

WET LAB AND COMPUTATIONAL BIOLOGY/DATA SCIENCE (loosely grouped by function)

Addgene has a lot of online resources for learning the basics of molecular cloning techniques:

[Blog](#) (Plasmid 101, CRISPR, fluorescent proteins...)

[Molecular biology basics](#) for cloning

[Protocols](#) and [video protocols](#)

[Science guides](#)

[eBooks](#) to download: Plasmids 101, fluorescent proteins, CRISPR, viral vectors

[Protocols YouTube channel](#) for molecular biology/cell culture/microbiology

[Intro to the Lab Bench](#) short videos

[Lab tips YouTube channel](#)

[Free molecular biology tools](#): 2020 blog post with links for DNA sequence analysis, plasmid mapping, primer design, calculators, etc

[ASM Biosafety Guidelines for Teaching Labs](#)

[At The Bench](#) by Kathy Barker free pdf download of the 2020

[BitesizeBio](#) research articles on biochemistry, molecular biology, cell biology, genomics, etc

[Software and online tools](#)

[Techniques articles](#)

[Webinars](#)

[Integrated DNA Technologies](#) (IDT) nucleic acid synthesis company

[Biotech basics](#) overview of common lab techniques and applications

[Educational videos](#) (genome editing, NGS, functional genomics, gen mol bio, etc)

[OligoAnalyzer](#) requires free account, my fave primer analyzer tool

[Technical reports](#) comprehensive discussion of nucleic acids properties, calculations, strategies, techniques, and applications

[Tools](#): calculators, design tools, etc

[User guides and protocols](#) (DNA, RNA, qPCR, PCR, CRISPR editing, NGS etc)

[Community blog](#)

[Laboratory techniques and methods to improve your experimental skills](#) (chemistry focus, definitely read the rookie mistake section!)

[Learn Genetics](#) modules from University of Utah

[Molecular Cloning](#) by Sambrook and Russell, 3 vol set for free download

[The importance of stupidity in scientific research](#) (J. Cell Science, 2008, IMO a very important viewpoint)

[Virtual Lab](#) (DNA extraction, gel electrophoresis, flow cytometry, PCR, DNA microarray) from University of Utah

[What experiment to do next infographic](#), Avasthi lab and iBiology

Online Bioinformatics and Data Analysis tools

[ExpASY](#) Bioinformatics Resource Portal, tons of bioinformatic resources here

[Motif Search](#) online tool to search for protein motifs

[NCI Online Data Analysis Tools](#)

[New England Biolabs Interactive Tools](#) – Molecular biology, genome editing, and synthetic biology tools

[Online analysis tools for molecular biologists](#) (created by Dr. Andrew Kropinski, University of Guelph)

[Primer3web](#) web-based primer design

[Protocols.io](#) online repository to create or search for protocols and gives a doi for publication

[Protocol Online](#) protocols database for molecular biologists

[Proteomics technologies for protein interactions](#) Trends in Biochemical Sciences May 2020

[Alternate Summer Experiences for Undergrads](#) during COVID (ASM 2020)

Programming/coding/comp bio

CCSB: Center for Computational Structural Biology at Scripps Institute

[Learn molecular docking with Autodock tutorials](#)

[CellPAINT](#) Digital illustration of images from atoms to molecules

[CellPAINT 2-D tutorial](#)

[Resources available from NIAID's Bioinformatics and Comp Science Branch](#) (BCSB)

Includes: Gen. Bioinformatics, NGS, Structural Biology, Scientific Programming, Systems Biology, 3D Printing

[Link to all NIH/NIAID bioinformatics applications](#)

[Videos made by BCSB 2020-2021](#)

[NIAID Bioinformatics Training](#) – Bioinformatics Training Webinars

[Learning bioinformatics at home](#) from Harvard Informatics Group

readme.md has lots of links for learning Unix, R, python, etc and links to eBooks

[Top 43 programming languages: when and how to use them](#) (post from Oct 2018)

[Karl Broman](#) (JHU, UW-Madison) Systems Genetics/Biostats [courses](#) and [tutorials](#) (includes R, links to ruby, python tutorials)

[NSA handbook for learning Python](#) (FOIA 108165)

[List of online resources for learning R](#) (learning guides, field-specific guides, tips, course notes, and books)

[the-not-so-scary-guide-to-R.com](#) guide to learning R

[Introduction to Data Science](#) by Rafael A. Irizarry (online version for R, RStudio, updated Oct 2019)

[Stackoverflow questions](#) (browse answers/ask questions about programming languages)

[10 great papers for biologists starting out in computational biology](#) (PLoS)

[Microbial 'Omics: an introduction](#)