# BIOinformatics Working Group

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3 April 2019

# Objectives

1. Next-Generation technologies
2. Linux terminology
3. Best practices
4. Linux basics
5. Github

# Quick Quiz

**1. _____ command is used to remove a directory.**

- **a. rdir**
- **b. remove**
- **c. rd**
- **d. rmdir**

**2. _____ command is used to list contents of a directory.**

- **a. tar**
- **b. ls**
- **c. dir**
- **d. lp**

**3. _____ command is used to grab specific strings in a file.**

- **a. grep**
- **b. grab**
- **c. less**
- **d. head**

**4. _____ command is used to see columns in a file.**

- **a. awk**
- **b. cut**
- **c. sort**
- **d. a and b**

**5. `#!/bin/sh` is called what?**

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   d. a and b

5. `#!/bin/sh` is called what?

sha-bang, hashbang, pound-bang

# NGS technologies

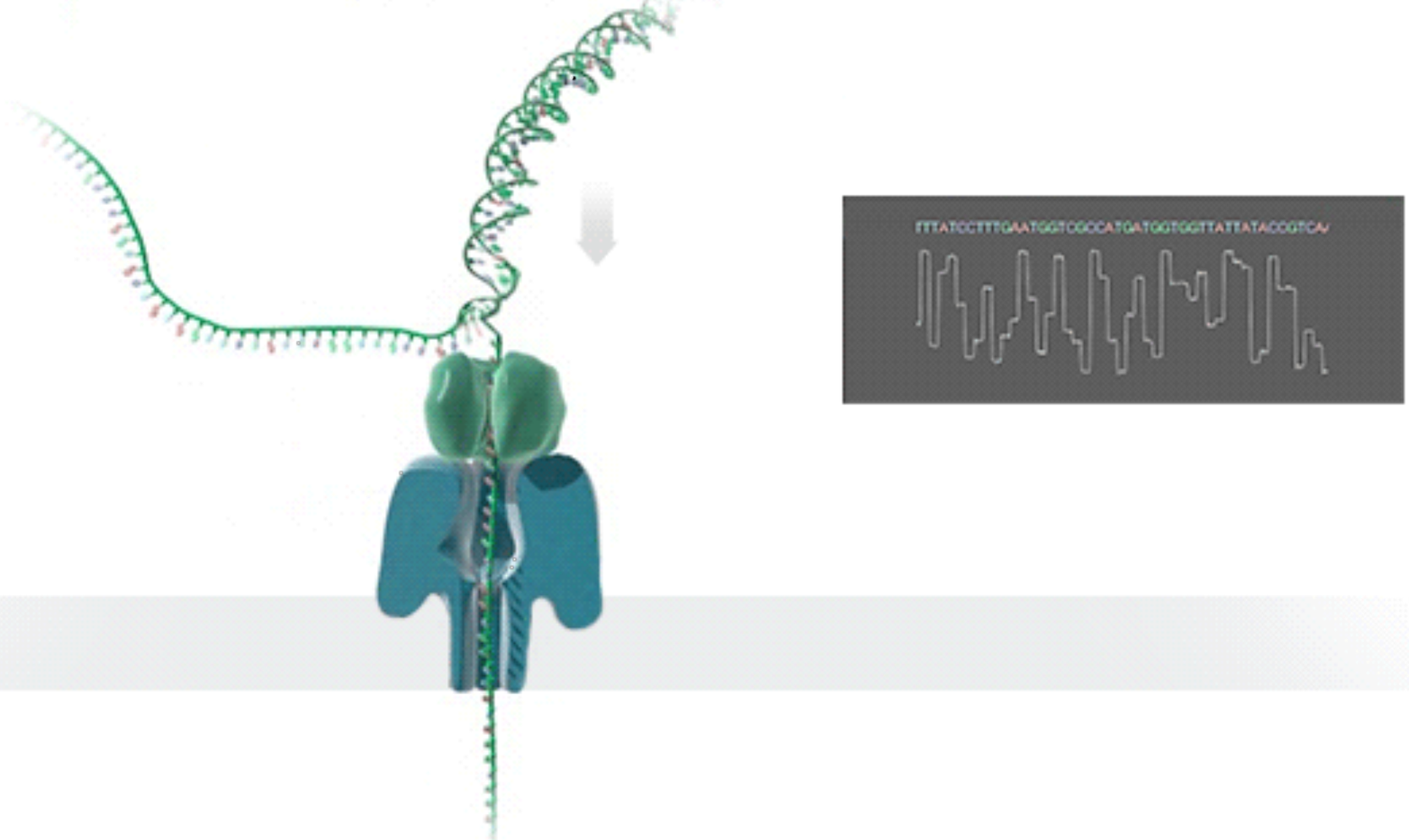
PACBIO®

illumina®

- **Single Molecule Real Time (SMRT) technology**
- **35,000 - 70,000 good reads cell$^{-1}$**
- **~11% error rate (as of 2013)**
- **Read length >45 kb and >190 kb**
- **More info: https://www.pacb.com/smrt-science/smrt-sequencing/**

- **Most common**
- **millions - billions of reads lane$^{-1}$**
- **Low error rate**
- **Average read length ~300 bp**
- **More info: https://www.illumina.com/techniques.html**

- **USB device**
- **Long reads (e.g., 1 mbp)**
- **High error rate (~5-15%)**



- **USB device**
- **Long reads (e.g., 1 mbp)**
- **High error rate (~5-15%)**
- **More info: https://nanoporetech.com/how-it-works**

# Key Linux Terms

- **Linux - a type of operating system**
- **Terminal - a place where you type input and receive output**
- **Shell - the program that interprets what you type in the terminal**
- **Bash - a type of shell**
- **Root - *the* top level directory (denoted by /)**
- **Root - the person with admin privileges**
- **Permissions - describe who can do what to files and directories**

# Best Practices

Post your code on Github

Use a text editor to organize commands

Use a consistent directory structure

Case MaTTerS

Avoid spaces

# Command Line Time