Resource Summary Report

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TrakEM2

RRID:SCR_008954
Type: Tool

Proper Citation

TrakEM2 (RRID:SCR_008954)

Resource Information

URL: http://www.ini.uzh.ch/~acardona/trakem2.html

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Description: An ImageJ plugin for morphological data mining, three-dimensional modeling and image stitching, registration, editing and annotation. Two independent modalities exist: either XML-based projects, working directly with the file system, or database-based projects, working on top of a local or remote PostgreSQL database. What can you do with it? * Semantic segmentation editor: order segmentations in tree hierarchies, whose template is exportable for reuse in other, comparable projects. * Model, visualize and export 3D. * Work from your laptop on your huge, remote image storage. * Work with an endless number of images, limited only by the hard drive capacity. Dozens of formats supported thanks to LOCI Bioformats and ImageJ. * Import stacks and even entire grids (montages) of images, automatically stitch them together and homogenize their histograms for best montaging quality. * Add layers conveniently. A layer represents, for example, one 50 nm section (for TEM) or a confocal section. Each layer has its own Z coordinate and thickness, and contains images, labels, areas, nodes of 3d skeletons, profiles... * Insert layer sets into layers: so your electron microscopy serial sections can live inside your optical microscopy sections. * Run any ImageJ plugin on any image. * Measure everything: areas, volumes, pixel intensities, etc. using both built-in data structures and segmentation types, and standard ImageJ ROIs. And with double dissectors! * Visualize RGB color channels changing the opacity of each on the fly, non-destructively. * Annotate images non-destructively with floating text labels, which you can rotate/scale on the fly and display in any color. * Montage/register/stitch/blend images manually with transparencies, semiautomatically, or fully automatically within and across sections, with translation, rigid, similarity and affine models with automatically extracted SIFT features. * Correct the lens distortion present in the images, like those generated in transmission electron microscopy. * Add alpha masks to images using ROIs, for example to split images in two or more parts, or to remove the borders of an image or collection of images. * Model neuronal arbors with 3D skeletons (with areas or radiuses), and synapses with connectors. * Undo all steps. And much more...

Abbreviations: TrakEM2

Resource Type: data processing software, image analysis software, software application, software resource

Defining Citation: PMID:22723842, PMID:20957184

Keywords: java, imagej plugin, neuronal circuit, reconstruction, electron microscopy, optical image volume, arbor, synapse, image, align, register, FASEB list

Funding: Swiss National Science Foundation 31003A_132969;
NINDS 1-R01 NS054814-05

Availability: If your work uses TrakEM2 or its associated image registration libraries, Please cite.

Resource Name: TrakEM2

Resource ID: SCR_008954

Alternate IDs: nlx_151924

Record Creation Time: 20220129T080250+0000

Record Last Update: 20260912T200059+0000

Ratings and Alerts

No rating or validation information has been found for TrakEM2.

No alerts have been found for TrakEM2.

Data and Source Information

Source: SciCrunch Registry

Usage and Citation Metrics

We found 344 mentions in open access literature.

Listed below are recent publications. The full list is available at SPARC SAWG .

Wu P, et al. (2026) Mitophagy promotes lung repair and regeneration by restoring epithelial metabolic fitness. Nature communications, 17(1).

Jokura K, et al. (2026) Neural connectome of the ctenophore statocyst. eLife, 14.

Thayer JA, et al. (2026) A unified mechanism for mitochondrial damage sensing in PINK1-Parkin-mediated mitophagy. The EMBO journal, 45(1), 64.

Ferraioli A, et al. (2026) The 3D architecture of the ctenophore aboral organ and the evolution of complex integrative centers in animals. Science advances, 12(10), eaea8399.

Kim SH, et al. (2026) Remodeling synaptic connections via engineered neuron-astrocyte interactions. Nature communications, 17(1).

Han K, et al. (2026) 4D single-cell spatial transcriptomics reveals dynamic morphogenetic gradients and regenerative domains in planarians. GigaScience, 15.

Park C, et al. (2026) Synchronous climbing fiber activity enables instructive signaling for cerebellar learning through modulation of disinhibitory circuits. Nature neuroscience, 29(6), 1425.

Chalatsi T, et al. (2026) Autophagy regulates PVALB (parvalbumin) interneuron excitability and memory. Autophagy, 22(2), 351.

Chen D, et al. (2026) Ca²? leakage is a conserved signal for non-canonical ATG8/LC3 lipidation and membrane repair. The EMBO journal, 45(9), 3022.

Žigon P, et al. (2026) The Entomotoxic Fungal Lectin Marasmius oreades Agglutinin Disrupts the Midgut Epithelium of Colorado Potato Beetle Larvae. Journal of agricultural and food chemistry, 74(8), 6890.

Kim GH, et al. (2026) Synaptic ultrastructural alterations in human focal cortical dysplasia: Insights from volume electron microscopy. Epilepsia, 67(4), 2007.

Herzog T, et al. (2026) A heterogeneous population code at the first synapse of vision. Nature communications, 17(1).

Hayashi S, et al. (2026) Presynaptic SNAP25 supports maturation of hippocampal mossy fiber-CA3 synapses. iScience, 29(7), 116503.

Hamada N, et al. (2026) Distinct pathophysiological mechanisms of CEP152 variants in microcephaly and brain abnormalities. EMBO molecular medicine, 18(6), 2180.

Puska ML, et al. (2026) A cone opsin double knockout mouse reveals long-term cone survival and provides a platform for gene therapy. Research square.

Richter V, et al. (2025) Morphology and ultrastructure of external sense organs of Drosophila larvae. eLife, 12.

Corte GM, et al. (2025) Morphological and functional aspects of the canine placental barrier: evidence supporting a deciduo-chorial model. Reproduction & fertility, 6(4).

Nitta A, et al. (2025) Molecular and Anatomical Strengthening of "Winner" Climbing Fiber Synapses in Developing Mouse Purkinje Cells. The Journal of neuroscience : the official journal of the Society for Neuroscience, 45(15).

Glaser J, et al. (2025) Enhancer adoption by an LTR retrotransposon generates viral-like particles, causing developmental limb phenotypes. Nature genetics, 57(7), 1766.

Cook SJ, et al. (2025) Comparative connectomics of two distantly related nematode species reveals patterns of nervous system evolution. Science (New York, N.Y.), 389(6759), eadx2143.