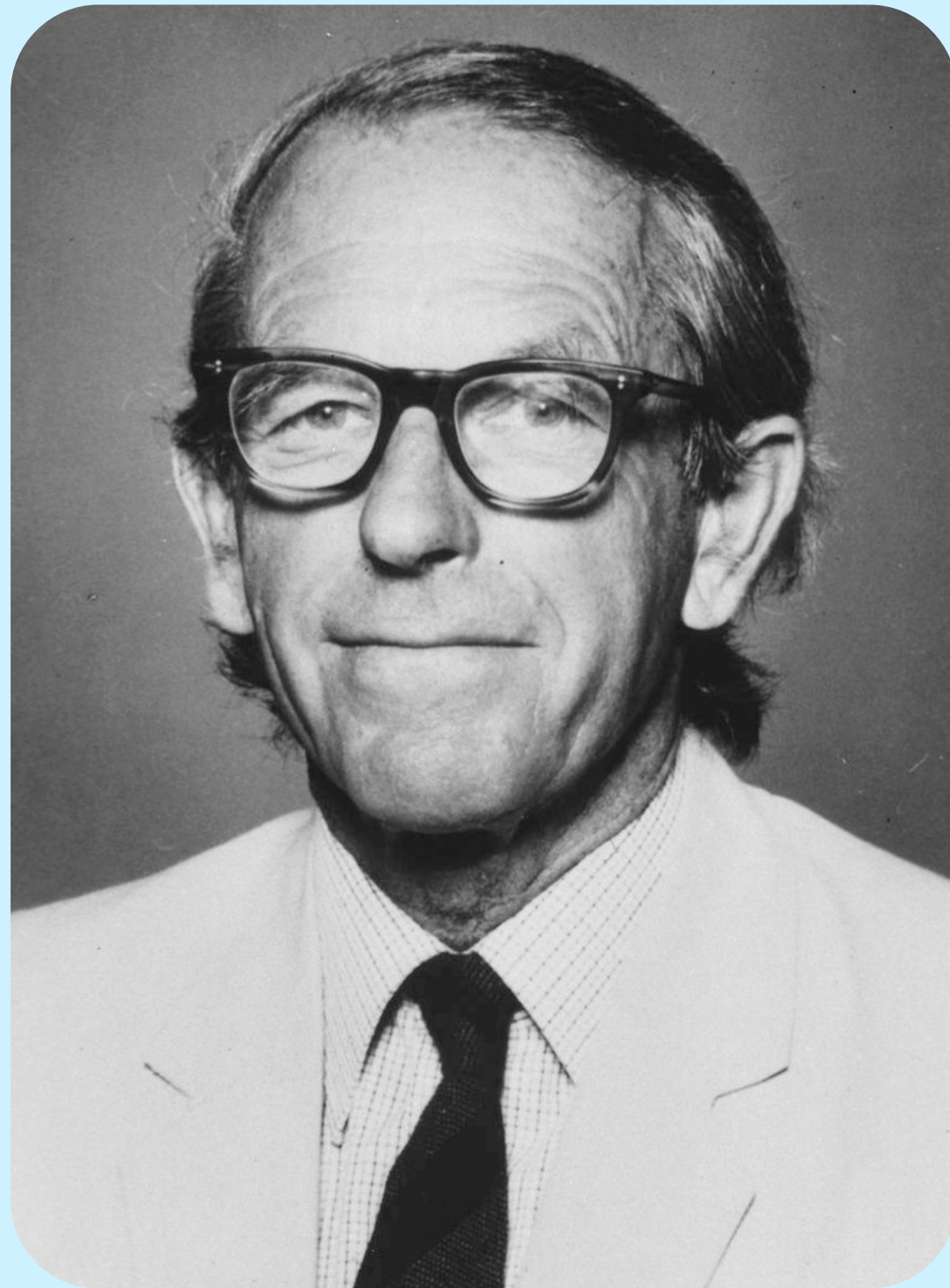
DID YOU KNOW?

Vitamin C is the cure of scurvy and it used in treatment of some cancers

1958 - Frederick Sanger

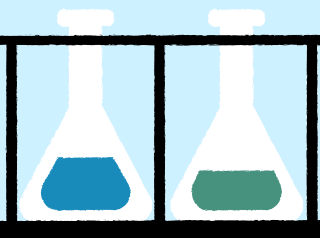
**Structure of Proteins,
Insulin**





Frederick Sanger

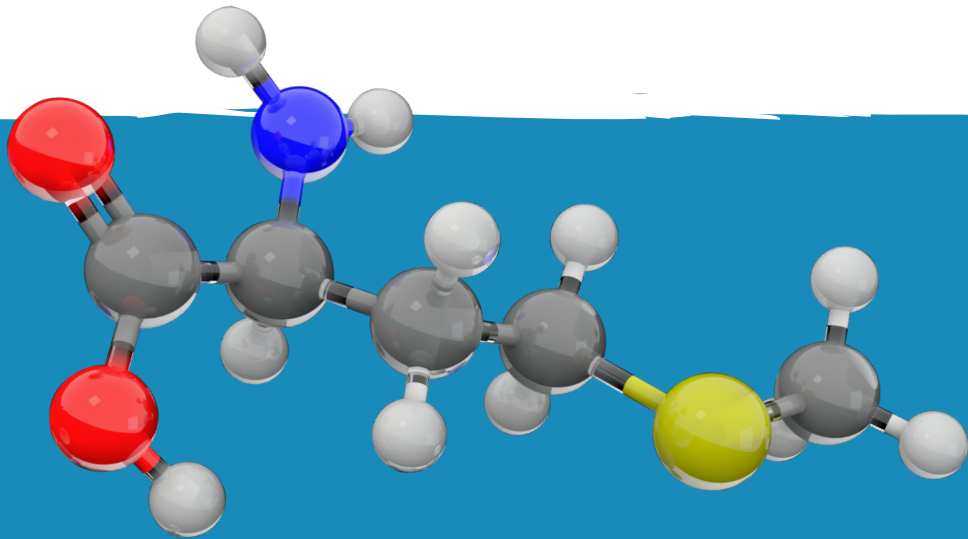
- Born: 13 August 1918, Rendcombe, United Kingdom
- Died: 19 November 2013, Cambridge, United Kingdom
- Researched at: University of Cambridge
- Prize motivation:
“for his work on the structure of proteins, especially that of insulin”



Types of Chemical Reaction

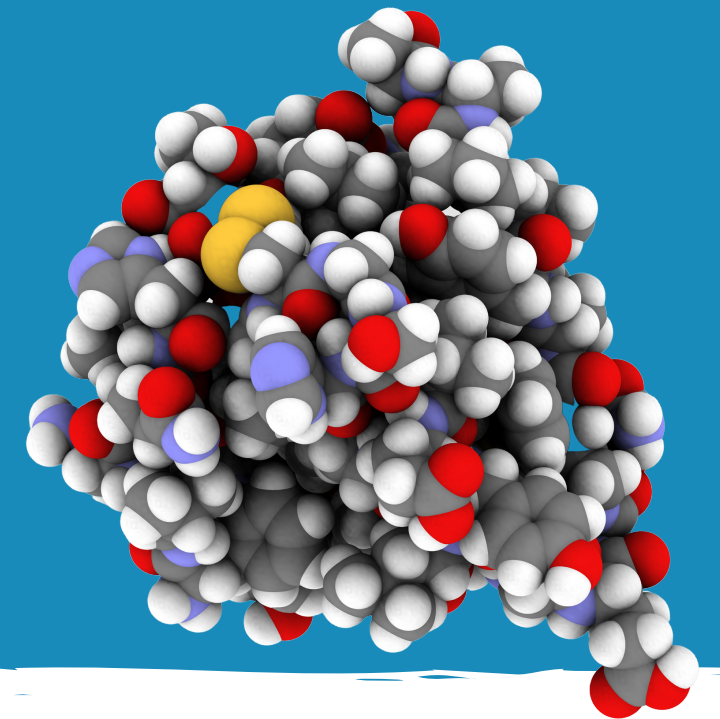
Proteins

Highly complex substances that are present in all living organisms. Proteins are of great nutritional value and are directly involved in the chemical processes essential for life.



Insulin

Insulin is a protein composed of two chains, an A chain (with 21 amino acids) and a B chain (with 30 amino acids), which are linked together by sulfur atoms. Insulin is derived from a 74-amino-acid prohormone molecule called proinsulin.

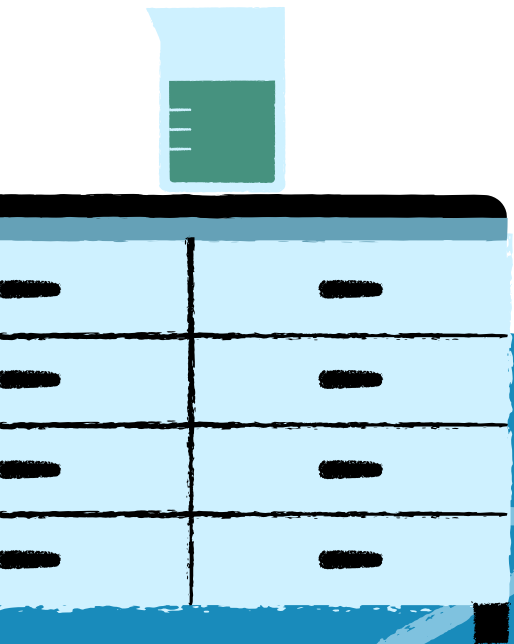


TASK 3

For which group(s) of patients is this discovery especially important?

Thanks to his discovery, the exact order of amino acids (the building blocks of proteins) can be determined.

Why is this knowledge such a breakthrough in clinical chemistry?



Thank you for your attention!

Hope you enjoyed it :)

