

MILRD Mini Virtual Training Projects

VTP OVERVIEW	Interpreting Single-cell & Spatial Transcriptomics Figures with Cellular/Molecular Neuroscience Data
Source Data	Hasel, P., Rose, I.V.L., Sadick, J.S. <i>et al.</i> Neuroinflammatory astrocyte subtypes in the mouse brain. Nat Neurosci 24, 1475–1487 (2021) . https://doi.org/10.1038/s41593-021-00905-6 .
Aim	Review, interpret, and interrogate single-cell RNA-sequencing (scRNA-seq) and spatial transcriptomics data profiling neuroinflammatory astrocyte subtypes in the mouse brain.
Audience	<i>This workshop is designed for:</i> <ul style="list-style-type: none">❖ High school students interested to pursue study in cellular/molecular biology or neurobiology❖ Undergraduate biology majors interested in research internships or applying to graduate school❖ Teachers/instructors who teach cellular/molecular biology or neurobiology at the high school or college level❖ Non-biologist professionals with an active interest in learning more about molecular & cellular biology and neurobiology
Prerequisite Concepts	<i>Participants should have a rudimentary understanding of cellular and molecular biology concepts, including:</i> <ul style="list-style-type: none">➤ mRNA, DNA, proteins➤ Cell structure and organelles.➤ The central dogma of molecular biology➤ Neurons
Goals	<i>Each participant will:</i> <ul style="list-style-type: none">• Learn how to interpret figures that showcase results from single-cell RNA sequencing (scRNA-seq) and spatial transcriptomics.• Engage in discussions about the experimental design choices highlighted in the research paper.• Analyze the expression levels of a specific gene within the scRNA-seq and spatial transcriptomics data, and then compare and contrast these findings with those of other participants.• Explore the fundamental concepts and experimental design strategies of scRNA-seq and spatial transcriptomics—with an emphasis on control versus perturbation studies.
Deliverables	<i>Letter of Completion:</i> Participants will receive a letter of completion that outlines the content covered and assignments completed during the workshop.
Structure & Time Commitment	<ul style="list-style-type: none">→ 1.5 hours long→ Interactive online workshop led by experts, featuring presentation, discussion, and analysis via MILRD's platform→ All tasks are designed to be completed within the workshop, but participants will have access to the instructional materials, platform, and a Zoom recording for 24 hours after the workshop to review and complete any unfinished work
Signup	Enroll here .