



Otto Heinrich Warburg

Otto Heinrich Warburg (1883–1970) was a German physiologist, physician, and biochemist renowned for his pioneering work on cellular respiration and metabolism. He received the 1931 Nobel Prize in Physiology or Medicine for discovering the nature and mode of action of the respiratory enzyme, advancing understanding of how cells utilize oxygen.

Key facts

- Born: October 8, 1883, Freiburg im Breisgau, Germany
- Died: August 1, 1970, West Berlin, Germany
- Nobel Prize: Physiology or Medicine, 1931
- Affiliation (at award): Kaiser-Wilhelm-Institut für Biologie, Berlin-Dahlem
- Fields: Biochemistry, physiology, cancer metabolism

Scientific contributions

Warburg's research centered on the biochemical processes that sustain life, particularly cellular respiration—the way cells convert nutrients into energy. Using refined manometric methods, he measured oxygen consumption in living tissues and identified cytochromes as key components in the chain of respiratory enzymes. His work revealed the role of iron-containing enzymes and led to the discovery of flavoproteins and coenzymes such as FAD and NAD, crucial for cellular redox reactions.

The Warburg effect and cancer metabolism

Beyond respiration, Warburg investigated differences between healthy and cancerous cells. He observed that tumor cells consumed less oxygen yet metabolized glucose at high rates, even in the presence of oxygen—a phenomenon now called the “Warburg effect.” This discovery established a cornerstone for modern cancer metabolism research and continues to influence oncological biochemistry.

Career and legacy

Warburg directed the Kaiser Wilhelm Institute for Cell Physiology in Berlin-Dahlem, later part of the Max Planck Society. Despite his partial Jewish heritage, he survived the Nazi era largely untouched, though barred from receiving a second Nobel Prize offered in 1944. After World War II, his institute became a leading center for biochemical research. His methodologies and hypotheses remain foundational in cell biology and cancer studies.