

# Resource Summary Report

Generated by PRECISE-TBI on Sep 8, 2026

## Synapse Web

RRID:SCR\_003577

Type: Tool

### Proper Citation

Synapse Web (RRID:SCR\_003577)

### Resource Information

**URL:** <http://synapses.clm.utexas.edu>

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**Description:** A portal into the 3D ultrastructure of the brain providing: Anatomy of astrocytes, axons, dendrites, hippocampus, organelles, synapses; procedures of 3D reconstruction and tissue preparation; as well as an atlas of ultrastructural neurocytology (by Josef Spacek), online aligned images, and reconstructed dendrites. Synapse Web hosts an ultrastructural atlas containing more than 500 electron micrographs (added to regularly) that identify unique ultrastructural and cellular components throughout the brain. Additionally, Synapse Web has raw images, reconstructions, and quantitative data along with tutorial instructions and numerous tools for investigating the functional structure of objects that have been serial thin sectioned for electron microscopy.

**Synonyms:** SynapseWeb

**Resource Type:** atlas, data or information resource, image collection, narrative resource, training material

**Keywords:** electron microscopy, 3d reconstruction, neuroanatomy, astrocyte, axon, brain, cellular, dendrite, hippocampus, micrograph, microscopy, neurocytology, organelle, structure, synapse, tissue, ultrastructural, light microscopy, neuron, rat, experimental protocol, synapse structure

**Funding:** The Human Brain Project ;  
NIDA R01 MH/DA 57351;  
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**Availability:** Copyrighted, Acknowledgement required

**Resource Name:** Synapse Web

**Resource ID:** SCR\_003577

**Alternate IDs:** nif-0000-00026

**Record Creation Time:** 20220129T080219+0000

**Record Last Update:** 20260905T132505+0000

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## Ratings and Alerts

No rating or validation information has been found for Synapse Web.

No alerts have been found for Synapse Web.

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## Data and Source Information

**Source:** [SciCrunch Registry](#)

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## Usage and Citation Metrics

We found 73 mentions in open access literature.

**Listed below are recent publications.** The full list is available at [PRECISE-TBI](#) .

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

Esmaili Z, et al. (2025) Quercetin mitigates aluminum nanoparticle-induced neurotoxicity: a stereological and molecular study on memory, hippocampal integrity, and MAPK signaling. EXCLI journal, 24, 708.

De Introna M, et al. (2025) Chemogenetic induction of CA1 hyperexcitability triggers indistinguishable autistic traits in asymptomatic mice differing in Ambra1 expression and sex. Translational psychiatry, 15(1), 82.

Ageta-Ishihara N, et al. (2025) Septin 3 regulates memory and L-LTP-dependent extension of endoplasmic reticulum into spines. Cell reports, 44(3), 115352.

Yu F, et al. (2024) Mitochondria-ER contact sites expand during mitosis. iScience, 27(4), 109379.

Köhler S, et al. (2023) Protocol for high-throughput electron tomography exemplified on centrioles in primary human plasma cells. STAR protocols, 4(3), 102373.

Haile MT, et al. (2023) Conditional deletion of Neurexin-2 alters neuronal network activity in hippocampal circuitries and leads to spontaneous seizures. Translational psychiatry, 13(1), 97.

Li JM, et al. (2022) Swimming exercise prevents hippocampal dendritic spine changes and memory loss caused by aging: An application of a new semi-automated spine analysis

software. *Molecular and cellular neurosciences*, 121, 103755.

de Souza JM, et al. (2022) mGluR5 ablation leads to age-related synaptic plasticity impairments and does not improve Huntington's disease phenotype. *Scientific reports*, 12(1), 8982.

Verma B, et al. (2022) Ayurvedic formulations amalaki rasayana and rasa sindoor improve age-associated memory deficits in mice by modulating dendritic spine densities. *Journal of Ayurveda and integrative medicine*, 13(4), 100636.

Esmaili Z, et al. (2022) A stereological study reveals nanoscale-alumina induces cognitive dysfunction in mice related to hippocampal structural changes. *Neurotoxicology*, 91, 245.

Tan Z, et al. (2021) Tetramethylpyrazine Alleviates Behavioral and Psychological Symptoms of Dementia Through Facilitating Hippocampal Synaptic Plasticity in Rats With Chronic Cerebral Hypoperfusion. *Frontiers in neuroscience*, 15, 646537.

Hagadorn MA, et al. (2021) Age-related mushroom body expansion in male sweat bees and bumble bees. *Scientific reports*, 11(1), 17039.

Shi X, et al. (2021) Stroke subtype-dependent synapse elimination by reactive gliosis in mice. *Nature communications*, 12(1), 6943.

Kim HW, et al. (2020) Differential synapse density between Purkinje cell dendritic spine and parallel fiber varicosity in the rat cerebellum among the phylogenetic lobules. *Applied microscopy*, 50(1), 6.

Henneberger C, et al. (2020) LTP Induction Boosts Glutamate Spillover by Driving Withdrawal of Perisynaptic Astroglia. *Neuron*, 108(5), 919.

Eguchi K, et al. (2020) Advantages of Acute Brain Slices Prepared at Physiological Temperature in the Characterization of Synaptic Functions. *Frontiers in cellular neuroscience*, 14, 63.

Pérez-Villegas EM, et al. (2020) HERC1 Ubiquitin Ligase Is Required for Hippocampal Learning and Memory. *Frontiers in neuroanatomy*, 14, 592797.

Kashiwagi Y, et al. (2019) Computational geometry analysis of dendritic spines by structured illumination microscopy. *Nature communications*, 10(1), 1285.

Yu M, et al. (2019) Gallic acid disruption of A $\beta$ 1-42 aggregation rescues cognitive decline of APP/PS1 double transgenic mouse. *Neurobiology of disease*, 124, 67.