Our objective is to propose a neural cell segmentation algorithm for fluorescent microscopic images of mice brains. We received a dataset from the Laboratory of Neurochemistry, Institute of Physiology of the Czech Academy of Sciences in Prague. We conducted various image segmentation experiments to identify a method that can most accurately segment neural cells. Our thesis will present the challenges linked with the segmentation of biological images. Then, we will describe the details of our experiments and the evaluation metrics used for measuring our methods' accuracy.