Arthur Beck Pardee Biography

Arthur Beck Pardee

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Biography

Together with French molecular biologist **François Jacob** (1920-)and French biochemist Jacques Monod (1910-1976), Arthur Pardee conducted pioneering research on protein regulation. Their teamwork is immortalized in the name of their most famous collaboration, the PaJaMo experiment. In the mid-1950s, Pardee, Monod, and other biochemists encountered several instances of feedback regulation, where the presence of an enzyme within a **cell** inhibits its further production. Within the cell, some **enzymes** are produced continuously (constitutive production); others are synthesized only after the addition of a specific factor (inducible production). These regulatory characteristics are controlled by genetic factors.

In the 1957-1958 PaJaMo experiments, the scientists used the **bacteria** *Eschericia coli* K12 to demonstrate that instead of directly stimulating enzyme production, inducers work as anti-repressors. Later research demonstrated that the genes controlling synthesis, repression, and induction of a particular protein usually occur together in a regulatory unit, called an **operon**. Pardee and others began considering spatial (steric) mechanisms of protein regulation around 1960. In 1962, Monod proposed a general theory of **allosteric regulation**, generally accepted today, in which repressors and inducers change the spatial conformation (and, therefore, specificity) of proteins by binding at a second **active site**. These were crucial insights in understanding how genetic information is transferred between **DNA**, **RNA**, and protein.

Pardee was born in Chicago, Illinois, and completed his undergraduate studies at the University of California, Berkeley. After completing his Ph.D. at the California Institute of Technology, Pardee returned to Berkeley, first as an instructor, then as assistant, then associate professor. He joined Jacob and Monod at the Pasteur Institute in 1957-1958 as a National Science Foundation Senior Research Fellow. Upon his appointment to Princeton University in 1961, Pardee was instrumental in building the department of biochemistry. In 1975, he became Chief of the Division of Cell Growth Regulation of the Dana Farber Cancer Institute, Harvard Medical School, where he remains today.

Pardee□s research at the Dana Farber Cancer Institute has established his reputation as a world expert on cell cycle control. He has received numerous honors and awards from the scientific community and has served as President of the American Society of Biological Chemists and the American Association for Cancer Research.