Molecular and Other Software Tools of Interest (Manish Raizada)

A. Reference Tools

Endnote – software for referencing when writing papers (must purchase)
http://www.endnote.com/
(also at Guelph, check out Reference Manager)

Guelph CCS Software Downloads and Licenses
http://www.uoguelph.ca/ccs/software/index.shtml

Translate websites between languages - BabelFish
http://babelfish.altavista.com/
enter in: http://www.uoguelph.ca (try English to Dutch)

CiteULike – Share, store and organize articles (can upload and organize PDFs)
http://www.citeulike.org/

Delicious – organize your bookmarks online
http://del.icio.us/

Faculty of 1000 – read what great scientists are reading
http://www.f1000biology.com

How to get posters printed at Guelph
http://www.envbio.uoguelph.ca/graphicstudio/
Typically $50-$80
Make as one large Powerpoint slide (4feet x 3feet)

Basic Statistics Online
http://www.statsoft.com/textbook/stbasic.html

Statistics – note that Excel will do very sophisticated stats – search Excel Search Engine
http://www.mathtools.net/Excel/Statistics/

Excel Tutorial on Statistics
http://phoenix.phys.clemson.edu/tutorials/excel/stats.html

(there is freeware for Excel statistics – just search Google for Excel statistics)

Journal Impact Factors
http://www.sciencegateway.org/impact/

Most Cited Researchers (ISI)

http://isihighlycited.com/

Link to Different Publication, Grant and Patent Databases
http://www.lifescilink.org

Off-Campus Web of Science
http://cerberus.lib.uoguelph.ca/login?url=http://portal.isiknowledge.com/portal.cgi?Init=Yes&SID=B32nAMo638E58K6oJeL

B. Molecular Tools

B1. Molecular Sites with Great Links

Pedro's BioMolecular Tools
http://www.public.iastate.edu/~pedro/rt_all.html

BioWeb Pasteur
http://bioweb.pasteur.fr

Molecular toolbox at the European Bioinformatics Institute
http://www.ebi.ac.uk/Tools/

NCBI Tools for Data Mining
http://www.ncbi.nlm.nih.gov/Tools/

Genamics SoftwareSeek
http://genamics.com/software/

ChemDex – Directory of Chemistry
http://www.chemdex.org

B2. Specific Molecular Applications

VectorDesigner Software for creating, labeling, modifying and analyzing vector sequences
https://vectordesigner.invitrogen.com/login.cfm

pDRAW – Free DNA Cloning and Vector Drawing Software (download)
http://www.acaclone.com/

REBASE – Restriction Enzyme Database (take a tour)
http://rebase.neb.com/rebase/rebase.html
type in EcoRI

Obtain a virtual gel of digested bands from your sequence:
http://rebase.neb.com/rebase/rebtools.html
Click on REB Sites, then cut and paste your sequence directly from Genbank:

1 tcgactacct attatacacc tgattatcaa gttaaagaaa ctgacattct tgcagctttt
61 cgtatgactc cacaacctgg agttccgcca gaagaatgtg gagctgctgt tgctgctgaa
121 tcttcaactg gaacatggac aacagtttgg acagatggat taacaagttt agatagttat
181 aaaggacgtt gttatgattt agaaccggta aaaggagaag aaaatcaata tattgcatat
241 gttgcttatc ctattgattt atttgaagaa ggatcggtta ctaatttatt tacatcaatt
301 gttggaaacg tttttggatt taaagcatta cgagctcttc gattagaaga tttacggatt
361 tcaccagctt atgcaaaaac atttcaagga ccacctcatg ggattgaagt agaacgagat
421 aaattaaata aatatggacg tccattatta ggttgtacta ttaaacctaa attaggctta
481 tcagctaaaa attatggacg tgctgtttat gaatgtttaa gaggtggatt agattttact
541 aaagatgatg agaatgtaaa ttctcaa

In REBASE, find all restriction enzymes
http://rebase.neb.com/rebase/rebase.enz.html

Good online lecture on restriction enzymes
http://escience.ws/b572/L5/L5.htm

NetPrimer
http://www.premierbiosoft.com/netprimer/netprlaunch/netprlaunch.html
Analyze your PCR primer for hairprin loops or potential dimers that will interfere with PCR:

AATTCCGGGGTTTTAACCGTCGTAAAAA (Oligo type – sense)
(hit hairpin or dimmer, then All)

Then Click- Oligo Type antisense, and enter in second primer
AAAATTTTCCCAGAGTACGATATTTTT

Hit Analyze, and check Cross Dimerization between primers

Primo – PCR Primer design Tools (ChangBiosci)
http://www.changbioscience.com/primo/

PCR Primer Design and Optimization – Excellent Online Lecture
http://www.mcb.uct.ac.za/pcroptim.htm

Codon Usage Database (very useful when trying to express a transgene)
http://www.kazusa.or.jp/codon/
(type in Arabidopsis thaliana or homo sapiens)

Index of Plant Chromosome Numbers (Missouri Botanical Gardens)
http://mobot.mobot.org/W3T/Search/ipcn.html

Animal Genome Size Database
http://www.genomesize.com
Plant Genome Size (Cot values) Database (Kew Gardens)

http://www.rbgkew.org.uk/cval/homepage.html

WebElements Periodic Table – to remind yourself of basic chemistry
http://www.webelements.com/

B3. Useful Molecular Software Downloads

ProteinExplorer _ free software to view proteins in 3D
http://www.umass.edu/microbio/chime/pe/protexpl/frntdoor.htm
(go to Demo)

ExPASy Expert Protein Analysis System Links: protein structure prediction, threading, making phylogenetic trees, finding protein targeting sequences, finding post-translational modification sequences:
http://www.expasy.org/

STRAP – Structure Alignment Program for Proteins (free download)
For viewing aligned sequences on 3D protein structure
http://www.charite.de/bioinf/strap/

TreeFinder – to build phylogenetic trees (free download)
http://www.treefinder.de/

ArgusLab – molecular modeling, graphics, drug design (free download)
http://www.planaria-software.com/

CHIME – free molecular visualization
http://www.umass.edu/microbio/chime/

RasMol – molecular visualization freeware (download)
http://www.umass.edu/microbio/rasmol/

Atlas of MacroMolecules – molecular molecules (including DNA, carbohydrates in 3D)
http://www.umass.edu/microbio/chime/atlas/atlas.htm

ChemSketch – freeware to draw chemical structures
http://www.acdlabs.com/download/chemsk.html