



Canadian Centre for
Computational
Genomics

C3G Analysis Workshop: RNA-Seq

Day1: Introduction & Basic Setup

22-23 January 2019



Outline:

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

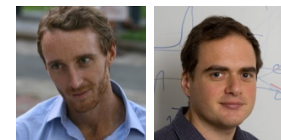


Who are we?



Canadian Centre for
Computational
Genomics

- 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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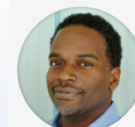
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Workshop Objectives:

- 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 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

12:30am **Lunch**

1:30am **Practical:** Data Exploration & Visualization

3:00am **Coffee Break (30 min)**

3:30am **Practical:** Pipeline Relaunch & Error Logs

4:30am Concluding Remarks & Available Resources



Genome Québec



Genome Canada



Ontario Genomics



McGill



Canadian Centre for
Computational
Genomics

SickKids®

MiC:M McGill initiative in
Computational Medicine

Thank you!

 HPC4Health

 **IHEC**
International Human Epigenome Consortium

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 Terry Fox
PROFYLE


GenAP




Calcul Québec


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