

Stamp Vignette on Medical Science



Hartmut Michel— Nobel Laureate in Chemistry

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The 1988 Nobel Prize in chemistry was awarded to 3 German biochemists, Hartmut Michel (1948-), Johann Deisenhofer (1943-), and Robert Huber (1937-), for their determination of the structure of certain proteins that are essential to photosynthesis. Michel performed the work that was the basis for the 3 scientists' joint research. They wanted to determine the 3-dimensional structure of the photosynthetic reaction center, a 4-protein complex, that is crucial to the process of photosynthesis in certain bacteria. The bacterial species that Michel selected to investigate was *Rhodospseudomonas viridis*. After 4 years (1978 to 1982) of experimentation, he was able to reduce the protein complex to a pure crystalline form, thus making it possible to determine the protein structure atom-by-atom with x-ray diffraction technique. For 2 years (1982 to 1984), the 3 scientists

mapped the protein complex structure using x-ray crystallography. Deisenhofer received the Nobel Prize "for his part in work that revealed the 3-dimensional structure of closely linked proteins that are essential to photosynthesis," and Huber received his share for using x-ray crystallography to elucidate the positions of the approximately 10,000 atoms in the protein complex. This work was significant not only to the understanding of photosynthesis but also for its applications; membrane-bound proteins are important in many disease states.

Michel was born on July 18, 1948, in Ludwigsburg in southwestern Germany, near Stuttgart. He studied biochemistry at the University of Tübingen and received a PhD degree in chemistry from the University of Würzburg in 1977. After receiving his doctorate, Michel remained at the University of Würzburg for 2 years (1977 to 1979) as a researcher. He left Würzburg in 1979 to become a researcher at the Max Planck Institute for Biochemistry at Martinsried (Germany), where he did his Nobel Prize-winning work. He worked at Martinsried until 1987, when he became director of the staff of the Max Planck Institute for Biophysics in Frankfurt am Main.

In addition to the Nobel Prize, Michel has received the Biophysics Prize of the American Physics Society (1986), the Otto Klung Prize for Chemistry (1986), and the Otto Bayer Prize (1988). He was honored on 2 stamps issued in 1995, one by Grenada and the other by Guyana.