

Resource Summary Report

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EM3D

RRID:SCR_007362

Type: Tool

Proper Citation

EM3D (RRID:SCR_007362)

Resource Information

URL: <http://em3d.stanford.edu>

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Description: EM3D is a software application designed to facilitate the analysis and visualization of electron microscope (EM) tomography data by cellular and molecular biologists. Such data are collected as a tilt series, a sequence of 2D electron micrographs taken at many tilt angles with respect to the electron beam. EM3D features an integrated graphical user interface that automates most of the initial alignment and reconstruction of the tilt-series data to form a 3D volume. These functions seamlessly connect with segmentation and model-generation tools that permit the user to easily and reliably extract specific structural components from the reconstructed volume. The 3D models can then be visualized and manipulated using an extensive package of surface- and volume-rendering techniques. EM3D also provides a set of analysis tools to quantify structural information from the models, including their moments, proximity relationships, and spatial reliability. Altogether, EM3D facilitates the analysis of 3D cell structure at the full resolution of a reconstructed volume (2-3 nm).

Synonyms: EM3D

Resource Type: software resource, data visualization software, software application, data processing software

Funding:

Resource Name: EM3D

Resource ID: SCR_007362

Alternate IDs: nif-0000-00294

Record Creation Time: 20220129T080241+0000

Record Last Update: 20250407T215638+0000

Ratings and Alerts

No rating or validation information has been found for EM3D.

No alerts have been found for EM3D.

Data and Source Information

Source: [SciCrunch Registry](#)

Usage and Citation Metrics

We found 15 mentions in open access literature.

Listed below are recent publications. The full list is available at [RRID](#).

Barone S, et al. (2024) Accuracy Assessment of EM3D App-Based 3D Facial Scanning Compared to Cone Beam Computed Tomography. *Dentistry journal*, 12(11).

Jung JH, et al. (2019) Synaptic Vesicles Having Large Contact Areas with the Presynaptic Membrane are Preferentially Hemifused at Active Zones of Frog Neuromuscular Junctions Fixed during Synaptic Activity. *International journal of molecular sciences*, 20(11).

Chen X, et al. (2018) Identification of PSD-95 in the Postsynaptic Density Using MiniSOG and EM Tomography. *Frontiers in neuroanatomy*, 12, 107.

Jung JH, et al. (2018) Active Zone Material-Directed Orientation, Docking, and Fusion of Dense Core Vesicles Alongside Synaptic Vesicles at Neuromuscular Junctions. *Frontiers in neuroanatomy*, 12, 72.

Kamma-Lorger CS, et al. (2016) Role of Decorin Core Protein in Collagen Organisation in Congenital Stromal Corneal Dystrophy (CSCD). *PloS one*, 11(2), e0147948.

Koudouna E, et al. (2014) Three-dimensional architecture of collagen type VI in the human trabecular meshwork. *Molecular vision*, 20, 638.

Linsalata AE, et al. (2014) Electron tomography on γ -aminobutyric acid-ergic synapses reveals a discontinuous postsynaptic network of filaments. *The Journal of comparative neurology*, 522(4), 921.

Wrede C, et al. (2013) Deposition of biogenic iron minerals in a methane oxidizing microbial mat. *Archaea* (Vancouver, B.C.), 2013, 102972.

Gierthmuehlen M, et al. (2013) Computational tissue volume reconstruction of a peripheral nerve using high-resolution light-microscopy and reconstruct. *PloS one*, 8(6), e66191.

Harlow ML, et al. (2013) Alignment of synaptic vesicle macromolecules with the macromolecules in active zone material that direct vesicle docking. *PloS one*, 8(7), e69410.

Szule JA, et al. (2012) Regulation of synaptic vesicle docking by different classes of macromolecules in active zone material. *PloS one*, 7(3), e33333.

Rau C, et al. (2012) Quantitative X-ray tomography of the mouse cochlea. *PloS one*, 7(4), e33568.

Perkins GA, et al. (2009) Chapter 2 Correlated light and electron microscopy/electron tomography of mitochondria in situ. *Methods in enzymology*, 456, 29.

Nagwaney S, et al. (2009) Macromolecular connections of active zone material to docked synaptic vesicles and presynaptic membrane at neuromuscular junctions of mouse. *The Journal of comparative neurology*, 513(5), 457.

Ress DB, et al. (2004) Methods for generating high-resolution structural models from electron microscope tomography data. *Structure* (London, England : 1993), 12(10), 1763.