

14. Claude Bernard (1813-1878) → French → Paris
 → Discovered Liver Glycogen & its relation to blood sugar in health and diseases.
 → Digestive properties of Pancreatic Juice.
 → Research in Muscle and Nerve Physiology.

15. Theodor Schwann (1816-1882) ^{established →} Fermentation Process
 as a Biological Process.
 Acc to him Biological as Yeast is a plant capable to
 Convert Sugar → Ethanol and Carbon dioxide

But Berzelius, Wohler & Leibig → consider Yeasts as Non-living

Acc them Fermentation is done solely by Oxygen.

16. Louis Pasteur (1822-1895) → Confirmed Schwann's view.
 → Founded a new Branch → Microbiology in 1857
 → Identified several organisms carrying functioning without oxygen → Life Without air i.e. Fermentation
 → Gave concept of $\left\{ \begin{array}{l} \text{Aerobic} \\ \text{Anaerobic} \end{array} \right.$ & Respiration.

17. Edward Buchner → (1860-1917)
 Sugars can be fermented by cell free Yeast extracts.
 ⇒ It is a land mark in enzymological & metabolic studies.

18. Arrhenius Van't Hoff & Ostwald ^{work on}
 Electrolytic dissociation and osmotic pressure
 led the attention to Biological phenomenon.
19. Soren Sorensen (1868-1939) → Denmark (Danish)
 developed concept of pH .
20. Jacques Loeb (1859-1924) → studied
 colloidal behaviour of Proteins and their effect
 on cell.
21. Leonor Michaelis: Concept of Enzyme substrate
(E+S) Complex Formⁿ Relation (complex). on Experimental²
 Basis -
22. Stanley → Viruses as Nucleoprotein.
23. Van Slyke → invented Blood gas apparatus.
24. Svedberg → Ultra centrifuge.
25. Tiselius → Electrophoresis apparatus.
26. Urey & Schoenheimer → application of chromatography
 Use of Isotopes in Biochemistry
 Biochemical Research.
27. Martin & Synge → Application of chromatography.
 It opens a new chapter of Biochemistry.

28. Frederick Gowland Hopkins et al at Cambridge University have done various series of feeding experiments and gave a concept of Deficiency diseases with their curative agents.

Recognized → Scurvy
Rickets
Beriberi
Pelagra

→ These were called Vitamins by Casimir Funk (1912).

+ Babcock,
McCullum,
Osborne,
Mendel &
Sherman.

29. Harden & Young, Embden and Meyerhof extended the cell free fermentation ~~and~~ of sugar → Work of Buchner and elucidated the complete Biochemical pathway known as ³¹⁵ Glycolysis / Embden, Meyerhof-Paranas Pathway.

30. Albert Szent-Gyorgyi and Hans A. Krebs (1900-1981).
England → Fate of Pyruvate / Lactate during
Aerobic Oxidation.
→ Marked a Sequence of Reactions known as
Citric Acid Cycle or Krebs Cycle.

Later on it was found that intermediates are common during oxidation of Lipids and Aminoacids. i.e. There are a common mechanism of liberation of energy from Food Stuffs.

31. Warburg, Heinrich Wieland, Keilin and Theorell

led to the discovery of enzymes and co-factors involved in cellular oxidation.

T.P.P.
Lipochol
Mn⁺⁺

32. Fritz A. Lipmann (1899-1986) and Kurt Hansleit
— Terminal phosphatase linkage of ATP
as an Energy Storage Reservoir.

33. Frederick Sanger → Insulin — a protein hormone
↳ established the complete ^{sequence of} amino acid sequence of insulin.

34. Du Vigneaud → By direct synthesis of nonpeptide
hormone of Posterior Pituitary proved its structure.

35. Linus Carl Pauling (1901-1994) and Robert Corey → Work
Secondary structure of Protein molecule — α Helix.

36. James D. Watson and Francis Harry Compton Crick.
1953 → DNA molecule Structure. Proposed
↓ Base Pairing.
Double stranded
DNA molecule could be
made by linking bases of
adjacent strands to each other
by Hydrogen Bonding.

37. Erwin Chargaff → Austrian Refugee → Confirmed it.
By quantitative Date Pm/Py. $\frac{A+G}{T+C} = 1$.

38. Arthur Kornberg established it → Enzymatically Synthesize
DNA.