



# Sequence and Structure Data Support

- PDB, ASTRAL, entire Swiss-Prot Database
- 100,000+ environmental sequences of Ribosomal RNA
- Sequence Data from BLAST, ALN, FASTA, Nexus, PIR, PHY, ALI
- Growth Temperature Metadata from the Prokaryotic Growth Temperature Database
- Taxonomic Sequence Information from the Comparative RNA Website

# Sequence and Structure Data Support (continued)

## Secondary Structure Prediction via PSIPRED

**Edit Sequence Information**

Sequence Name: Myb.lepra3  
Source Organism: Mycobacterium leprae  
Common Name:  
Sequence Type: RNA  
EC Number:  
EC Description:  
Description: Mycobacterium leprae str. LTB  
Data Sources:  
Lineage: Bacteria, Actinobacteria, Actinobacteridae, Actinomycetales, Corynebacterineae, Mycobacteriaceae  
Notes: I have just Predicted the secondary structure below.  
Secondary Structure: CCCCCCCCCCCCCCHHHHHH, CCCCCCHHCCCCCCHHCCCC, CCCCCCEEHHHCCCCCCCCCE, EEEEECCCCCHHCCCCCCCC  
Buttons: Predict, OK, Cancel

# Sequence Window

So Many Sequences.. So Little Screen Space..

untitled.multiseq

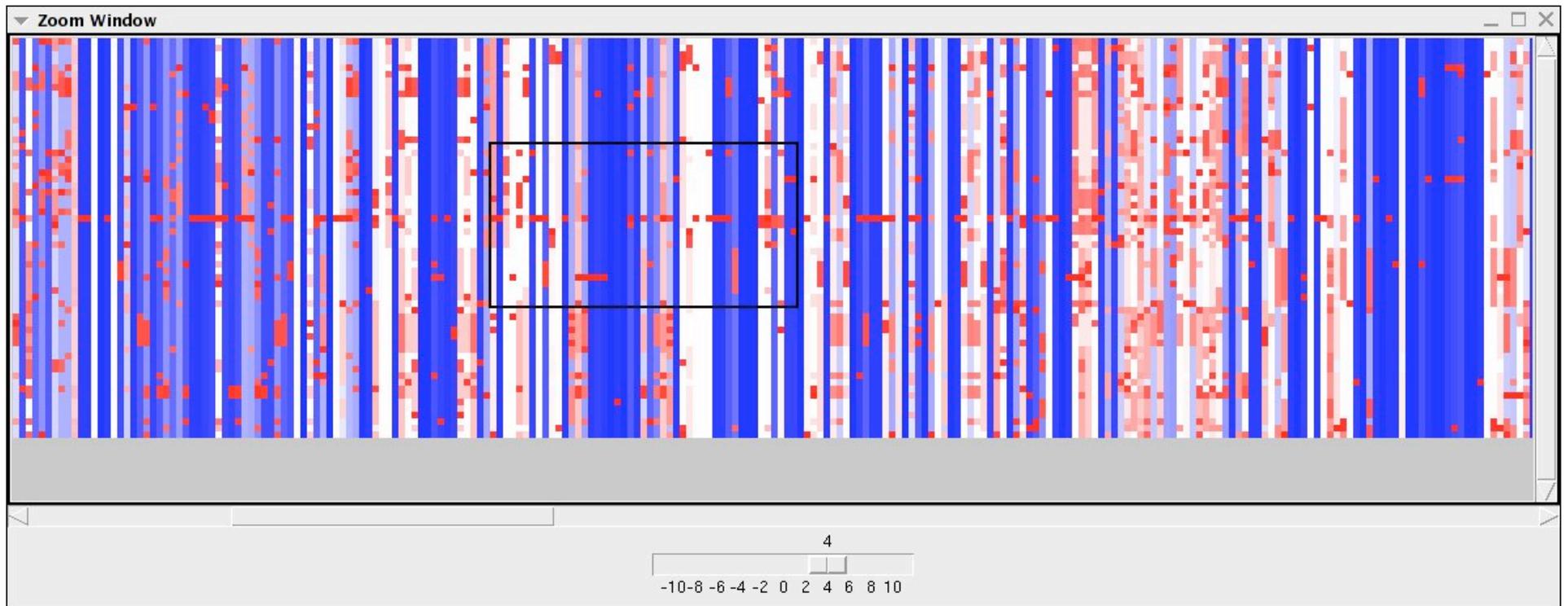
File Edit Search Tools Options View Help

| Sequence Name  | 220 | 230 | 240 | 250 | 260 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|--|-----|-----|-----|-----|-----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| <input type="checkbox"/> C.botulinD <b>rl</b> 235        | U   | C   | G   | G   | C   | A | C | A | U | U | G | G | A | C | U | G | A | G | A | C | A | C | G | U | C | C | A | G | A | C | U | U | A | A | G | C | A | G | U | G | G | G | A |   |   |   |
| <input type="checkbox"/> Pir.marina <b>rl</b> 242        | C   | C   | C   | G   | U   | C | U | C | U | G | G | G | A | C | U | G | A | G | A | U | A | C | G | U | G | C | C | C | A | G | A | C | A | U | A | A | G | C | A | G | U | C | G | A | G | A |
| <input type="checkbox"/> Rps.palus7 <b>rl</b> 215        | U   | C   | A   | G   | C   | C | A | C | A | U | G | G | A | C | U | G | A | G | A | C | A | C | G | G | C | C | C | A | G | A | C | U | U | A | A | G | C | A | G | U | G | G | G | A |   |   |
| <input type="checkbox"/> Zym.mobilis.3 <b>rl</b> 243     | U   | C   | A   | G   | C   | C | A | C | A | U | G | G | A | C | U | G | A | G | A | C | A | C | G | G | C | C | C | A | G | A | C | U | U | A | A | G | C | A | G | U | G | G | G | A |   |   |
| <input type="checkbox"/> T.cuprina <b>rl</b> 239         | C   | C   | A   | G   | C   | C | A | C | A | U | G | G | U | C | U | G | A | G | A | C | A | C | G | G | C | C | C | A | G | A | C | U | U | A | A | G | C | A | G | U | G | G | G | A |   |   |
| <input type="checkbox"/> Nis.gonorr <b>rl</b> 243        | U   | C   | C   | G   | C   | N | A | C | A | U | G | G | A | C | U | G | A | G | A | C | A | C | G | G | C | C | N | A | G | A | C | U | U | A | A | G | C | A | G | U | G | G | G | N | N |   |
| <input type="checkbox"/> Nan.exeden <b>rl</b> 243        | U   | C   | A   | G   | U   | C | A | C | A | U | G | A | A | C | U | G | A | G | A | C | A | C | G | U | U | C | C | A | G | A | C | U | U | A | A | G | C | A | G | U | G | G | G | A |   |   |
| <input type="checkbox"/> Cam.coli83 <b>rl</b> 240        | U   | C   | A   | G   | U   | C | A | C | A | U | G | A | A | C | U | G | A | G | A | C | A | C | G | U | U | C | C | A | G | A | C | U | U | A | A | G | C | A | G | U | A | G | G | A |   |   |
| <input type="checkbox"/> Hlb.nemstr <b>rl</b> 242        | A   | C   | G   | G   | A   | C | A | C | A | U | G | A | A | C | U | G | A | G | A | C | A | C | G | U | U | C | C | A | G | A | C | U | U | A | A | G | C | A | G | U | A | G | G | A |   |   |
| <input type="checkbox"/> Wln.succi2 <b>rl</b> 241        | U   | C   | G   | G   | A   | C | A | C | A | U | G | A | A | C | U | G | A | G | A | C | A | C | G | U | U | C | C | A | G | A | C | U | U | A | A | G | C | A | G | U | A | G | G | A |   |   |
| <input type="checkbox"/> Arm.hydrop <b>rl</b> 242        | U   | C   | A   | G   | C   | C | A | C | A | U | G | A | A | C | U | G | A | G | A | C | A | C | G | U | U | C | C | A | G | A | C | U | U | A | A | G | C | A | G | U | G | G | A |   |   |   |
| <input type="checkbox"/> Bor.garin5 <b>rl</b> 243        | N   | G   | G   | G   | U   | G | G | N | N | C | U | N | G | A | C | U | G | A | G | A | N | A | U | G | A | N | A | C | A | G | N | C | A | C | C | G | G | C | A | G | C | N | A | A | G | A |
| <input type="checkbox"/> Trp.pallidum.rmA <b>rl</b> 242  | C   | C   | G   | G   | A   | C | A | C | A | U | G | G | A | C | U | G | A | G | A | U | A | C | G | G | C | C | C | A | G | A | C | U | U | A | A | G | C | A | G | C | U | A | A | G | A |   |
| <input type="checkbox"/> Fer.island <b>rl</b> 244        | C   | C   | G   | G   | C   | C | A | C | A | A | G | G | G | C | A | C | U | G | A | G | A | C | A | C | G | G | G | C | C | U | A | C | U | U | A | A | G | C | A | G | U | G | G | G | G |   |
| <input type="checkbox"/> Tt.maritima.2.GEN <b>rl</b> 242 | U   | C   | G   | G   | C   | C | A | C | A | A | G | G | G | C | A | C | U | G | A | G | A | C | A | C | G | G | G | C | C | C | A | C | U | U | A | A | G | C | A | G | U | G | G | G | A |   |
| <input type="checkbox"/> D.radiodu2 <b>rl</b> 217        | C   | C   | G   | G   | C   | C | A | C | A | A | G | G | C | A | C | U | G | A | G | A | C | A | C | G | U | U | C | C | A | G | C | U | U | A | A | G | C | A | G | U | U | A | G | A |   |   |
| <input type="checkbox"/> Ap.pernix1 <b>rl</b> 237        | G   | C   | C   | C   | C   | C | A | G | A | U | G | G | C | A | C | U | G | A | G | A | C | A | A | G | G | G | C | C | A | G | G | C | U | A | A | C | C | A | G | C | G | C | G | A |   |   |
| <input type="checkbox"/> Dco.mobili <b>rl</b> 237        | G   | C   | C   | C   | C   | C | A | G | A | U | G | G | C | A | C | U | G | A | G | A | C | A | A | U | G | G | C | C | A | G | G | C | U | A | A | C | C | A | G | C | G | C | G | A |   |   |
| <input type="checkbox"/> Adi.brieri <b>rl</b> 216        | G   | C   | C   | C   | C   | A | G | U | U | U | G | G | C | A | C | U | G | A | G | A | C | A | A | U | G | G | C | C | A | G | G | C | U | A | A | C | C | A | G | C | G | C | G | A |   |   |
| <input type="checkbox"/> Adi.infer2 <b>rl</b> 221        | G   | C   | C   | C   | C   | A | G | U | U | U | G | G | C | A | C | U | G | A | G | A | C | A | A | G | G | C | C | C | A | G | G | C | U | A | A | C | C | A | G | C | G | C | G | A |   |   |
| <input type="checkbox"/> Sul.acald4 <b>rl</b> 237        | G   | C   | C   | N   | C   | C | A | G | U | U | G | G | N | N | N | N | N | A | G | A | C | A | A | G | G | G | C | C | A | G | G | C | U | A | A | C | C | A | G | C | G | C | G | A |   |   |
| <input type="checkbox"/> Sul.solfa6 <b>rl</b> 226        | G   | C   | C   | C   | C   | A | G | U | U | U | G | G | C | A | C | U | G | A | G | A | C | A | A | G | G | G | C | C | A | G | G | C | U | A | A | C | C | A | G | C | G | C | G | A |   |   |
| <input type="checkbox"/> Tmf.penden <b>rl</b> 237        | G   | C   | C   | C   | C   | G | A | G | A | U | G | G | C | A | C | U | G | A | G | A | C | A | A | G | G | G | C | C | A | G | G | C | U | A | A | C | C | A | G | G | C | G | C | G | A |   |
| <input type="checkbox"/> Thp.tenax <b>rl</b> 237         | G   | C   | C   | C   | C   | G | A | G | A | U | G | G | C | A | C | U | G | A | G | A | C | A | A | G | G | G | C | C | A | G | G | C | U | A | A | G | C | A | G | C | G | C | G | A |   |   |
| <input type="checkbox"/> C.symbiosum.A <b>rl</b> 239     | G   | C   | C   | C   | G   | G | A | G | A | U | G | G | U | A | C | U | G | A | G | A | C | A | C | G | A | C | C | A | G | G | C | U | A | A | G | C | A | G | C | G | A | G | A |   |   |   |
| <input type="checkbox"/> Arq.fulgidus <b>rl</b> 237      | G   | C   | C   | C   | G   | A | G | A | U | G | G | A | C | C | U | G | A | G | A | C | A | C | G | G | G | U | C | C | A | G | G | C | U | A | A | G | C | A | G | C | G | C | G | A |   |   |

Percent GC Content: 55.3389

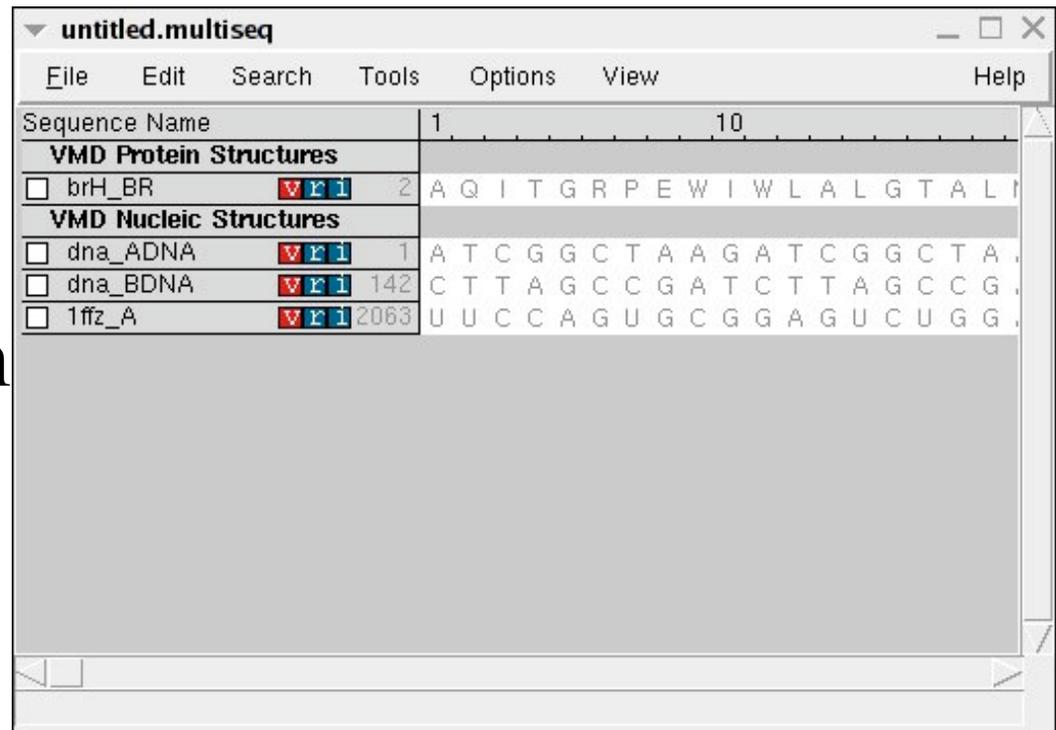
# Zoom Window

Quickly find regions of interest



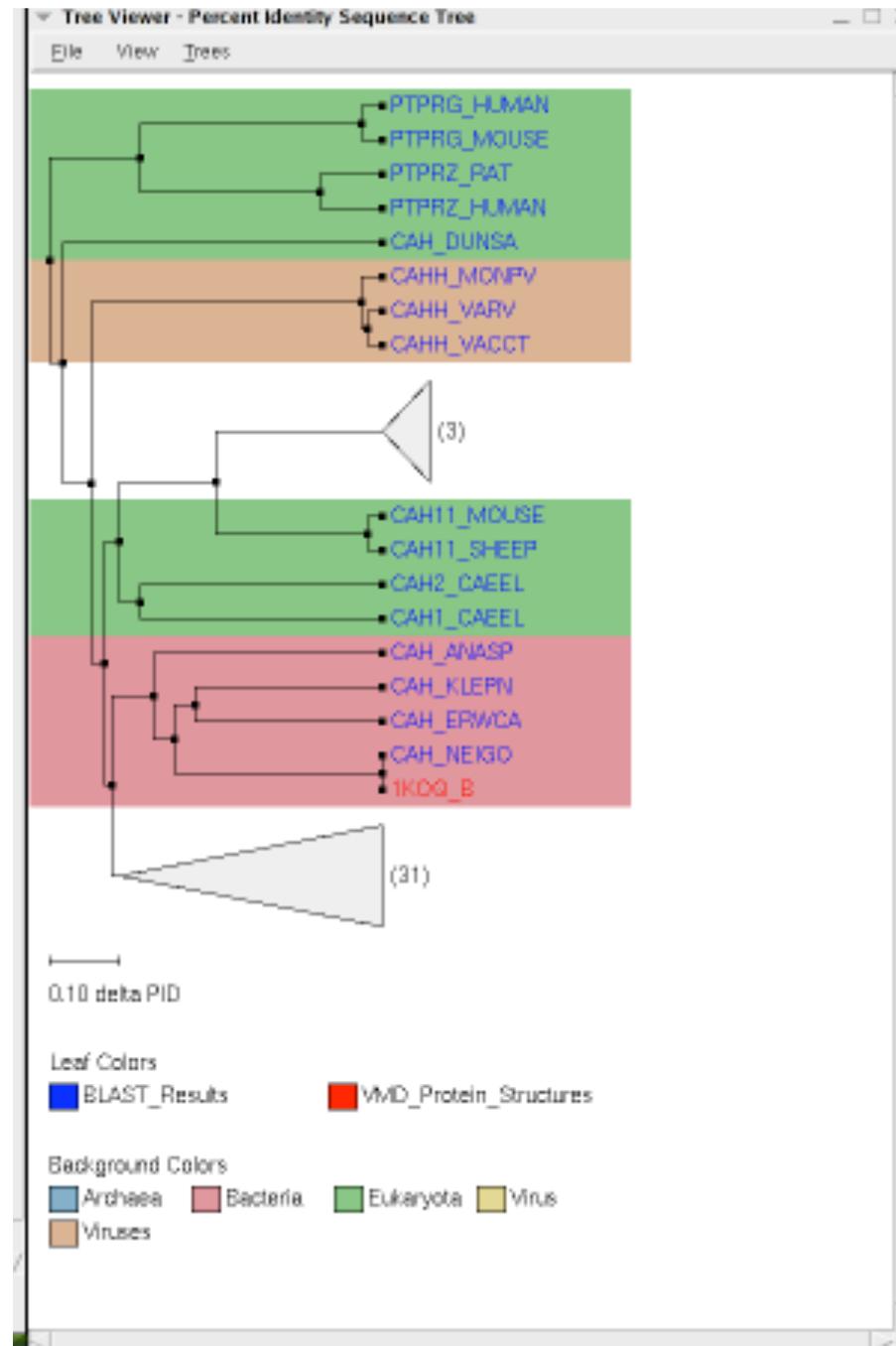
# Nucleic Acids

- Automatic differentiation between DNA/RNA/Protein sequences
- QR now works with nucleic acid structures and sequences (as well as protein structures and sequences)



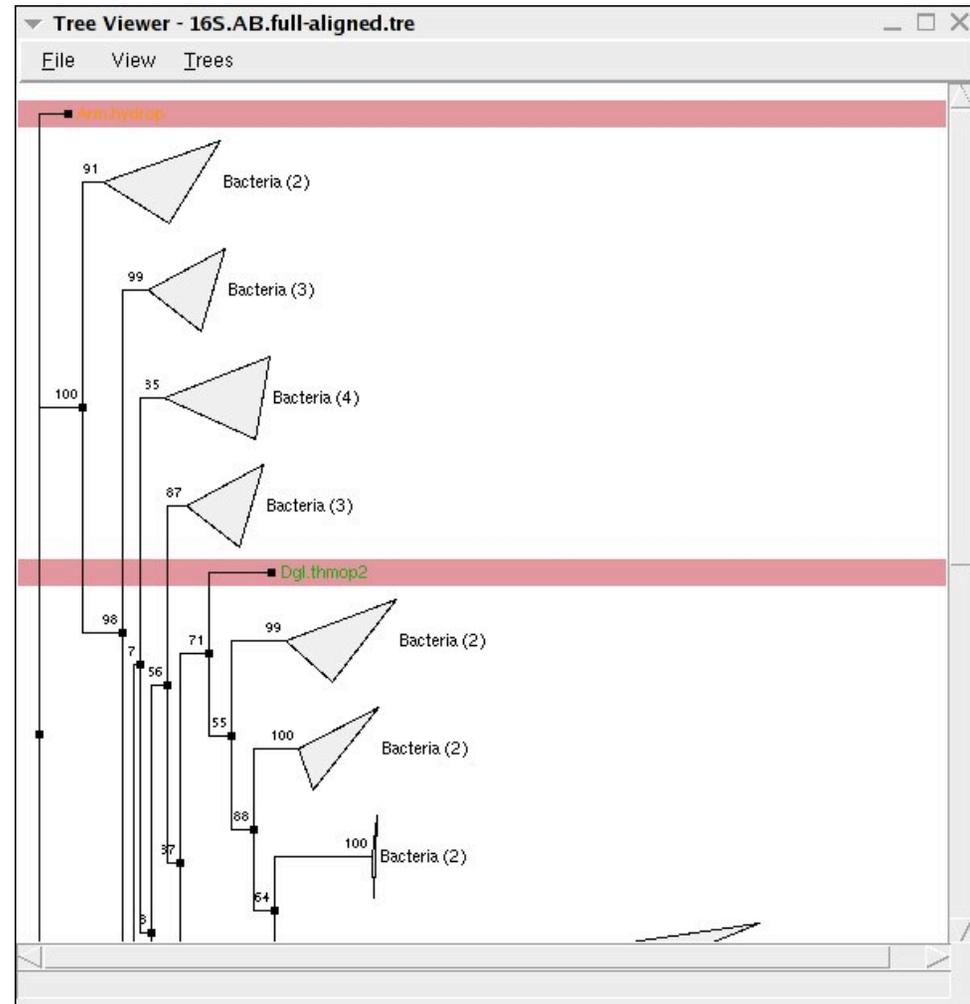
# Phylogenetic Trees

- MultiSeq tool to show evolutionary relationship among sequences



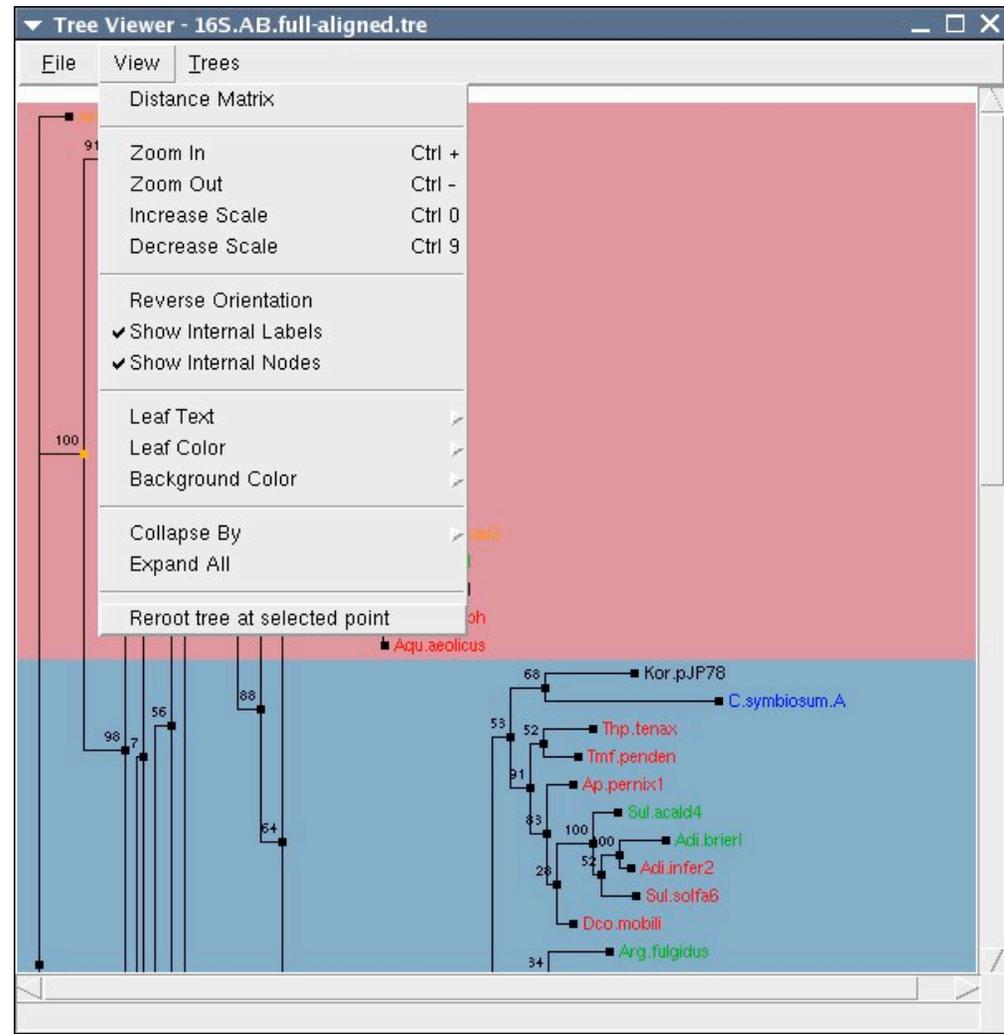
# Phylogenetic Trees

- Automatic collapsibility by taxonomy level, Temp. class, MultiSeq group



# Phylogenetic Trees

- Ability to “reroot” tree at a point of your choosing
- Distance-based tree from only well-aligned columns



# Advanced Feature - Scripting

- Use MultiSeq features in your own scripts and plugins
  - Shannon entropy/mutual information for sequence alignment
  - Combining alignments based on reference alignment
  - Structural Contact Information (Q)
  - Phylogenetic Trees - manipulations, balance