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# Quantitative analyses of the ultrastructural features of dopaminergic axon terminals

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## ABSTRACT

The release of dopamine from axons is critical for normative brain function and behaviour. Impaired or otherwise inappropriate dopamine release often correlates with changes in the ultrastructure of dopamine neuron axons that can be assessed with electron microscopy. Here, we provide two protocols that can be used serially to, first, help the user process animal brain tissue for electron microscopy and, secondly, help the user undertake quantitative analyses of the ultrastructural features of dopaminergic axon terminals in the brain.

Protocol #1 describes how to prepare brain tissue, carry out pre-embedding immunohistochemistry for tyrosine hydroxylase as a marker of dopaminergic axons, and then make tissue sections ready for electron microscope.

Protocol #2 details how to examine and image ultrathin sections of tissue using a transmission electron microscope and then how to analyse the digital images.

## DOI

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## EXTERNAL LINK

<https://www.mrcbndu.ox.ac.uk/>

## COLLECTION CITATION

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#### KEYWORDS

Dopamine, Axon terminal, Striatum Tyrosine hydroxylase (TH), Transmission Electron Microscopy (TEM), Electron microscopy (EM), Substantia nigra pars compacta (SNc), Ventral Tegmental Area (VTA), Vesicle Synapse, Ultrastructure, Immuno-EM, Immunogold, Quantification, ImageJ

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

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

Protocol #2 details how to examine and image ultrathin sections of tissue using a transmission electron microscope and then how to analyse the digital images.

## FILES



Quantitative analyses of the ultrastructural features of dopaminergic axon terminals. Protocol #1: Tissue preparation for electron microscopy

**Version 1**  
by Cláudia C. Mendes



Quantitative analyses of the ultrastructural features of dopaminergic axon terminals. Protocol #2: Acquisition and analysis of electron microscopy images

**Version 1**  
by Cláudia C. Mendes