

Useful Nucleic Acid Chemistry Web Sites

Below is a listing of selected internet resources found to be of particular value by the CPNC editorial board; it is not intended to be a complete listing of all web resources cited in this manual. In addition to the sites listed here, be sure to see the Internet Resources sections at the end of selected units for specialized sites pertaining to the contents of those units.

Nucleic acid structure

Nucleic Acid Database—structural information about nucleic acids

<http://ndbserver.rutgers.edu/NDB/ndb.html>

National Center for Biotechnology (NCBI) database of 3-dimensional macromolecular structures

<http://www.ncbi.nlm.nih.gov/Structure>

Nucleic Acid Nomenclature and Structure—good overview of important structural parameters including the Dickerson movements of bases in sequence-dependent structures (tip, inclination, opening, propeller, buckle, twist, roll, slide, rise, shift, and tilt)

http://www.imb-jena.de/ImgLibDoc/nana/IMAGE_NANA.html#watson

IMB Jena Image Library of Biological Macromolecules—additional data on nucleic acid structure

<http://www.imb-jena.de/IMAGE.html>

Overview of DNA and RNA structure

<http://info.bio.cmu.edu/Courses/BiochemMols/DNA/DNA.html>

Protein Data Bank—includes RNA structures

<http://www.rcsb.org/pdb>

Nomenclature

IUPAC-IUB Commission on Biochemical Nomenclature (CBN) Abbreviations and Symbols for Nucleic Acids, Polynucleotides, and their Constituents—Recommendations 1970

<http://www.chem.qmw.ac.uk/iupac/misc/naabb.html>

IUPAC-IUB Joint Commission on Biochemical Nomenclature (JCBN) Abbreviations and Symbols for the Description of Conformations of Polynucleotide Chains—Recommendations 1982 (Also reproduced in this volume; see *APPENDIX 1C*)

<http://www.chem.qmw.ac.uk/iupac/misc/pnuc1.html>

RNA resources

RNA modification database

<http://medstat.med.utah.edu/RNAmods>

Compilation of tRNA sequences and tRNA genes

<http://www.uni-bayreuth.de/departments/biochemie/trna>

The RNA World—large compilation of RNA resources from the Institute of Molecular Biology at Jena. Includes links to databases and web tools for 3-D structure and sequences, as well as links for RNA viruses and a variety of RNA-related software, books, tutorials, and meetings.

<http://www.imb-jena.de/RNA.html>

The RiboWeb Project—three-dimensional models of the *E. coli* 30S ribosomal subunit and 16S rRNA

<http://www-smi.stanford.edu/projects/helix/ribo3dmodels/index.html>

Ribosomal Database Project

<http://www.cme.msu.edu/RDP/html/index.html>

RNA Secondary Structures—group I introns and 16S and 23S rRNA

<http://pundit.colorado.edu:8080>

RNase P Database

<http://jwbrown.mbio.ncsu.edu/RNaseP/home.html>

Small RNA Database

<http://mbcr.bcm.tmc.edu/smallRNA/smallrna.html>

The RNA Society Homepage

<http://www.pitt.edu/~rna1/>

Nucleic acid informatics

RNA Modeling

<http://uracil.cmc.uab.edu/RNA-Modeling/>

MFOLD WWW server—fold your own sequences on M. Zuker's server, includes resources such as free energy and enthalpy tables for RNA folding

<http://www.ibc.wustl.edu/~zucker/rna/form1.cgi>

RNA thermodynamics software and links

<http://www.ibc.wustl.edu/~zucker/rna/node3.html>

RNADRAW—freeware program for RNA secondary structure calculation and analysis for Microsoft Windows

<http://mango.mef.ki.se/~ole/rnadraw/rnadraw.html>

MacMolecule (MacOS) and PCMolecule (Windows) for viewing pdb files

<http://www.molvent.com>

Miscellaneous

Nucleic Acids Research

<http://www3.oup.co.uk/nar/>

Translational Active Regions Database (TARD)

<http://benpc.bionet.nsc.ru/SRCG/Translation/index.html>

Extinction coefficient calculation for DNA and RNA oligomers

<http://paris.chem.yale.edu/extinct.html>

Glen Research—extensive collection of material for the synthesis of modified oligonucleotides

<http://www.glenres.com/>

Oligonucleotide Calculator— T_m , MW, and OD

<http://www.embl-heidelberg.de/~toldo/JaMBW/3/1/9/>

T_m Determination—allows input of salt and oligonucleotide concentration

<http://alces.med.umn.edu/rawtm.html>