The Department of Molecular Biology and Genetics

Professor David Baker
Head of the Institute for Protein Design
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The Class of 1942 James B. Sumner Lecture

“The Coming of Age of De Novo Protein Design”

Friday, May 21, 2021
Virtual Seminar

The James B. Sumner Lectureship was established to honor Professor Sumner. The energy, enthusiasm and generosity of Mrs. Mary Sumner and the Sumner family were essential to the effort. Professor Walter L. Nelson, a colleague of Professor Sumner, a friend of the Sumner family, and a former member of this department, played a key role in raising funds for the lectureship’s endowment.

Mrs. Prudence Sumner Gamard was an active member of the Class of 1942 and as part of its forty-fifth reunion activities the class selected the lectureship as its special project. The lectureship is now known as The Class of 1942 James B. Sumner Lectureship.

Professor Leon A. Heppel, a former member of this department, gave the first Sumner Lecture. Other Lecturers include Thomas Cech, Christopher Dobson, Alan Fersht, Steven Harrison, Hugh Huxley, Arthur Kornberg, Daniel Koshland, Richard Lerner, Roderick MacKinnon, Max Perutz, and Lubert Stryer, Roger Kornberg, Patrick Cramer.
Professor James B. Sumner

Professor James B. Sumner spent his entire professional career at Cornell University, starting in 1913. A superb biochemist, Professor Sumner made many novel contributions. Among these are the discovery and crystallization of concanavalins A and B and the ability of these proteins to agglutinate red blood cells, the first purification of an anti-enzyme, and many analytical techniques still in use today. But he is best known for an accomplishment that most scientists thought was impossible – the crystallization of an enzyme and demonstration that enzymes are proteins. In April 1926, Professor Sumner, after years of frustrating failure, crystallized the enzyme, urease. He wasted no time in reporting this crowning achievement. A preliminary account of this work appeared in the August 1926 issue of *The Journal of Biological Chemistry*.

His accomplishment was greeted with scepticism, at best, and outright hostility, at worst. Professor Sumner was, however, not easily intimidated and carried out a series of elegant experiments that proved that the crystals were not only protein but also the enzyme urease. In addition to the demonstration that enzymes are proteins, a novel idea at the time, the crystallization of urease showed that enzymes must have definitive structures. These pioneering studies made possible the development of an entire field of investigation: the structure and function of proteins and enzymes. For these remarkable achievements, Professor Sumner was awarded the Nobel Prize for Chemistry in 1946, together with John H. Northrop and Wendell M. Stanley.

Professor David Baker

David Baker is the director of the Institute for Protein Design, a Howard Hughes Medical Institute Investigator, a professor of biochemistry and an adjunct professor of genome sciences, bioengineering, chemical engineering, computer science, and physics at the University of Washington. His research group is a world leader in protein design and protein structure prediction. He received his Ph.D. in biochemistry with Randy Schekman at the University of California, Berkeley, and did postdoctoral work in biophysics with David Agard at UCSF. Dr. Baker is a member of the National Academy of Sciences and the American Academy of Arts and Sciences. Dr. Baker is a recipient of the Breakthrough Prize in Life Sciences, Irving Sigal and Hans Neurath awards from the Protein Society, the Overton Prize from the ISCB, the Feynman Prize from the Foresight Institute, the AAAS Newcomb Cleveland Prize, the Sackler prize in biophysics, and the Centenary Award from the Biochemical society. He has also received awards from the National Science Foundation, the Beckman Foundation, and the Packard Foundation. Dr. Baker has published over 500 research papers, been granted over 100 patents, and co-founded 11 companies. Seventy-five of his mentees have gone on to independent faculty positions.