Three-dimensional electron microscopy of macromolecular assemblies

Academic Press - Figure 3.2 from Three

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Electron microscopy.

Three-dimensional imaging in biology. Three-dimensional electron

microscopy of macromolecular assemblies

-Three-dimensional electron microscopy of macromolecular

Notes: Includes bibliographical references (p. 293-331) and index. This edition was published in 1996

Tags: #Figure #3.2 #from #Three

2011 Three Dimensional Electron Microscopy Conference GRC

This tool has several advantages over the conventional structural biology tools X-ray

crystallography and NMR such as, structure elucidation without crystallization, solving the structure in physiological conditions, and with literally no upper limit on size of the protein. Negative staining can reveal the true solvent-excluded surface and shape of a biological molecule. De Carlo S, Harris JR.



Biochemistry and

sample purification

EM sample

preparation

(negative stain or vitrification)

or cryo-EM

High-resolution

data collection

Computational

image analysis

Atomic mode

building and

refinement

validation

validation

Filesize: 44.510 MB

Electron Microscopy of Macromolecular Assemblies

Rossmann MG, Bernal R, Pletnev SV. MODELLER, which is a homology modelling tool commonly used with X-ray and NMR structures as templates, also incorporates two fitting modules — Mod-EM for rigid fitting Topf et al. Visualizing density maps with UCSF Chimera.

Figure 3.2 from Three

Specimen preparation methods for electron microscopy The most commonly used staining methods in electron microscopy are negative staining, CryoEM and Cryo-negative staining. Recent studies on Limulus SAP-like pentraxin Shrive et al. The poor contrast that is inherent in the cryoEM sets a lower limit of about 200 kDa on the protein size.

Three dimensional electron microscopy and in silico tools for macromolecular structure determination.

Similarly, one can also use the SITUS package for fitting crystal structures by both rigid body and flexible way Wriggers et al. Cryo-negative staining Cryo-negative staining combines the advantages of both negative staining and cryo-EM. This approach is known to give higher resolution structural details but suffers from poor contrast and high radiation damage.

Talmon Y, Davis HT, Scriven LE, Thomas EL. Annu Rev Biophys Biomol Stuct 2002;31: 303-19.

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