Medical Biochemistry Services Section Home

History

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Enzyme Discoveries

: The early 20th century saw the identification and characterization of enzymes, laying the foundation for medical biochemistry.
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Molecular Biology Integration

: The latter half of the 20th century witnessed the integration of molecular biology techniques into medical biochemistry research.

Hans Krebs

: Known for elucidating the citric acid cycle, also known as the Krebs cycle, which is central to cellular metabolism.
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Christian de Duve

: Discovered lysosomes and peroxisomes, shedding light on cellular compartmentalization and metabolism.
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Evolution till Date

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Molecular Diagnostics

: Medical biochemistry evolved to include molecular diagnostic techniques, aiding disease detection and prognosis.
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Precision Medicine

: Medical biochemistry played a role in the emergence of personalized medicine, tailoring treatments based on individual molecular profiles.
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Industrial Applications

Medical biochemistry has a wide range of industrial applications across various sectors:
1.

Pharmaceutical Industry

: Biochemical studies inform drug discovery, target identification, and drug development processes.
3.

Cancer Research

: Biochemical insights are vital for understanding cancer mechanisms, developing targeted therapies, and assessing treatment efficacy.
5.

Metabolic Disorders

: Biochemical studies contribute to understanding and treating metabolic disorders like diabetes and phenylketonuria.
7.

Neurodegenerative Diseases

: Biochemical research helps unravel the molecular mechanisms behind diseases like Alzheimer s and Parkinson s.
9.

Enzyme Replacement Therapy

: Biochemical insights guide the development of enzyme replacement therapies for lysosomal storage diseases.
11.

Personalized Nutrition

: Biochemical analyses guide personalized dietary recommendations based on individual metabolic profiles.
13.

Aging Research

: Medical biochemistry contributes to understanding cellular aging processes and potential interventions.
15.

Rare Diseases

: Biochemical studies aid in the diagnosis and management of rare genetic disorders.
17.

Proteomics and Biomarker Discovery

: Identifying protein biomarkers for disease diagnosis, prognosis, and treatment monitoring.
19.

Biochemical Research Tools

: Medical biochemistry drives the development of research tools like reagents, assays, and imaging techniques.

Precision Therapeutics

: Advancing personalized medicine through tailored treatments based on individual genetic and biochemical profiles.
2.

Gene Editing and CRISPR

: Applying gene-editing technologies for precision therapeutics and disease modification.
4.

Omics Integration

: Integrating genomics, proteomics, and metabolomics to understand complex disease mechanisms.
6.

Organelle Targeting

: Developing therapies that target specific cellular organelles for precise interventions.
8.

Neurochemical Therapies

: Developing biochemical interventions for neurological disorders using targeted drugs and interventions.

10.

Bioprinting and Tissue Engineering

: Utilizing biochemical knowledge to engineer functional tissues and organs.
12.

Viral and Antibody Therapies

: Developing viral vectors and antibodies for targeted therapies and vaccines.
14.

Ethical Considerations

: Addressing ethical challenges in the application of medical biochemistry, such as gene editing and data privacy.
16.

Environmental Health

: Studying the biochemical effects of environmental factors on human health.
18.

Telemedicine Integration

: Integrating medical biochemistry with telemedicine for remote diagnostics and monitoring.
20.