2014 NOBLE PRIZE IN CHEMISTRY: ERIC BETZIG, WILLIAM MOERNER AND STEFAN HELL FOR THE DEVELOPMENT OF SUPER-RESOLVED FLUORESCENCE MICROSCOPY

Summary

In this paper we describe works of Eric Betzig, Stefan W. Hell and William E. Moerner which lead them to the Nobel Prize in Chemistry "for the development of super-resolved fluorescence microscopy". The problem of resolution in optics is shortly discussed as well as the importance of fluorescence microscopy in life sciences. The way of how to bypass optical resolution is described as well as basic ideas underlying PALM microscopy by Eric Betzig are introduced. The use of photoswitchable fluorescent dyes is emphasized together with role of William E. Moerner in their development. Finally, the construction of STED confocal microscope built by Stefan W. Hell is presented.