# Montreal Genomics Analysis Workshop: RNA-Seq

Day1: Introduction & Basic Setup

21-22 August 2018

# Outline:

- Who are we?

- What is GenPipes?

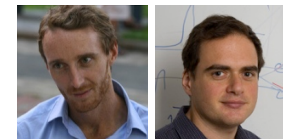- Objectives of this workshop

# Who are we?

- The Canadian Center for Computational Genomics (C3G) :
  - An organization that provides bioinformatics analysis and HPC services for the life science research community

- 2 Nodes: Montreal (Dr. Guillaume Bourque) and Toronto (Dr. Michael Brudno)



- We have many useful tools and tutorials online
  - Our website: http://www.computationalgenomics.ca/
  - Our bitbucket repository: https://bitbucket.org/account/user/mugqic/projects/PROJ

# C3GAW Team:

Canadian Centre for
**Computational**
Genomics

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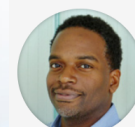
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# Workshop Objectives:

- Learn how to process your own RNASeq data using GenPipes

- Learn more about C3G and GenPipes

- Identify resources that can help you in the future

# What is GenPipes?

- GenPipes is a workflow management system, developed by C3G, that helps in genomics analyses; it links analysis steps together in a smart way.

  - Available pipelines:

    - RNASeq
    - ChIPSeq
    - DNASeq

    - Tumour Pair
    - HiCSeq
    - MethylSeq

    - ampliconSeq
    - RNASeq assembly
    - PacBio assembly

  - GenPipes Resources:

    - Tutorial: http://www.computationalgenomics.ca/tutorials/
    - Code: https://bitbucket.org/mugqic/genpipes/src/master/

# Workshop Logistics:

- ## Lectures that cover the theory

  - Paired with Practicals for hands-on practice of concepts

- ## Handout:

  •Schedule, cheat sheet, name tag, Red/Green post its,

  GenPipes sticker.

- ## We are here to help: if confused, ask!

  - Sticker system:
    - Green: I am doing Ok
    - Red: Please, Help!

- ## Guest Accounts:

  •McGill Wifi account.

  •Compute Canada account

| Day 1 | Tuesday Aug 21 | Presenter |
|---|---|---|
| 9:00 | Welcome/Intro/Basic Setup | Rola |
| 9:15 | Lecture: Unix & Compute Canada | PO |
| 10:00 | Practical: Unix & Compute Canada | PO |
| 10:45 | Coffee break (15 min) | |
| 11:00 | Practical: Setting up GenPipes | Rola |
| 11:30 | | |
| 12:00 | Lunch | |
| 12:30 | | |
| 1:00 | Lecture: Intro to NGS (QC, fastq, bam…) | Mathieu |
| 1:30 | | |
| 2:00 | Lecture: Intro to RNASeq | Hector |
| 2:30 | | |
| 3:00 | Coffee break (15 min) | |
| 3:30 | Lecture: GenPipes Files: creation & validation | Rola |
| 4:00 | Practical: GenPipes Files: creation & validation | Rola |
| 4:30 | | |
| 5:00 | | |
| Day 2 | Wednesday Aug 22 | |
| 9:00 | Lecture: Review & Recap | Rola |
| 9:30 | Practical: RNA-Seq mapping | Hector |
| 10:00 | | |
| 10:30 | Coffee break (15 min) | |
| 11:00 | Lecture: Differential analysis | Eloi |
| 11:30 | Practical: Differential analysis | Eloi |
| 12:00 | | |
| 12:30 | Lunch | |
| 1:00 | | |
| 1:30 | Practical: Data exploration & visualization | Hector |
| 2:00 | | |
| 2:30 | | |
| 3:00 | Coffee break (15 min) | |
| 3:30 | Practical: Pipeline relaunch & Error logs | Rola |
| 4:00 | | |
| 4:30 | Concluding Remarks and Available Resources | Rola |
| 5:00 | | |

Thank you!