

Nobel Prize Chemistry, 2014



2014 Nobel Prize in Chemistry, 2014 was won by two American scientists Eric Betzig of Howard Hughes Medical Institute and William E. Moerner of Stanford University of USA and Stefan W. Hell of the Max Planck Institute in Göttingen, Germany for improving the resolution of optical microscope.

Optical microscopes had previously been held back by a presumed limitation: that they would never obtain a better resolution than half the wavelength of light, stated by a fundamental law of optics known as Abbe's diffraction limit, named after an equation published in 1873 by the German microscopist Ernst Abbe. It states that the resolution can never be better than half the wavelength of light being looked at. For visible light, that limit is about 0.2 millionths of a meter, or one-127,000th of an inch. A human hair is 500 times as wide.

The Nobel Laureates with the help of fluorescent molecules, circumvented this limitation. The three scientists each contributed to the development of a new technique called super-resolved fluorescence microscopy, which circumvents physical limits on the resolution of traditional optical microscopes. They developed a set of imaging techniques that helped in observing the activity of individual molecules inside living cells. Using these methods, Hell had studied nerve cells to get a better understanding of brain synapses. Moerner had studied proteins related to Huntington's disease and Betzig has tracked cell division inside embryos.

Dr. Hell is director of the Max Planck Institute for Biophysical Chemistry in Göttingen and also works at the German Cancer Research Center in Heidelberg. Dr. Betzig is group leader for the Janelia Farm Research Campus at Howard Hughes Medical Institute in Ashburn, Virginia, and Dr. Moerner is a chemistry professor at Stanford University in California. The three equally share the prize and its cash award of 8 million Swedish kroner, or about \$1.1 million.

Reference

TOI, 9 August, 2014;

http://www.nytimes.com/2014/10/09/science/nobel-prize-chemistry.html?_r=0

