

## Astrocyte Structural Organization Analysis Based on Fluorescent Microscopy with 2D and 3D Quantitative Approaches

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According to the obtained data over the last decades, astrocytes play a crucial role in neuronal homeostasis. Therefore, the software for assessing morphological changes in astrocytes is not sufficiently cover in the literature. Hence, the article examines two- and three-dimensional quantitative approach of astrocytic structure analysis based on freely available software. The brains of mature male Wistar rats was used ( $n = 5$ ). Double immunocytochemical GFAP/GLT-1 staining was performed to obtain fluorescent confocal images. The article supposes the implementation of recent analysis approaches using freely available software to obtain qualitative and quantitative information about the structural features of heterogeneous cells of central nervous system such as astrocytes. Moreover, proposed approach provides standardization of data that necessary for comparing the results obtained by different scientific groups.

**Keywords:** astrocytes, ImageJ, immunocytochemistry, confocal laser microscopy, quantitative analysis, morphometry