

Internal Webinar

Resolution of optical microscope

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In recent years, the optical microscope has received tremendous interest due to its ability to image live samples. There are many developments, and several techniques are evolved to enhance the image quality in terms of resolution and contrast. Especially the laser scanning microscope is very much popular among the biological community due to its optical sectioning property in the imaging of thick biological specimens and also its ability to form three-dimensional images of the sample volume. The resolution of the laser scanning microscope cannot break the empirical limit of diffraction proposed by E. Abbe. However, in past decades, several techniques have developed to break the diffraction limit by indirect means and are often referred to as super-resolution microscopy. Stochastic optical reconstruction microscopy (STORM) is one of them, it is based on random stochastic switching of fluorophores allows temporal recording of individual molecules. Each fluorophore molecule can be precisely located by finding their position coordinates from the Gaussian fitting of each fluorophore image. The positions of all the individual fluorophores from a large number of image frames are combined to produce the final super-resolution image.

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