Data Carpentry July 2015
CSE/HPCBio Data Carpentry Workshop

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Day 1 - Intro to R and Bioconductor

Date: July 13, 2015, 9 am – 4 pm
Instructors: Jenny Drnevich (HPCBio), Jessica Kirkpatrick (HPCBio), Neal Davis (CSE)
Location: 607 IGB

Workshop Materials:

- Materials for Day 1
- R Installation guide
- Continued Use of R and Bioconductor guide
- R swirl guide
- Understanding R code cheat sheet
- CSAMA2015 Labs - Day 1
- Morning video
- Afternoon video

Additional Resources:

Why learn R and Bioconductor:

- Nature Toolbox: Adventures with R
- Why you should learn R first for data science

Day 2 - Intro to Linux & Cluster Usage; Data Management

Date: July 14, 2015, 9 am – 4:30 pm
Instructors: Jenny Drnevich (HPCBio), Jessica Kirkpatrick (HPCBio), Neal Davis (CSE)
Location: 607 IGB

Linux Materials:

- Presentation
- Linux cheat sheet
- Getting on a UNIX-based terminal
- Linux / R comparison

Git Materials/Resources:

- Data management github repository
- Git Tutorial
- Git cheat sheet

Additional Linux Resources:

- Beginner Linux - self-guided tutorials for extra practice
  - Tutorial from the book UNIX and Perl to the RESCUE!
  - Parts 1 and 2 cover UNIX
  - http://korflab.ucdavis.edu/Unix_and_Perl/current.html#part2
- Orchestrating high-throughput genomic analysis with Bioconductor

How to learn R:

- The R manuals
- swirl interactive lessons (see R homework above for guide on how to get started)
- UIUC Intro to R tutorial
- Jared Knowles' R Bootcamp
- IDRE, UCLA: Resources to help you learn and use R
- Software Carpentry's Programming with R
- John Hopkins University's MOOCs on Coursera.org:
  - The Data Scientist's Toolbox
  - R programming
- Code School: Try R (warning: free but must register; they send a lot of spam e-mails)
- Thomas Girke's R & Bioconductor Manual
- Learning Statistics with R
- R reference card (good to print out)
- Writing an R package from scratch (intermediate R users)
- RStudio's cheatsheets and online learning resources

R blogs:

- R-bloggers
- hipsteR
- RStudio blog
- R/Bioconductor blog by Sean Davis

- SIB tutorial
  - If it asks you to log in, just log in as a “guest user”
  - Click on "UNIX elearning module" at the bottom to get started
- University of Surrey tutorial
  - http://www.ee.surrey.ac.uk/Teaching/Unix/
- Ryan's Tutorials
  - http://ryanstutorials.net/linuxtutorial/

- Linux Books
  - UNIX and Perl to the RESCUE! by Keith Bradnam & Ian Knorf
  - Developing Bioinformatics Computer Skills by Cynthia Gibas & Per Jambeck
  - Linux Pocket Guide by Daniel J. Barrett
  - Beginning Shell Scripting by Eric Foster-Johnson, John C. Welch, & Micah Anderson
  - Learning the bash Shell by Cameron Newham
  - bash Cookbook by Carl Albing, JP Vossen, & Cameron Newham

- Linux-related Software
  - PuTTY: Allows remote access from a Windows computer to a Linux based terminal.
    - http://www.putty.org/
  - Mac already has a UNIX-based terminal pre-installed. You can find it in Applications -> Utilities -> Terminal

- Cluster Resources
  - Biocluster help page
  - Campus cluster help page
  - How to submit a cluster job
  - qsub script generator