UCDAVIS Bioinformatics Core

Quick Introduction to the Workshop and Core

UCDAVIS Bioinformatics Core

The **mission** of the Bioinformatics Core facility is to facilitate outstanding omics- scale research through these activities:

Data Analysis

The Bioinformatics Core promotes experimental design, advanced computation and informatics analysis of ‘omics’ scale datasets that drives research forward.

Research Computing

Maintain and make available high-performance computing hardware and software necessary for todays data-intensive bioinformatic analyses.

Training

The Core helps to educate the next generation of bioinformaticians through highly acclaimed training workshops, seminars and through direct participation in research activities.

UCDAVIS Bioinformatics Core

UC Davis Bioinformatics Core in the Genome Center

Core Facility Manager
Dr. Matthew Settles

Faculty Advisor
Dr. Ian Korf

Data Analysis Group

Genomics Bioinformatics

Dr. Joseph Fass
Dr. Monica Britton
Nikhil Joshi

Proteomics Bioinformatics

Metabolomics Bioinformatics

Dr. Jessie Li

Biostatistics

Dr. Blythe Durbin-Johnson

Undergraduate Assistants

Research Computing Group

System Administration

Michael Casper Lewis
Richard Feltstykket

Database/Web Programming

Adam Schaal

Undergraduate Assistant

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Contacts

- Bioinformatics related questions, include but not limited to

  bioinformatic methods questions, software use, data questions

  Bioinformatics.core@ucdavis.edu
- Computing Issues, include but not limited to

  User account questions, equipment failure/malfunction, software install, software failures (not related to use)

  helpdesk@genomecenter.ucdavis.edu
- Training courses information

  training.bioinformatics@ucdavis.edu

Goals

- End to End understanding of RNAseq differential expression analysis
- Discussions/lectures
  - Experimental design
  - Cost estimation
  - Technologies
  - Workflow
  - Special topics (more on that later)
- To work through a complete experiment, starting from raw data to completion, including making a few figures.
- Goal is 30-40% lecture/discussion 60-70% hands-on

Internet

Eduroam, If your home institution is on eduroam, you should be on already

- http://itcatalog.ucdavis.edu/service/eduroam

UCD Guest Wireless

- http://itcatalog.ucdavis.edu/service/wireless-guest-access

Workshop materials

Workshop materials posted on github, publicly available

- Main page:

  https://github.com/ucdavis-bioinformatics-training

- This RNAseq Workshop

  https://ucdavis-bioinformatics-training.github.io/2018-June-RNA-Seq-Workshop/

  https://github.com/ucdavis-bioinformatics-training/2018-June-RNA-Seq-Workshop

Computing cluster

- Course will be conducted on our servers and compute cluster

  ganesh.genomecenter.ucdavis.edu

- Everyone should have a username/password.
  - Recommend you copy to plaintext editor, like notepad (windows) textedit (mac).
- Cluster usage will be under the slurm reservation ‘workshop’
  - Reservation will last 1 full week after the workshop and allow you to practice or run analyze your own data.

workshop ACTIVE 2018-06-17T00:00:00 2018-06-30T00:00:00 13-00:00:00

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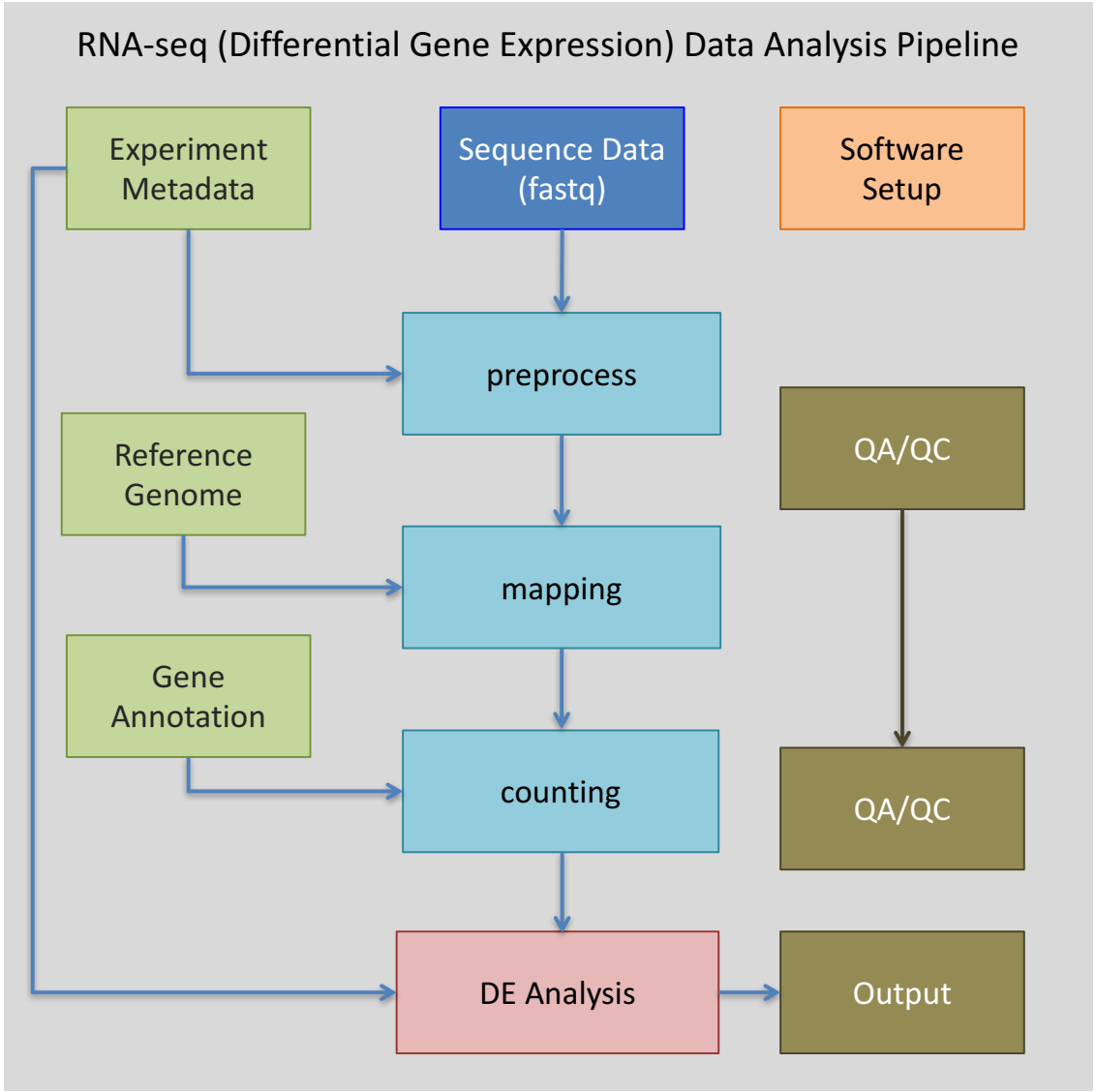
RNA-seq pipeline overview



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Schedule at a glance

- Monday
  - Morning – computing
  - Afternoon –cluster usage
- Tuesday
  - Morning – genome technology talk / ‘data’
  - Afternoon – preprocessing data
- Wednesday
  - Mapping/counting/visualizing
- Thursday
  - Morning – Intro to R
  - Afternoon – Differential expression analysis
- Friday
  - Morning – Enrichment Analysis
  - Afternoon– Figures

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Industry Lunch Sponsors

Tuesday

Wednesday

Thursday

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Additional Lectures – as time is available

- What is Bioinformatics
- Single-cell transcriptomics
- Spatial transcriptomics
- TagSeq vs standard RNAseq
- Bacterial RNA sequencing
- Transcriptome assembly

https://goo.gl/forms/RHPWCVNNZT25xNjG3