

Making Gene Trees in Mega

What's a tree?

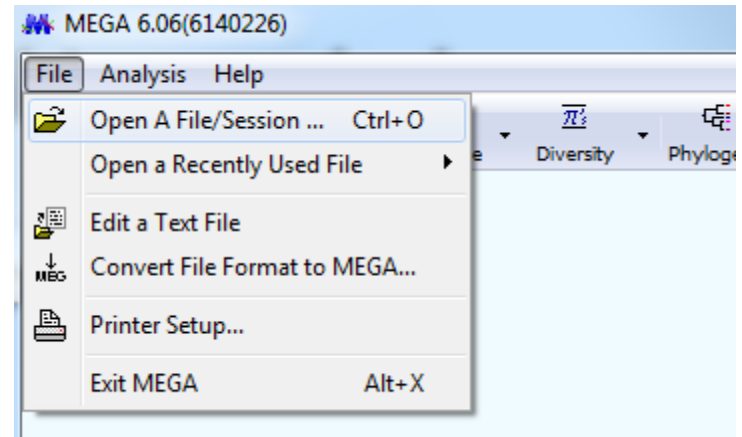
Depends on the method and data

Phylogenetic tree = groups are based on morphological or genetic data, implies **evolutionary** relationships

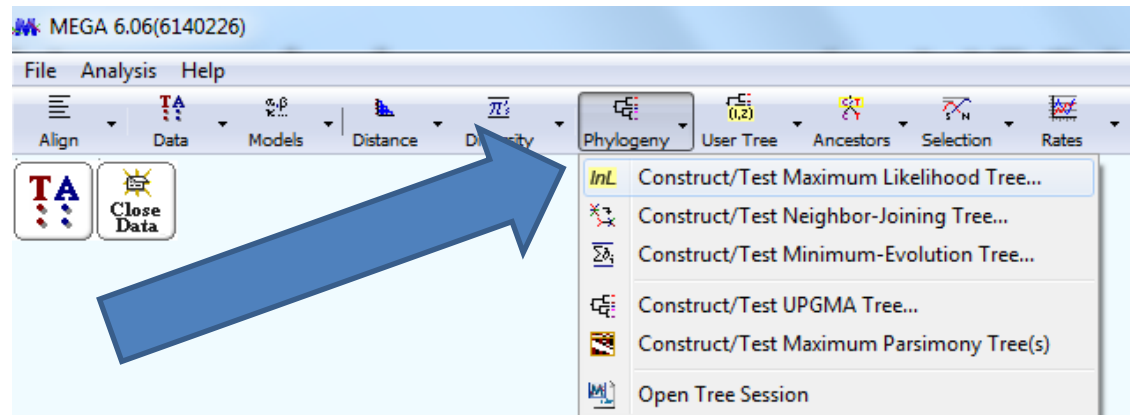
Cladogram tree = groups are based on similarities, not necessarily on evolutionary relationships

Making a cladogram tree in MEGA

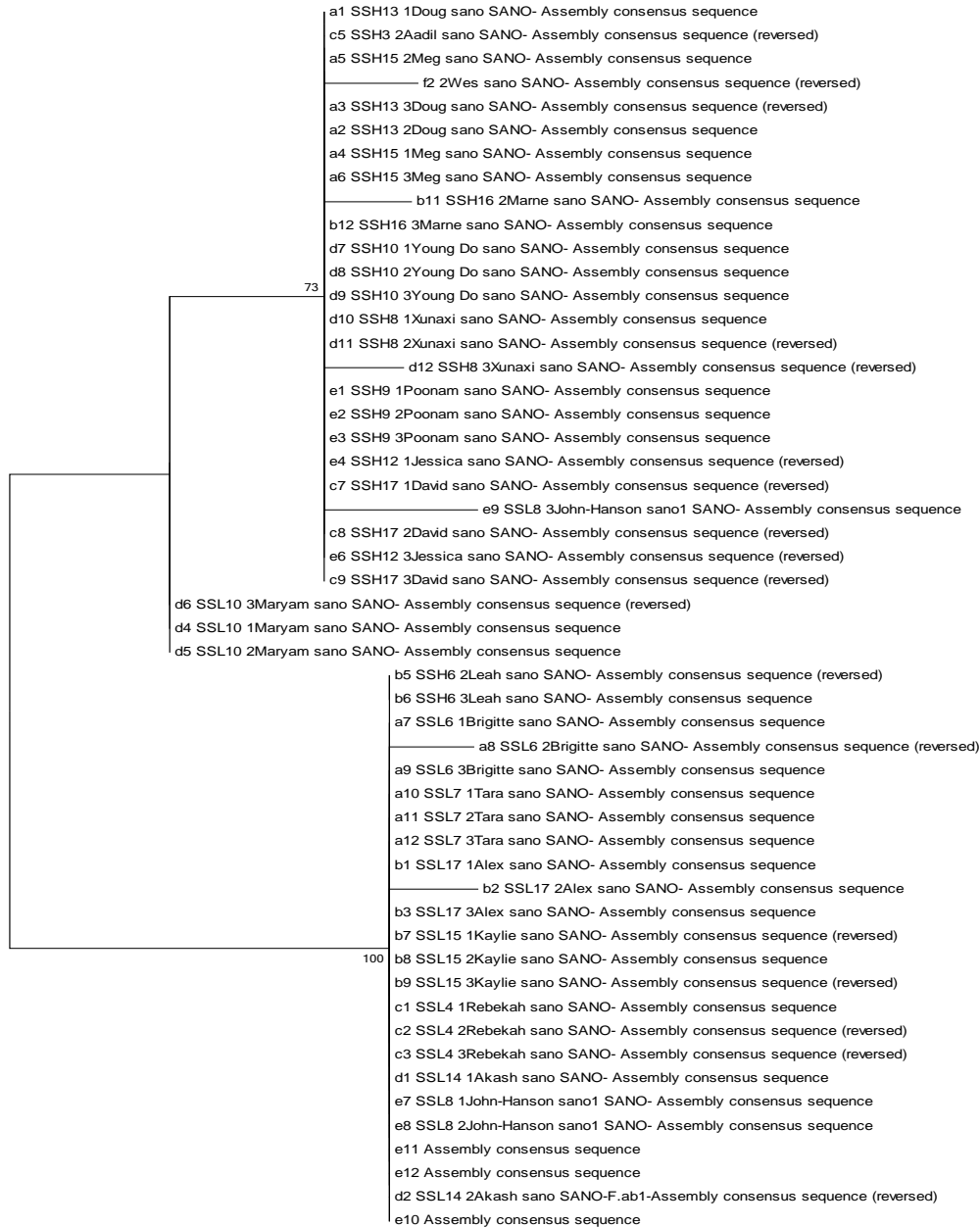
1) Open the alignment file



2) Phylogeny -> Construct/Test Max Likelihood Tree -> Yes -> Compute



Example: *sano* tree



0.002

Example: *sano* tree

Mostly SS High Lines

```

a1 SSH13 1Doug sano SANO- Assembly consensus sequence
c5 SSH3 2Aadil sano SANO- Assembly consensus sequence (reversed)
a5 SSH15 2Meg sano SANO- Assembly consensus sequence
      |2 2Wes sano SANO- Assembly consensus sequence (reversed)
a3 SSH13 3Doug sano SANO- Assembly consensus sequence (reversed)
a2 SSH13 2Doug sano SANO- Assembly consensus sequence
a4 SSH15 1Meg sano SANO- Assembly consensus sequence
a6 SSH15 3Meg sano SANO- Assembly consensus sequence
      |b11 SSH16 2Marne sano SANO- Assembly consensus sequence
b12 SSH16 3Marne sano SANO- Assembly consensus sequence
d7 SSH10 1Young Do sano SANO- Assembly consensus sequence
d8 SSH10 2Young Do sano SANO- Assembly consensus sequence
d9 SSH10 3Young Do sano SANO- Assembly consensus sequence
d10 SSH8 1Xunaxi sano SANO- Assembly consensus sequence
d11 SSH8 2Xunaxi sano SANO- Assembly consensus sequence (reversed)
      |d12 SSH8 3Xunaxi sano SANO- Assembly consensus sequence (reversed)
e1 SSH9 1Poonam sano SANO- Assembly consensus sequence
e2 SSH9 2Poonam sano SANO- Assembly consensus sequence
e3 SSH9 3Poonam sano SANO- Assembly consensus sequence
e4 SSH12 1Jessica sano SANO- Assembly consensus sequence (reversed)
c7 SSH17 1David sano SANO- Assembly consensus sequence (reversed)
      |★ e9 SSL8 3John-Hanson sano1 SANO- Assembly consensus sequence
c8 SSH17 2David sano SANO- Assembly consensus sequence (reversed)
e6 SSH12 3Jessica sano SANO- Assembly consensus sequence (reversed)
c9 SSH17 3David sano SANO- Assembly consensus sequence (reversed)

```

```

d6 SSL10 3Maryam sano SANO- Assembly consensus sequence (reversed)
d4 SSL10 1Maryam sano SANO- Assembly consensus sequence
d5 SSL10 2Maryam sano SANO- Assembly consensus sequence

```

} 3 outlier replicates grouping together

Mostly SS Low Lines

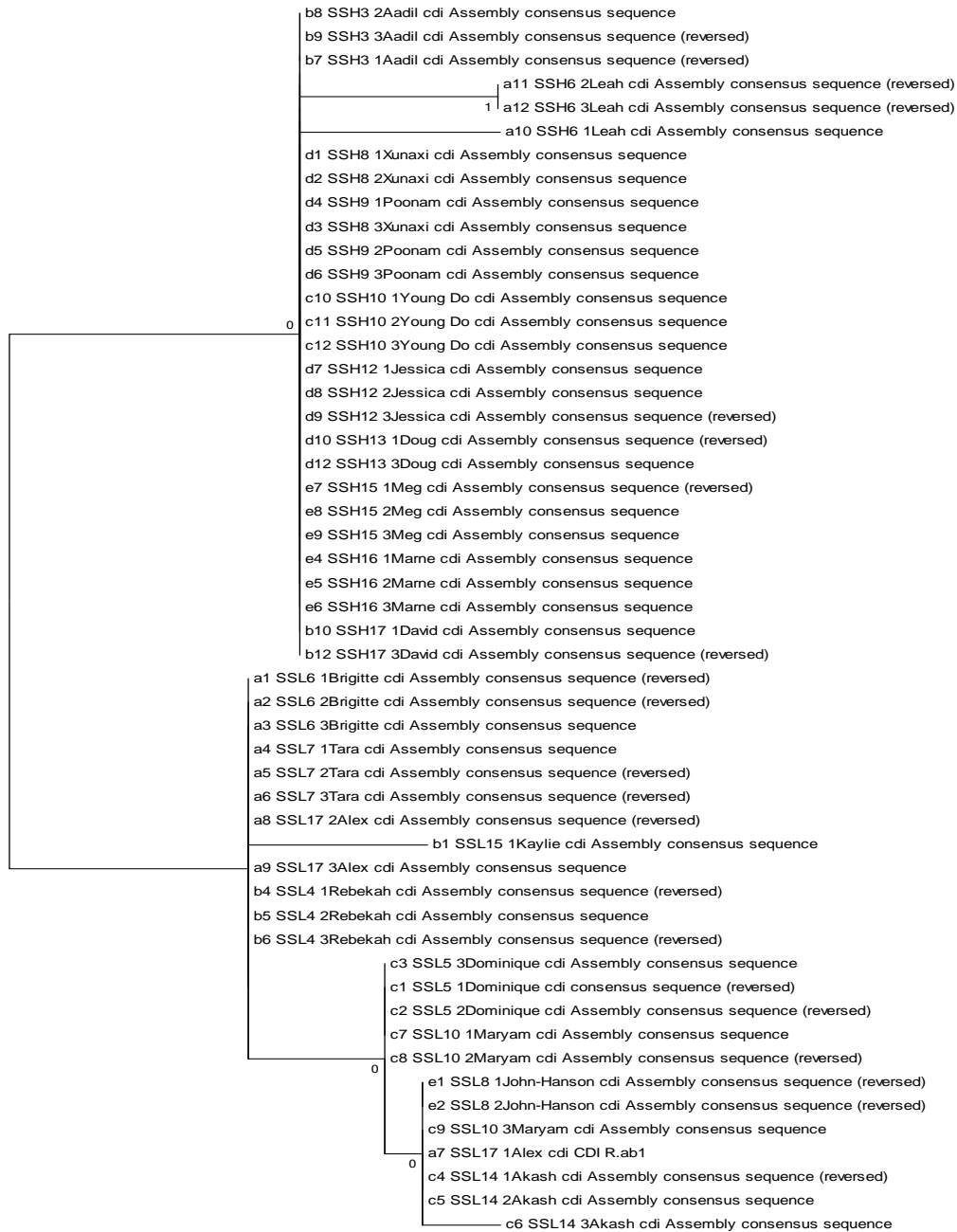
```

★ b5 SSH6 2Leah sano SANO- Assembly consensus sequence (reversed)
★ b6 SSH6 3Leah sano SANO- Assembly consensus sequence
a7 SSL6 1Brigitte sano SANO- Assembly consensus sequence
      |a8 SSL6 2Brigitte sano SANO- Assembly consensus sequence (reversed)
a9 SSL6 3Brigitte sano SANO- Assembly consensus sequence
a10 SSL7 1Tara sano SANO- Assembly consensus sequence
a11 SSL7 2Tara sano SANO- Assembly consensus sequence
a12 SSL7 3Tara sano SANO- Assembly consensus sequence
b1 SSL17 1Alex sano SANO- Assembly consensus sequence
      |b2 SSL17 2Alex sano SANO- Assembly consensus sequence
b3 SSL17 3Alex sano SANO- Assembly consensus sequence
b7 SSL15 1Kaylie sano SANO- Assembly consensus sequence (reversed)
b8 SSL15 2Kaylie sano SANO- Assembly consensus sequence
100 b9 SSL15 3Kaylie sano SANO- Assembly consensus sequence (reversed)
c1 SSL4 1Rebekah sano SANO- Assembly consensus sequence
c2 SSL4 2Rebekah sano SANO- Assembly consensus sequence (reversed)
c3 SSL4 3Rebekah sano SANO- Assembly consensus sequence (reversed)
d1 SSL14 1Akash sano SANO- Assembly consensus sequence
e7 SSL8 1John-Hanson sano1 SANO- Assembly consensus sequence
e8 SSL8 2John-Hanson sano1 SANO- Assembly consensus sequence
e11 Assembly consensus sequence
e12 Assembly consensus sequence
d2 SSL14 2Akash sano SANO-F.ab1-Assembly consensus sequence (reversed)
e10 Assembly consensus sequence

```

0.002

Example: *cdi* tree



Example: *cdi* tree

Mostly SS High Lines

```

b8 SSH3 2Aadil cdi Assembly consensus sequence
b9 SSH3 3Aadil cdi Assembly consensus sequence (reversed)
b7 SSH3 1Aadil cdi Assembly consensus sequence (reversed)
      |
      | a11 SSH6 2Leah cdi Assembly consensus sequence (reversed)
      | 1 a12 SSH6 3Leah cdi Assembly consensus sequence (reversed)
      |--- a10 SSH6 1Leah cdi Assembly consensus sequence
      |
d1 SSH8 1Xunaxi cdi Assembly consensus sequence
d2 SSH8 2Xunaxi cdi Assembly consensus sequence
d4 SSH9 1Poonam cdi Assembly consensus sequence
d3 SSH8 3Xunaxi cdi Assembly consensus sequence
d5 SSH9 2Poonam cdi Assembly consensus sequence
d6 SSH9 3Poonam cdi Assembly consensus sequence
c10 SSH10 1Young Do cdi Assembly consensus sequence
c11 SSH10 2Young Do cdi Assembly consensus sequence
      |
      | 0 c12 SSH10 3Young Do cdi Assembly consensus sequence
      |
d7 SSH12 1Jessica cdi Assembly consensus sequence
d8 SSH12 2Jessica cdi Assembly consensus sequence
d9 SSH12 3Jessica cdi Assembly consensus sequence (reversed)
d10 SSH13 1Doug cdi Assembly consensus sequence (reversed)
d12 SSH13 3Doug cdi Assembly consensus sequence
e7 SSH15 1Meg cdi Assembly consensus sequence (reversed)
e8 SSH15 2Meg cdi Assembly consensus sequence
e9 SSH15 3Meg cdi Assembly consensus sequence
e4 SSH16 1Mame cdi Assembly consensus sequence
e5 SSH16 2Mame cdi Assembly consensus sequence
e6 SSH16 3Mame cdi Assembly consensus sequence
b10 SSH17 1David cdi Assembly consensus sequence
b12 SSH17 3David cdi Assembly consensus sequence (reversed)
    
```

Mostly SS Low Lines

```

a1 SSL6 1Brigitte cdi Assembly consensus sequence (reversed)
a2 SSL6 2Brigitte cdi Assembly consensus sequence (reversed)
a3 SSL6 3Brigitte cdi Assembly consensus sequence
a4 SSL7 1Tara cdi Assembly consensus sequence
a5 SSL7 2Tara cdi Assembly consensus sequence (reversed)
a6 SSL7 3Tara cdi Assembly consensus sequence (reversed)
a8 SSL17 2Alex cdi Assembly consensus sequence (reversed)
      |
      | b1 SSL15 1Kaylie cdi Assembly consensus sequence
      |
a9 SSL17 3Alex cdi Assembly consensus sequence
b4 SSL4 1Rebekah cdi Assembly consensus sequence (reversed)
b5 SSL4 2Rebekah cdi Assembly consensus sequence
b6 SSL4 3Rebekah cdi Assembly consensus sequence (reversed)
      |
      | c3 SSL5 3Dominique cdi Assembly consensus sequence
      | c1 SSL5 1Dominique cdi consensus sequence (reversed)
      | c2 SSL5 2Dominique cdi Assembly consensus sequence (reversed)
      | c7 SSL10 1Maryam cdi Assembly consensus sequence
      | c8 SSL10 2Maryam cdi Assembly consensus sequence (reversed)
      | 0
      | e1 SSL8 1John-Hanson cdi Assembly consensus sequence (reversed)
      | e2 SSL8 2John-Hanson cdi Assembly consensus sequence (reversed)
      | c9 SSL10 3Maryam cdi Assembly consensus sequence
      | 0
      | a7 SSL17 1Alex cdi CDI R.ab1
      | c4 SSL14 1Akash cdi Assembly consensus sequence (reversed)
      | c5 SSL14 2Akash cdi Assembly consensus sequence
      |--- c6 SSL14 3Akash cdi Assembly consensus sequence
    
```