



2014 Nobel Prize in Chemistry: What You Need to Know

The Winners:

Eric Betzig: Ph.D. from Cornell University (1988), research group leader at Janelia Research Campus of the Howard Hughes Medical Institute

Stefan Hell: Ph.D. from the University of Heidelberg, Germany (1990), director of Nanobiophotonics at the Max Planck Society

William Moerner: Ph.D. from Cornell University (1982), chemistry and physics professor at Stanford University

Why They Won:

For hundreds of years, scientists could only "zoom in" so much using regular light microscopes. Hell created a kind of "nano-sized flashlight" using two lasers that sweep along a sample one nanometer at a time. Betzig and Moerner created a similar method that allows them to turn glowing molecules "on" and "off."

Together, the discoveries are called "super-resolved fluorescence microscopy," which shatters the limits of traditional light microscopes, and allows scientists to see a cell's processes in real-time.

Why It's Important:

Super-resolved fluorescence microscopy has improved our understanding of DNA and has shed light on how proteins involved in Alzheimer's, Huntington's and Parkinson's disease work. It has even shown how neurons change during the brain's learning process.

"Super-resolution microscopy doesn't only tell us where, but when and how. And that is the greatness of this development." -- Sven Lidin, Chairman of the 2014 Nobel Committee for Chemistry.

Sources:

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