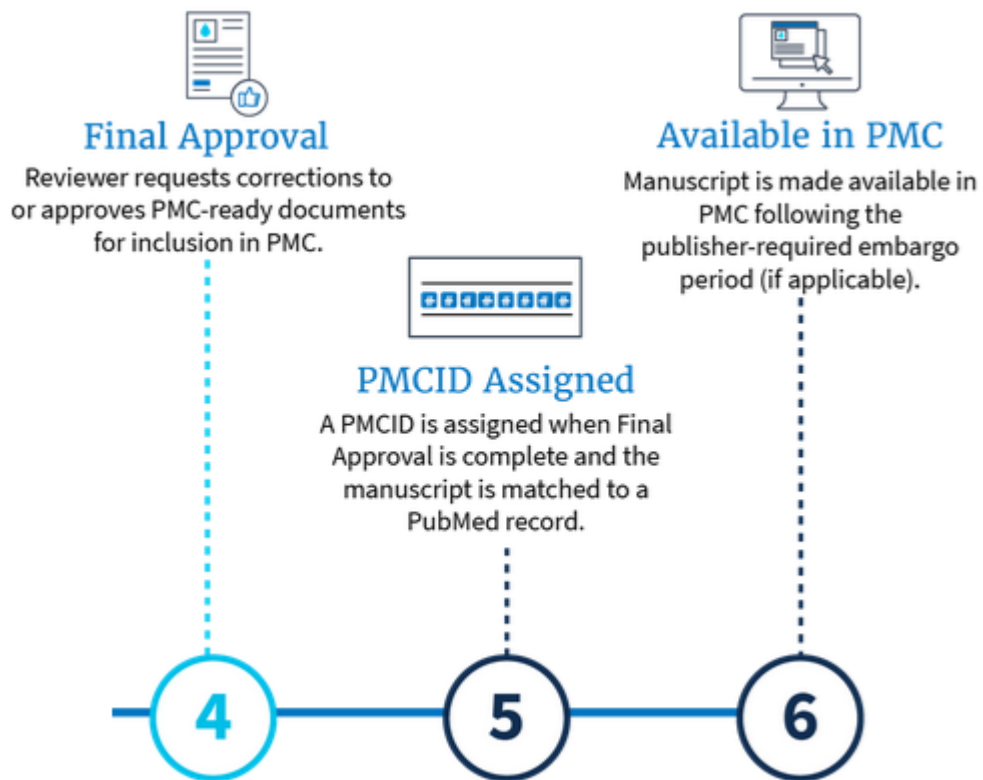


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[Yinxue Wang](#),<sup>1</sup> [Maria Ali](#),<sup>2</sup> [Yue Wang](#),<sup>1</sup> [Sarah Kucenas](#),<sup>2</sup> and  
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[Yinxue Wang](#),<sup>1</sup> [Maria Ali](#),<sup>2</sup> [Yue Wang](#),<sup>1</sup> [Sarah Kucenas](#),<sup>2</sup>  
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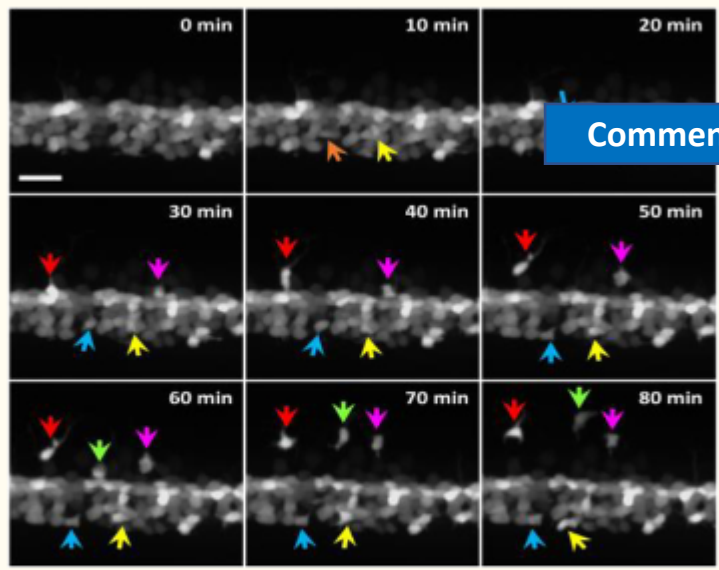
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Yinxue Wang<sup>1</sup>, Maria Ali<sup>2</sup>, Yue Wang<sup>1</sup>, Sarah Kucenas<sup>2</sup>, and Guoqiang Yu<sup>1</sup>

<sup>1</sup>Bradley Department of Electrical and Computer Engineering, Virginia Polytechnic Institute and State University, USA

<sup>2</sup>Department of Biology, University of Virginia, USA

#### Abstract

In this work, we develop a fully automatic algorithm named “MCDT” (Migrating Cell Detector and Tracker) for the integrated task of migrating cell detection, segmentation and tracking from *in vivo* fluorescence time-lapse microscopy imaging data. The interest of detecting and tracking migrating cells arouses from the scientific question in understanding the impact of oligodendrocyte progenitor cells (OPCs) migration *in vivo*, using advanced microscopy imaging techniques. Current practice of OPC mobility analysis relies on manual labeling, suffering from massive human labor, subjective biases, and weak reproducibility. Existing cell tracking methods have difficulties in analyzing such challenging data due to the extra complexity of *in vivo* data.

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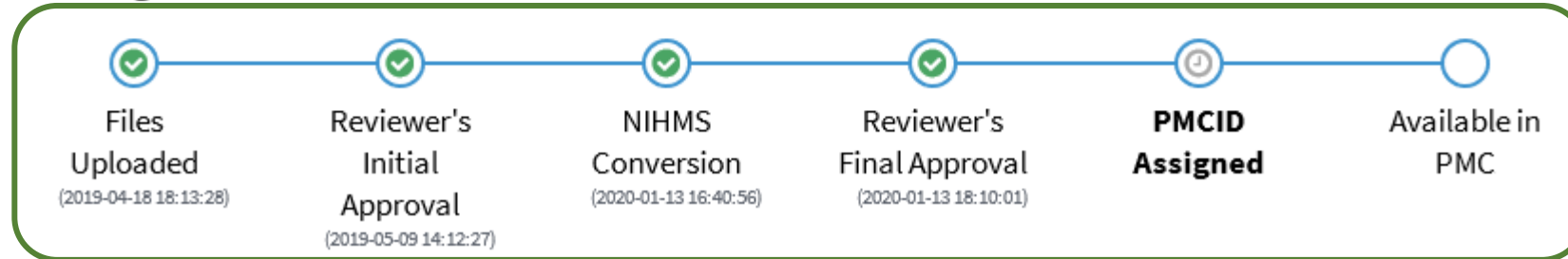
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