



CRI SEMINAR

Bioinformatics Workshop Series:

Spatial Transcriptome Analysis Hands-on Training
Workshop

Speakers: Jason Shapiro, PhD & Diana Vera Cruz, PhD

Thursday, April 3rd 1:30pm – 4:00pm CST.

Donnelley (BSLC) Meeting Room #202

REGISTER HERE: <https://mycri.cri.uchicago.edu/educations/trainings/76/register/>



This workshop will offer an introduction to spatial transcriptomics techniques along with hands-on data analysis experience. Attendees will work with data generated from Visium and GeoMX platforms, exploring our in-house data analysis workflows, tutorials, and real-world applications, including tumor microenvironment and brain tissue studies. Key topics include spatial correlation analysis, deconvolution, differential expression, and the use of Seurat for data analysis. Additionally, participants will learn about alternative approaches for differential expression, such as linear mixed models. Join us for an interactive session featuring hands-on tutorials, expert insights, and a live Q&A!

Pre-requisite:

- Knowledge on basic bash scripts and R/RStudio installed in your local PC with required packages including Seurat, Giotto (optional), STdeconvolve (optional), GeoMxTools, and SpatialDecon

Learning Objectives:

Introduction to spatial methods and their applications:

- Visium Workflow Overview
- Visium Examples and Tutorial
- Examples from the tumor microenvironment and mouse brain
- Overall workflow with Space Ranger setup and analysis with Seurat
- Discussion of spatial correlations, deconvolution, and differential expression
- Visium Q&A
- GeoMX Overview
- GeoMX examples and Tutorial
- Examples from kidney and human brain.

- Overall workflow with GeoMxTools only and usage of Seurat for GeoMx data.
- Spatial deconvolution.
- Alternative methods for DE (Linear mixed models).
- GeoMx and overall Q&A

This seminar will take place at Donnelley (BSLC) meeting room #202. 924 E 57th, Chicago, IL. also, via Zoom. Registration is required for all attendees, whether you plan to attend in person or via Zoom. Registration closes at 12pm on Wednesday, April 2nd. Zoom details will be emailed to registrants one day before the session. Please note that due to limited capacity, registration may close early if capacity is reached. Participation is open to University of Chicago, UCM, and Pritzker School of Medicine faculty, staff, and students.

About the speakers:

Jason Shapiro, Bioinformatician

Jason received his PhD in Ecology and Evolutionary Biology from Yale University (2014). Prior to joining the CRI Bioinformatics Core in 2021, he was a postdoctoral research associate at Loyola University Chicago, where he developed computational methods to explore the diversity and evolution of bacteriophages. His research currently focuses on virus comparative genomics. Jason has experience working with a range of data types and bioinformatic questions, including microbiome analysis, genome assembly, network analysis, variant analysis, and transcriptomics, including single-cell and spatial datasets.

Diana Vera Cruz, Bioinformatician

Diana received her Ph.D. in Computational Biology and Bioinformatics (May 2020) from Duke University. Before joining the CRI Bioinformatics core in 2022, she was a research scientist in the Department of Ecology and Evolution at the University of Chicago. Diana studied viral evolution across scales and how it is impacted by immune selection, antibody dynamics, and vaccination. Her expertise includes population genetics, phylogenetics, mathematical modeling, statistical methods, NGS data analysis, and pipeline development.

About the series: Since 2012, the Center for Research Informatics has offered free training sessions for the University of Chicago community in informatics research tools and techniques. Topics include REDCap, clinical data, bioinformatics analysis, data visualization, high performance computing, grant preparation, and more. To hear about upcoming seminars, sign up for our email list at <http://cri.uchicago.edu/seminar-series>

Questions? Contact [Janaya Lee at janayalee@bsd.uchicago.edu](mailto:janayalee@bsd.uchicago.edu)

Feedback Survey: We value your feedback and would greatly appreciate it if you could take a moment to [complete our quick survey](#). Your insights will help us enhance our seminars and ensure they provide the best possible learning experience. Additionally, we welcome your suggestions for future seminar topics and any areas you're interested in exploring further.

