Educational Single Cell RNAseq Workshop

Date: June 1 & 2 2023

Location: The Neuro, 3801 University Street (Jeanne Timmins Amphitheatre & NWB150) (in-person)

Start time: 8:30 a.m. (All Day)

In this inaugural workshop, we will cover wet and dry lab aspects of single cell RNAseq technique from sample preparation, detailed analysis workflows, data management and single cell Open Science resources.

The workshop is designed for those who have basic knowledge of single cell RNAseq technique and a basic knowledge of coding.

Thanks to our sponsors the workshop is free and the spots are limited, so please fill out the application form below if you are interested in attending by **March 7th 2023.** There will be a selection process and if you are accepted for the workshop we will contact you via the email address that you provided us.

Please complete application here: https://forms.gle/kAfVRynXzSYR2WZX7

Please feel free to share this announcement with your colleagues.

Sincerely,

Co-Principle Investigators:
Jo Anne Stratton, PhD, Corina Nagy, PhD, Claudia Kleinman, PhD, Ioannis Ragoussis, PhD, Jean-Francois Poulin, PhD, Jean-Baptiste Poline, PhD

Event coordinators:
Moein Yaqubi, PhD, Rhalena Thomas, Phd, Theresa Degenhard, PhD candidate

On behalf of the Single Cell Neurobiology Hub in partnership with Healthy Brains & Healthy Living (HBHL)

General Overview:

	Breakfast	Morning	Lunch Break	Afternoon
DAY 1 **June 1**	8:30 - 9: 00 a.m. Breakfast Location: Jeanne Timmins **Foyer**	9:00 - 9:10 a.m. Welcoming Remarks 9:10 - 10:30 a.m. Session 1 10:45 - 11:45 a.m. Session 2 Location: Jeanne Timmins **Amphitheatre**	11:45 a.m. - 12:45 p.m. Lunch Location: Jeanne Timmins **Foyer**	12:45 - 2:00 p.m. Session 3 Location: **NWB150** 2:00 - 3:00 p.m. Session 4 3:15 - 4:45 p.m. Session 5 Location: Jeanne Timmins **Amphitheatre** 5:30 - 7:00 p.m. Session 6 Location: **Thomson House** (3650 McTavish St, Montreal)
DAY 2 **June 2**	8:30 - 9:00 a.m. Breakfast Location: Jeanne Timmins **Foyer**	9:00 - 10:30 a.m. Session 1 10:45 -12:00 p.m. Session 2 Location: Jeanne Timmins **Amphitheatre**	12:00 - 1:00 p.m. Lunch Location: Jeanne Timmins **Foyer**	1:00 – 1:45 p.m. Session 3 1:45 - 2:45 p.m. Session 4 3:00 - 3:40 p.m. Session 5 3:40 - 4:45 p.m. Session 6 4:45 - 5:00 p.m. Closing Remarks 5:00 - 7:00 p.m. Troubleshooting Location: Jeanne Timmins **Amphitheatre**

Scientific Program: *(Unless noted, located at Jeanne Timmins amphitheatre, 3801 University Street, Montreal)*

Day 1: Thursday, June1	
Session 1 **Overview of single cell technologies**	
9:00 - 9:10 a.m.	Jo Anne Stratton, PhD Welcoming remarks
9:10 - 9:40 a.m.	Rhalena Thomas, PhD Introduction to Single Cell Microfluidics
9:40 - 10:30 a.m.	Adriana Suarez, PhD (10x Genomix) Overview of Single Cell Technologies
COFFEE Break 10:30 - 10:45 a.m.	
Session 2 **Experimental considerations for single cell RNA sequencing**	
10:45 - 11:25 a.m.	Adriana Suarez, PhD (10x Genomix) Best practices and protocol steps for sample preparation
11:25 - 11:45 a.m.	Julien Sirosis, PhD Practical aspects of tissue dissociation and cell sorting by FACS
LUNCH Break 11:45 a.m. - 12:45 p.m. *(Meet in NWB150 after lunch sessions)*	
Session 3 **10x Genomics workflow**	
12:45 - 1:45 p.m.	10x field application scientist Loading 10x chip
1:45 - 2:00 p.m.	Lama Fawaz, PhD and Taylor Goldsmith, MSc Understanding reagents and practical applications
Session 4 **Data presentation – Keynote Speaker**	
2:00 - 3:00 p.m.	Corina Nagy, PhD Technical aspect of single nucleus RNA sequencing from brain autopsies
COFFEE Break 3:00 - 3:15 p.m.	
Session 5 **Resources for big data analysis**	
3:15 - 3:45 p.m.	Moein Yaqubi, PhD, and Rhalena Thomas, PhD - Introduction of computational servers for big data analysis - Overview of CellRanger pipeline on NeuroHub
3:45 - 4:45 p.m.	10x field application scientist and Adriana Suarez, PhD - Describing steps in CellRanger analysis pipeline - Describing QC metrics for CellRanger pipeline outputs

Day 1: Thursday, June1st Evening event (Session 6)	
Neuro Single Cell Discussion *(Thompson House, 3650 McTavish St, Montreal)*	
5:30 - 7:00 p.m.	Shakour Mohammadnia, PhD and Moein Yaqubi, PhD - Cell – Cell Interactions 101: Inference and analysis of cell-cell communication - Nibbles, Drinks and Social Networking with the rest of the Montreal single cell community

Day 2: Friday, June 2	
Session 1 **Workflow for single cell/nucleus analysis using Seurat (Part 1)**	
9:00 - 10:30 a.m.	Malosree Maitra, PhD and Rhalena Thomas, PhD - Read-in CellRanger outputs into Seurat and check QC parameters - Using a standard dataset, which will be the same for all participants
COFFEE Break 10:30 - 10:45 a.m.	
Session 2 **Workflow of single cell/nucleus analysis using Seurat (Part 2)**	
10:45 a.m. - 12:00 p.m.	Malosree Maitra, PhD and Rhalena Thomas, PhD - Data merging/integration - Clustering and annotation - Differential Gene Expression (DGE) analysis
LUNCH Break 12:00 - 1:00 p.m.	
Session 3 **Introduction to Pseudotime analysis using monocle**	
1:00 - 1:45 p.m.	Rhalena Thomas, PhD
Session 4 **Open website possibilities - Keynote Speaker**	
1:45 – 2:45 p.m.	Jun Ding, PhD Analyzing scRNAseq data using publicly available web tools
COFFEE Break 2:45 - 3:00 p.m.	
Session 5 **Tools and resources for backing up single cell data**	
3:00 - 3:20 p.m.	Dan Speigleman, MSc Introduction to servers and cloud storage to back up data
3:20 - 3:40 p.m.	Moein Yaqubi, PhD Submitting raw scRNAseq files to GEO for publication
Session 6 **Publicly available scRNAseq datasets**	
3:40 - 4:45 p.m.	Shakour Mohammadnia, PhD and Moein Yaqubi, PhD - Understating where public scRNAseq datasets are stored and how to use - Downloading a public dataset as an example. - Troubleshooting of data analysis from morning session
Closing remarks	
4:45 - 5:00 p.m.	Jo Anne Stratton, PhD, Rhalena Thomas, PhD and Moein Yaqubi, PhD
Optional troubleshooting session for personal datasets **5:00 - 7:00 pm**	

For any more questions please contact Moein Yaqubi (moein.yaqubi@mail.mcgill.ca)