



# C3G Analysis Workshop: RNA-Seq

Day1: Introduction & Basic Setup

22-23 January 2019



# Outline:

- Who are we?
- What is GenPipes?
- Objectives of this workshop

# Who are we?

- The Canadian Centre for Computational Genomics (C3G) :
  - An organization that provides bioinformatics analysis and HPC services for the life science research community
  - Tasks: Services / Tech Dev / workshops
- 2 Nodes: Montreal (Dr. Guillaume Bourque) and Toronto (Dr. Michael Brudno)



 McGill SickKids

- We have many useful tools and tutorials online
  - Our website: <http://www.computationalgenomics.ca/>
  - Our bitbucket repository: <https://bitbucket.org/account/user/muggic/projects/PROJ>
  - Github pages: <http://c3g.github.io>

# C3GAW Team:



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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
  - GenPipes includes: pipelines, software and genomes.
  - GenPipes Resources:
    - Tutorial: <http://www.computationalgenomics.ca/tutorials/>
    - Code: <https://bitbucket.org/muggic/genpipes/src/master/>

# Workshop Logistics:

- Lectures that cover the theory
  - Paired with Practicals for hands-on practice of concepts
- Handout:
  - Schedule, cheat sheet, RNASeq workflow, name tag, Red/Green post its.
- We are here to help: if confused, ask!
  - Sticker system:
    - Green: I am doing Ok
    - Red: Please, Help!
- Guest Accounts:
  - McGill Wi-fi guest accounts
  - Compute Canada guest accounts
- No food/drinks in 210; All food is served in 519.

## Day 1 Tuesday Jan 22

- 8:30am Light Breakfast & Coffee
- 9:00am Welcome/Introduction/Basic Setup
- 9:15am Lecture: Basic Unix & Compute Canada
- 10:00am Practical: Basic Unix & Compute Canada
- 11:00am **Coffee Break (30 min)**
- 11:30am Practical: Setting Up GenPipes
- 12:30pm **Lunch**
- 1:30pm Lecture: Introduction to NGS & RNA-Seq
- 2:30pm **Coffee Break (30 min)**
- 3:00pm Lecture: GenPipes Files: Creation & Validation
- 3:30pm Practical: GenPipes Files: Creation & Validation
- 5:00pm **End of Day 1**

## Day 2 Wednesday Jan 23

- 8:30am Light Breakfast & Coffee
- 9:00am Lecture: Review of Day 1
- 9:30am Practical: RNA-Seq Mapping
- 10:30am **Coffee Break (30 min)**
- 11:00am Lecture: Differential Analysis
- 11:30am Practical: Differential Analysis
- 12:30pm **Lunch**
- 1:30am Practical: Data Exploration & Visualization
- 3:00pm **Coffee Break (30 min)**
- 3:30am Practical: Pipeline Relaunch & Error Logs
- 4:30am Concluding Remarks & Available Resources



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Thank you!



compute | calcul  
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