

This Day in History... September 24, 1905

Birth of Severo Ochoa

Severo Ochoa de Albornoz was born on September 24, 1905, in Luarca, Spain. Ochoa researched how cells build proteins like RNA, which earned him the Nobel Prize in 1956.

After Ochoa's father died when he was seven, he and his mother moved to Málaga. While in school, he grew interested in biology after reading the works of Nobel laureate Santiago Ramón y Cajal. Ochoa attended the University of Madrid Medical School where he hoped to work with Cajal, but Cajal had already retired. Instead, Ochoa worked with Juan Negrin, who encouraged him to work with another student and isolate creatinine from urine. They did, and developed a way to measure levels of muscle creatinine.

After spending a summer in Glasgow working on creatine metabolism with Diarmid Noël Paton, Ochoa returned to Spain and published a paper with his partner in the *Journal of Biological Chemistry*. Their paper was widely accepted within the scientific community. After earning his medical degree in 1929, Ochoa was invited to work with Otto Meyerhof at the Kaiser Wilhelm Institute for Biology in Germany. The institute was at the forefront of the fast growing field of biochemistry and Ochoa got to work some of the notable scientists in the field, including Otto Heinrich Warburg, Carl Neuberg, Einar Lundsgaard, and Fritz Lipmann.



Ochoa was a groundbreaking researcher in biochemistry and molecular biology.

Ochoa returned to Spain in 1931 and was appointed as a lecturer in physiology at the University of Madrid. He went to the National Institute for Medical Research in London in 1932 where he worked with Dr. H.W. Dudley. During his time there, Ochoa's research included the enzyme glyoxalase, which inspired his later interest in further working with enzymes.

In 1934, Ochoa again returned to Madrid where he was made a lecturer in physiology and biochemistry. He was soon made director of the Physiology Division of the Institute for Medical Research. However, the Spanish Civil War broke out around the same time and Ochoa realized he couldn't complete his work in such a setting. He and his wife spent the next years in Germany, then England, before emigrating to the United States following the outbreak of World War II in Europe.

Upon arriving in the US, Ochoa spent two years at Washington University's School of Medicine before being made a research associate in Medicine at New York University. Over the years, he held several positions at the school, including assistant professor of Biochemistry, professor of Pharmacology, professor of Biochemistry, and chair of the Biochemistry Department. Ochoa became an American citizen in 1956.

That same year, Ochoa discovered how to artificially create proteins (the main building blocks of life). He isolated an enzyme naturally designed to destroy RNA, and reversed the process to create it instead. It was the first time molecules were combined outside a living organism. Along with DNA, RNA is responsible for controlling cellular function and heredity. Ochoa speculated at the time that being able to combine RNA in the laboratory might lead to the creation of genetic material in a test tube – allowing the growth of living matter.

For his research, Ochoa and Arthur Kornberg received the 1959 Nobel Prize for Physiology or Medicine "for their discovery of the mechanisms in the biological synthesis of ribonucleic acid and deoxyribonucleic acid." In his acceptance speech, Ochoa stated, "These particles are at the threshold of life and appear to hold the clue to a better understanding of some of its most fundamental principles. Ochoa continued his research in the United States until 1985, when he returned to the once again democratic Madrid to work as a science advisor. He was awarded the US National Medal of Science in 1978 and a research center outside of Madrid was built and named in his honor. Ochoa died on November 1, 1993.



Ochoa was honored in the 2011 American Scientists set.

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