BMS 353

Bionformatics for Biomedical Sciences

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Research Software Instructors: Dr Tania Allard, Dr. Mike Croucher

An introduction to the tools we will be using

R vs the old way

R is a free language and environment for statistical computing and graphics

- Very expensive
- Popular with industry

Not surprisingly R is far more popular now!
http://r4stats.com/articles/popularity/

The number of jobs requiring R has increased too!

Packages

These save time by using other people's code

- Comprehensive R archive Network (CRAN)
  9662 packages (November 2016)
  https://cran.r-project.org
- Bioconductor **1211** packages (November 2016)
  http://bioconductor.org/

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Jupyter notebooks

Currently in use at

Google | Microsoft | IBM | Bloomberg | O'REILLY

ANACONDA. | rackspace. the #1 managed cloud company | SOUNDCLOUD | Quantopian | NetApp

software carpentry | hhmi janelia Research Campus | ⟨CODE NEURO⟩ | N-Site LLC | COCALC

BRYN MAWR COLLEGE | CAL POLY SAN LUIS OBISPO | Berkeley UNIVERSITY OF CALIFORNIA | The University Of Sheffield. | THE GEORGE WASHINGTON UNIVERSITY WASHINGTON, DC

CLEMSON UNIVERSITY | MICHIGAN STATE UNIVERSITY | Northwestern University | NYU | NASA

AYASDI | The Data Incubator

Combine live computer code, data, tetx, and mathematics in an interactive document.

Academic papers only gve a description of your analyis.

Jupyter notebooks contain both the description and the analysis.

- Collaborative computational mathematics
- All open source environment for running Jupyter notebooks (and others) in the cloud
- Dedicated Virtual Machine for this course on the Google Cloud Platform
- As powerful as a node on the Sheffield University Supercomputer: Iceberg

Log into CoCalc

https://cocalc.com
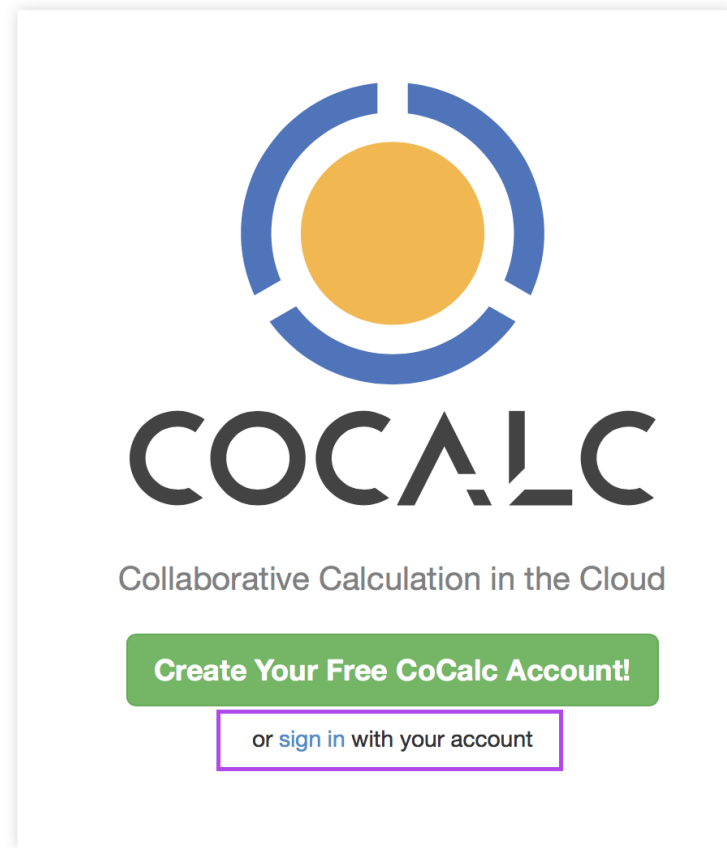
Handy tips for the notebooks

Ctrl/Cmd + y changes the cell to code mode

Ctrl/Cmd + m changes cell to markdown

Shift + Enter evaluates the cell

To add Latex in a markdown cell make sure to enclose in $$ or $

Also, we put together a **mini** CoCal tutorial that you can check at
https://tutorial.cocalc.com/students/