Curriculum Vitae

1899, June 12	Born in Königsberg
since 1917	Study of Medicine, Medical Schools of Königsberg, Munich and Berlin
1924	M.D., TU with Peter Rona, Berlin
1925-27	Study of Chemistry in Königsberg with Hans L. Meerwein
1927	Kaiser Wilhelm Institute Berlin with Otto Meyerhoff
1929	PhD, TU Berlin
1930	Kaiser Wilhelm Institute Heidelberg with Otto Meyerhof
1931	Kaiser Wilhelm Institute Berlin-Dahlem with Albert Fischer
1931	Marriage with Freda Hall
1931	Rockefeller Institute for Medical Research, New York, with Phoebus A. Levine
1932	Carlsberg Laboratory, Copenhagen, with Albert Fischer
1939	Cornell Medical School, New York, with Dean Burk and Vincent DuVigneaud
1941	Review in «Advances in Enzymology»: Metabolic Generation and Utilization of Phosphate Bond Energy
1941-57	Director of biochemical research laboratory at Massachusetts General Hospital in Boston
1945	Birth of son Stephen Lipmann
1947	Finding and molecular structure of co-enzyme A
1949	Full Professor for Biochemistry at Harvard Medical School, Boston
1953	Nobel Prize in Physiology or Medicine (shared with Hans A. Krebs)
since 1957	Full Professor at Rockefeller Institute for Medical Research, New York
1969	Admission to Deutsche Akademie der Naturforscher Leopoldina
1986, July 24	Died in Poughkeepsie, New York

His insights into the relationship between metabolism, life expectancy and the reduction in energy production by mitchondria in aging organs laid the foundation for cell-based research on aging.

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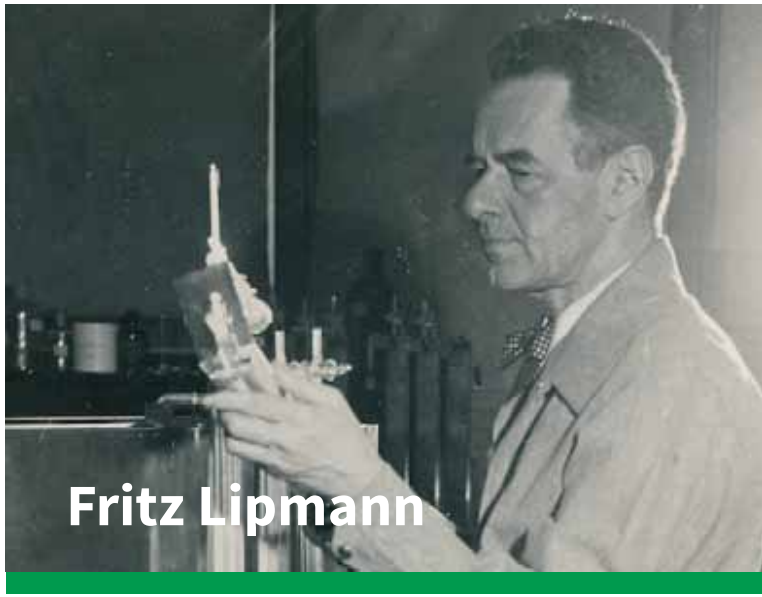
Leibniz Association

Leibniz Institute on Aging –
Fritz Lipmann Institute



Fritz Lipmann

Pioneer of Aging Research

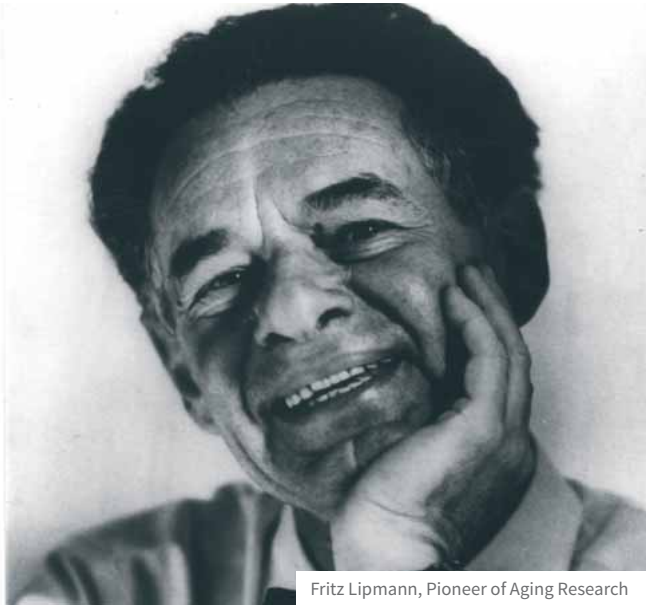
Pioneer of Aging Research

The Man Behind the Institute's Name

The Leibniz Institute on Aging's name commemorates Fritz Lipmann, an outstanding German-American biochemist who contributed substantially to our understanding of the foundations of aging.

The physician and chemist discovered the basic mechanisms of energy production and storage within the mitochondria of human cells. Only in recent years, is was shown that this energy production in cells decreases during aging, leading to an accelerated aging process. Lipmann's work, which was honored with the Nobel Prize in 1953, thus lays the foundations for modern aging research.

Moreover, his ambitious but modest personality, his innovative spirit and precision are supposed to be guidance and motivation for the researchers at the FLI.



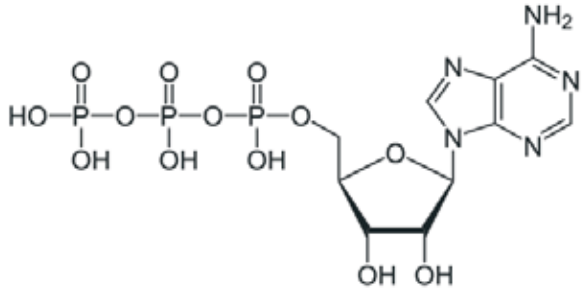
Fritz Lipmann, Pioneer of Aging Research

« I do what I do because I want to understand the energetics and the molecular mechanisms of life. »

The Energy Supplier of Cells

Since 1927, Fritz Lipmann dealt with the metabolism of energy compounds in cells with a special focus on the role of creatine phosphate.

It was known at this time, that muscle contractions are linked to the production of lactic acid and exothermic energy, which result from the cleavage of creatine phosphate through water. By means of fluorides and iodoacetic acid, Lipmann stopped the decomposition of glucose (glycolysis) in muscle cells. With that he could prove, that creatine phosphates do not stimulate muscle contractions directly, but - as a part of adenosine triphosphate (ATP) - rather work as a central energy storage system by taking up energy and giving it off again through hydrolysis. Lipmann provided evidence that muscle contractions may occur without procuding lactic acid.



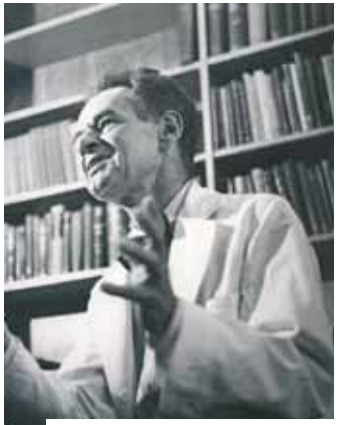
Chemical structure of ATP (adenosine triphosphate)

« Metabolism is not just there to oxidize things but to deliver energy to drive metabolic functions and the synthetic machinery of the cell. »

Fritz Lipmann about the relevance of the Metabolic Dynamo

Nobel Prize

In 1953, Fritz Lipmann was awarded the Nobel Prize in Physiology or Medicine together with the German biochemist Hans Krebs for his work on energy metabolism and the discovery of coenzyme A.



Fritz Lipmann at the Nobel Prize announcement in Harvard

(Source: Harvard Public Affairs and Communications)

Acetyl Coenzyme A

With studies on the decomposition of glucose in 1910, researchers begann to understand intermediary metabolic processes; but up to then, only little was known about the degradation of acetic acids. Acetic acids are central for the human metabolism: Resulting from the combustion of carbohydrates, fat and proteins, acetic acids are important building blocks for several biomolecules as vitamines, cholesterine and hormones.

Fritz Lipmann provided evidence that in cells, acetic acid - which initially is inert - can be activated as an acetyl coenzyme by a thioester and, as an «activated acetic acid» can be decomposed by the citric acid cycle.

Acetyl coenzyme A is an important node within the carbohydrate metabolism, playing a central role in the whole human metabolism and energy management. The core function of coenzyme A is to transfer acetyl groups and to create bondings to relevant enzymes of the intermediary metabolism.