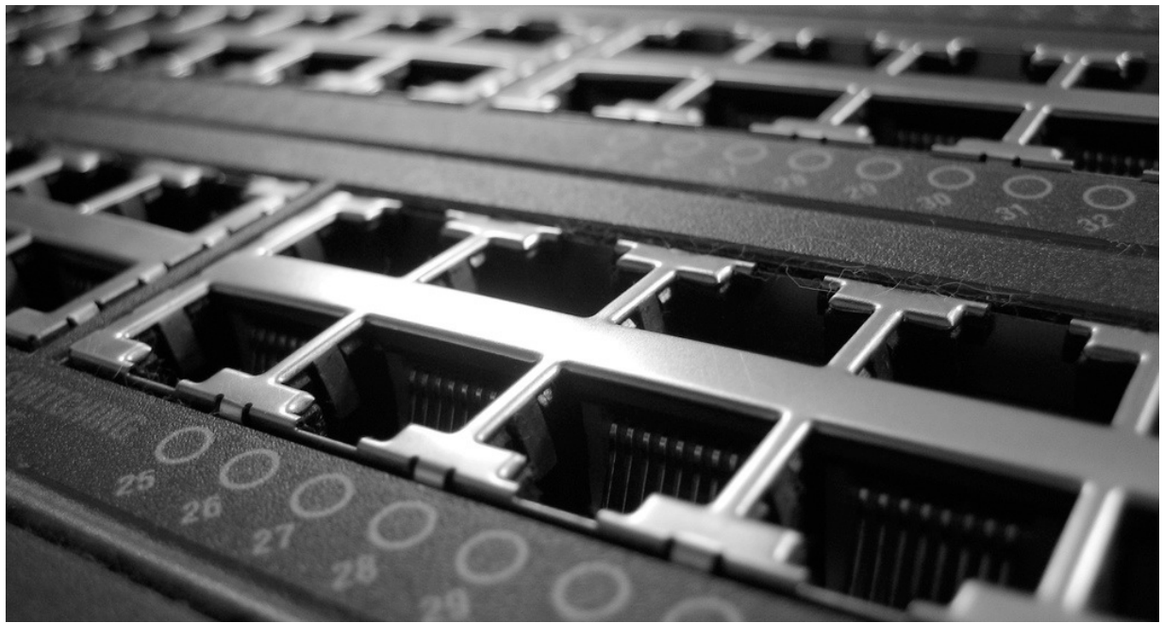

Current Topics in Bioinformatics

presented by the

Harvard Chan Bioinformatics Core

Workshop materials:

https://hbctraining.github.io/Training-modules/README.html

HBC training team: hbctraining@hsph.harvard.edu

HBC consulting: bioinformatics@hsph.harvard.edu

HARVARD T.H. CHAN SCHOOL OF PUBLIC HEALTH

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Training

- Introduction to **command line** (Unix) and **high-performance computing**
- **Introductory R** and **differential gene expression** analysis
- **In-depth course**: Unix & R, RNA-Seq, ChIP-Seq, and variant calling
- Monthly, short workshops on various bioinformatics topics

Consulting

- **Transcriptomics:** RNA-seq, small RNA-seq, scRNA-Seq
- **Epigenetics:** ChIP-seq, genome-wide methylation, ATAC-Seq
- **DNA Variation:** WGS, resequencing, exome-seq and CNV studies
- **Functional enrichment** analysis
- **Exp. design help** & **grant support**

http://bioinformatics.sph.harvard.edu/

Introduction to UNIX/shell

Harvard Chan Bioinformatics Core (HBC)

What is UNIX?

- Unix is an operating system
- It was originally developed at Bell labs in the late 60s for programmers
- Easily coordinates the use and sharing of a computer's (or a system's) resources and allows multi-user capacity, among other features

Why UNIX?

- Unix is **stable**, **efficient** and **powerful**
- It is very widely used
- Can easily handle complex tasks on large datasets
- Repetitive tasks can be very fast and very easy

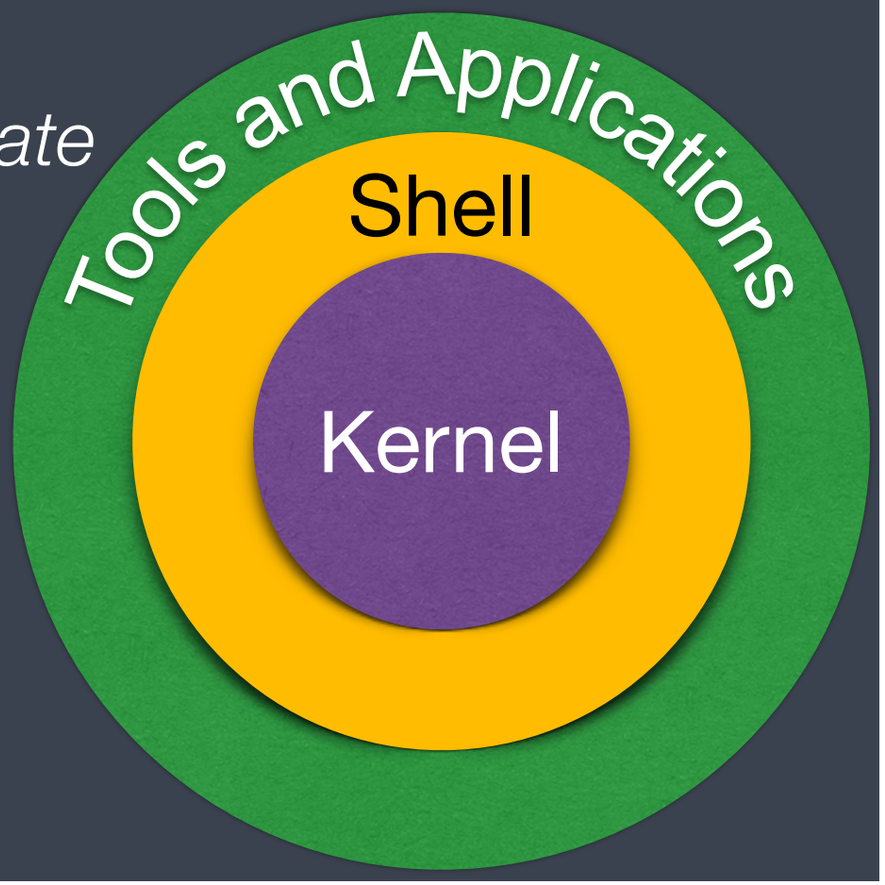
Bioinformatics:

- A large proportion of NGS-analysis tools are created for Unix
- Computational resources (e.g. clusters) that can handle large datasets require a working knowledge of Unix

Components

The Unix system is functionally organized at three levels:

- The kernel, which schedules tasks and manages storage: the brain of the system
- The shell, *an interpreter that helps translate our input into computer language*
- Utilities, tools and applications



The “shell”

- The shell (interpreter) is independent of the operating system, but essential
- Dozens of shells have been developed throughout UNIX history
- “Bourne shell,” named for its inventor, Steven Bourne, was the first major shell
- The most commonly used shell is **bash**; bash stands for “**b**ourne **a**gain **sh**ell”

Linux

- Linux is a free, open-source operating system based on Unix
- It has the same components as the original, but the open source community is involved in active development of various distinct distributions of Linux

Let’s get started…

https://hbctraining.github.io/Training-modules/Intro_shell/

Exit Survey

http://tinyurl.com/hbc-modules