

Resource Summary Report

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Vaa3D

RRID:SCR_002609

Type: Tool

Proper Citation

Vaa3D (RRID:SCR_002609)

Resource Information

URL: <http://www.vaa3d.org>

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Description: A handy, fast, and versatile 3D/4D/5D Image Visualization & Analysis System for Bioimages & Surface Objects. Vaa3D is a cross-platform (Mac, Linux, and Windows) tool for visualizing large-scale (gigabytes, and 64-bit data) 3D/4D/5D image stacks and various surface data. It is also a container of powerful modules for 3D image analysis (cell segmentation, neuron tracing, brain registration, annotation, quantitative measurement and statistics, etc) and data management. Vaa3D is very easy to be extended via a powerful plugin interface. For example, many ITK tools are being converted to Vaa3D Plugins. Vaa3D-Neuron is built upon Vaa3D to make 3D neuron reconstruction much easier. In a recent Nature Biotechnology paper (2010, 28(4), pp.348-353) about Vaa3D and Vaa3D-Neuron, an order of magnitude of performance improvement (both reconstruction accuracy and speed) was achieved compared to other tools.

Abbreviations: Vaa3D, Vaa3D-Neuron

Synonyms: V3D, Vaa3D: A Swiss army knife for bioimage visualization & analysis, V3D-Neuron, Vaa3D: A Swiss army knife for bioimage visualization and analysis, 3D Visualization-Assisted Analysis, Vaa3D and Vaa3D-Neuron

Resource Type: software application, software toolkit, software resource, data management software, data processing software, data visualization software, image analysis software

Defining Citation: [PMID:20231818](#)

Keywords: reusable library, atlas application, c, c++, cygwin, fiber tracking, gnome, image display, kde, linux, macos, microsoft, magnetic resonance, neuronal characterization, development environment, position, posix/unix-like, quantification, registration, rendering, resampling, segmentation, shape analysis, spatial transformation, surface analysis,

tractography, visualization, volumetric analysis, warping, win32 (ms windows), windows, windows 95/98/2000, windows nt/2000, windows vista, windows xp, 3d neuron reconstruction, 3d, neuron, reconstruction, microscopy

Funding: Howard Hughes Medical Institute

Availability: Free, Available for download, Freely available

Resource Name: Vaa3D

Resource ID: SCR_002609

Alternate IDs: nlx_156012

Alternate URLs: <http://www.nitrc.org/projects/v3d>

License: v3D License 2010-April

Record Creation Time: 20220129T080214+0000

Record Last Update: 20260729T044028+0000

Ratings and Alerts

No rating or validation information has been found for Vaa3D.

No alerts have been found for Vaa3D.

Data and Source Information

Source: [SciCrunch Registry](#)

Usage and Citation Metrics

We found 157 mentions in open access literature.

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

Solako??lu ST, et al. (2025) Layer-specific input to medial prefrontal cortex is linked to stress susceptibility. Translational psychiatry, 15(1), 134.

Rifat A, et al. (2025) The chloride intracellular channel 1 (CLIC1) is essential for microglial morphodynamics and neuroinflammation. Science advances, 11(43), eads9181.

Kessels S, et al. (2025) Cytoskeletal control in adult microglia is essential to restore neurodevelopmental synaptic and cognitive deficits. Science advances, 11(35), eadw0128.

Tasciotti S, et al. (2025) From Morphology to Computation: How Synaptic Organization Shapes Place Fields in CA1 Pyramidal Neurons. bioRxiv : the preprint server for biology.

Simon E, et al. (2025) Filopodia are essential for steroid release. *Nature communications*, 16(1), 5501.

Masoli S, et al. (2025) Cerebellar basket cell filtering of Purkinje cell responses elicited by low frequency parallel fibre transmission. *Scientific reports*, 15(1), 25192.

Trusel M, et al. (2025) Holistic Motor Control of Zebra Finch Song Syllable Sequences. *bioRxiv : the preprint server for biology*.

Urca T, et al. (2025) Visual gaze bias motion detection by split eyes in miniature whiteflies. *iScience*, 28(6), 112730.

Lin H, et al. (2025) 1275-nm Photobiomodulation Alleviates Brain Drainage Impairment as a Promising Therapeutic Strategy for Aging-Related Neurological Decline. *Aging cell*, 24(12), e70261.

Matthews EA, et al. (2025) RNA-programmable cell-type monitoring and manipulation in the human cortex with CellREADR. *Cell reports*, 44(8), 116037.

Hintiryan H, et al. (2025) Distinct subnetworks of the mouse anterior thalamic nuclei. *Nature communications*, 16(1), 6018.

Thakur P, et al. (2025) An antisense oligonucleotide-based strategy to ameliorate cognitive dysfunction in the 22q11.2 Deletion Syndrome. *eLife*, 13.

Xiong F, et al. (2025) Reconstruction of a connectome of single neurons in mouse brains by cross-validating multi-scale multi-modality data. *Nature methods*, 22(12), 2670.

Wang Y, et al. (2025) Integrated Classification of Cortical Cells and Quantitative Projectomic Mapping Unveil Organizational Principles of Brain-Wide Connectomes at Single Cell Level. *bioRxiv : the preprint server for biology*.

Jiang S, et al. (2025) A Multi-Scale Neuron Morphometry Dataset from Peta-voxel Mouse Whole-Brain Images. *Scientific data*, 12(1), 683.

Shi MY, et al. (2025) High-speed mapping of whole-mouse peripheral nerves at subcellular resolution. *Cell*, 188(14), 3897.

Zhong S, et al. (2025) Ultrabright chemical labeling enables rapid neural connectivity profiling in large tissue samples. *Neuron*.

Izquierdo P, et al. (2024) Amyloid plaques and normal ageing have differential effects on microglial Ca²⁺ activity in the mouse brain. *Pflügers Archiv : European journal of physiology*, 476(2), 257.

Hou YN, et al. (2024) Analyzing the factors affecting virus invasion by quantitative single-particle analysis. *Virulence*, 15(1), 2367671.

Brunner J, et al. (2024) Axons compensate for biophysical constraints of variable size to uniformize their action potentials. *PLoS biology*, 22(12), e3002929.