INTRODUCTION TO BIOCHEMISTRY

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Biochemistry is the branch of science that studies the chemical processes and substances that occur within living organisms. It combines principles from both biology and chemistry to understand how cells function at a molecular level.

Biochemistry is very important because it helps us understand how the human body works, how diseases develop, and how medicines can treat those diseases.

Basic Components of Life

All living organisms are made up of four main types of biomolecules:

1. **Carbohydrates**

Carbohydrates are the main source of energy for the body. Examples include glucose, starch, and sugars.

2. **Proteins**

Proteins are essential for growth and repair. They are made of amino acids and help build muscles, enzymes, and hormones.

3. **Lipids (Fats)**

Lipids store energy and help protect organs. They also form cell membranes.

4. **Nucleic Acids**

Nucleic acids like DNA and RNA carry genetic information and control cell activities.

Enzymes and Their Role

Enzymes are special proteins that act as catalysts. This means they speed up chemical reactions in the body without being used up.

For example:

- Digestive enzymes help break down food

• Other enzymes help in metabolism and energy production

Without enzymes, many biological processes would happen too slowly to support life.

Metabolism

Metabolism refers to all chemical reactions in the body. It has two main parts:

• **Catabolism**: breaking down molecules to release energy

• **Anabolism**: building molecules for growth and repair

Both processes are necessary to maintain life.

Importance of Biochemistry

Biochemistry plays a key role in many fields:

• **Medicine**: understanding diseases and developing drugs

• **Agriculture**: improving crops and food production

• **Nutrition**: studying how food affects the body

• **Biotechnology**: creating new products like vaccines and enzymes

Conclusion

Biochemistry is a fundamental science that helps us understand life at the molecular level. It explains how cells work, how energy is produced, and how the body stays healthy. Studying biochemistry is essential for students who want to work in medicine, science, or technology.

References (Foydalanilgan adabiyotlar)

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5. Khan Academy Website: https://www.khanacademy.org Easy explanations of biochemistry topics.

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