2017 Nobel Prize in Chemistry Awarded to Prof. Joachim Frank

October 4, 2017

Columbia University congratulates Joachim Frank, PhD, professor of biochemistry and molecular biophysics and of biological sciences, a winner of the Nobel Prize in Chemistry 2017, shared with Richard Henderson and Jacques Dubochet “for developing cryo-electron microscopy for the high-resolution structure determination of biomolecules in solution.”

Joachim Frank's Bio

Joachim Frank, PhD, is a professor of biochemistry and molecular biophysics at Columbia University Medical Center and biological sciences at Columbia University. Dr. Frank helped pioneer the development of cryo-electron microscopy, a technique used to reveal the structures of large organic molecules at high resolution.

Dr. Frank developed the necessary computational methods for reconstructing the three-dimensional shape of biological molecules from thousands of two-dimensional images of molecules, methods employed today by most structural biologists who use electron microscopy.

Cryo-electron microscopy is commonly used by structural biologists to study the molecular processes inside cells that drives protein synthesis. Using this technique, Dr. Frank has made important discoveries about the interactions between ribosomes (complex molecules that serve as the ‘factories’ of the cell) and other proteins in the cell. In a 2013 paper in Nature, Dr. Frank uncovered unique details about ribosomes from the parasite that causes African sleeping sickness that could lead to the development of new drugs for this disease. In another Nature paper later that year, he revealed how viral RNA commandeers the ribosome of the virus’s host to produce new viruses.

Dr. Frank was born in Germany during World War II. He received his undergraduate degree in physics from the University of Freiberg and a master’s degree from the University of Munich. Later, Dr. Frank earned a PhD in physics from the Technical University of Munich, where he taught as a professor. He conducted post-doctoral work at the University of California at Berkeley, where he worked with Robert Glaeser, a pioneer in cryo-electron microscopy.
Subsequently, Dr. Frank performed research at University of Cambridge before heading to New York, where he would eventually join Columbia University in 2008.

Dr. Frank is a member of the National Academy of Sciences and the American Academy of Arts & Sciences, and a Fellow of the American Association for the Advancement of Science and of the Biophysical Society. In 2014, he was awarded the Franklin Medal in Life Science by the Franklin Institute in Philadelphia. This past year, Dr. Frank was also awarded the prestigious Wiley Prize in Biomedical Sciences. He was a Howard Hughes Medical Institute investigator from 1998 to 2017.