

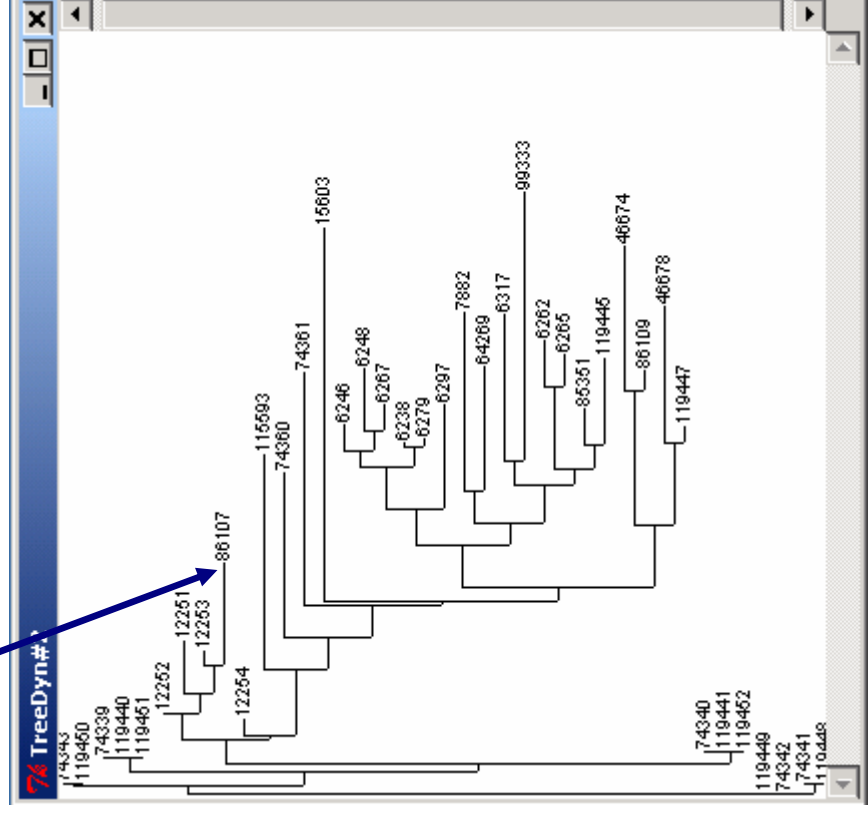
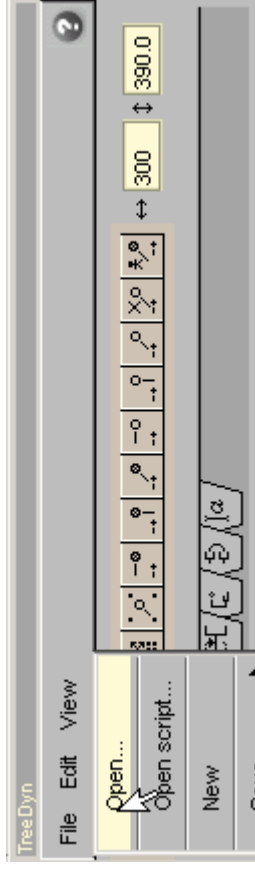
TreeDyn. Hands-on 2

How to use annotation files to label tree leaves

Consider the following phylogenetic tree in newick format :

```
((119448:0,74341:0):0.0007115819,74342:-1.1581898e-05):1.1581913e-05,119449:-1.4551915e-11,(((119452:0,(119441:0,74340:0):0.00090380176,(((119447:0.0011726692,46678:0.0011726692,((119444:0.0093273306):0.0054609589,(86109:0.0013608112,46674:0.0098391883):0.0089982012):0.0042391624,(((119445:0.0058253901,85351:0.0023746099):0.0015950939,(6265:0.0021096054,6262:0.0030903947):0.0055250474):0.0010892266,(99333:0.018204859,6317:0.0098951412):0.0015763311):0.0025864651,(64269:0.0083216215,7882:0.012078379):0.0021890898):0.0014601572,(6297:0.007032779,(16279:0.0004799336,6238:0.00022006637):0.0014288982,((6267:0.0018157574,6248:0.0041842428):0.0012919675,6246:0.0017952262):0.0011331339):0.002863992):0.0023462616):0.0028949073):0.00091945694,15603:0.025137445):0.00029993689,74361:0.01568599):0.0022281231,74360:0.011204003):0.0021720375,115593:0.014562469):0.0044436906,12254:0.0010795421):0.00020617894,(((86107:0.0068870564,12253:-0.00088705641):0.0018728451,12251:0.0035142109):0.0013389966,12252:4.2682015e-07):0.001715794):0.00052913628,(119451:0,(119440:0,74339:0):0.00096611318):0.00088319666,(119450:0,74343:0):0.00012141051):0.00059648033);
```

Using the menu File>Open as before (see below) simply draws the tree, as shown here

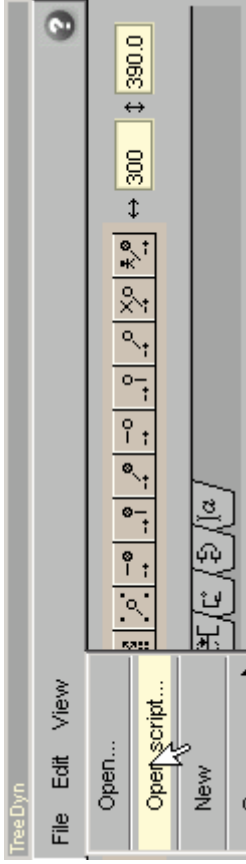


However, if you want to publish your tree, you often need to add more details.

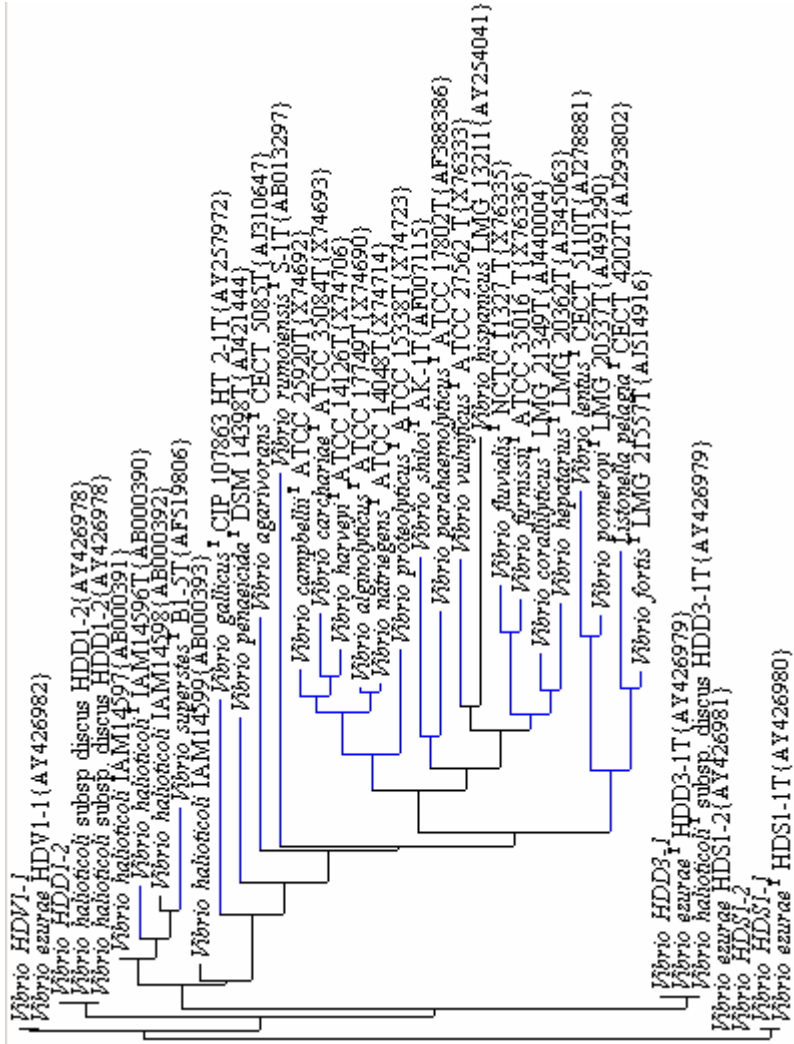
IJSEM is a scientific journal that publish usually at least one tree in each article.

You can automate treedyn to label the tree, ready for publication, as demonstrated in next slide

I have created three files: the newick file, the annotation file and a script file (explained later). The script file is shown below and produces automatically the tree below



```
loadtree D:/Bases/A_facon/treedyn/Vibrio_ezurae.tree
loadlabel D:/Bases/A_facon/treedyn/Vibrio_ezurae.tlf
color blue
operation nodefgcolor
ID EU from Vibrio_ezurae where TypeStrain == I
color black
font {Times 9 italic}
AN LeavesReplace {Vibrio_ezurae {Name}}
font {Times 6 normal}
AN LeavesAdd {Vibrio_ezurae {TypeStrain}} {prefix ""} exponent -3
font {Times 9 normal}
AN LeavesAdd {Vibrio_ezurae {Strain}}
font {Times 8 normal}
AN LeavesAdd {Vibrio_ezurae {Accession}} {prefix "{"} suffix "}"
```



In this hands_on, we will explain

- 1/ how to build an annotation file
- 2/ how to use the annotation file to annotate a tree
- 3/ how to construct a script file

Build an annotation file

Below is an excerpt of an annotation file

Each line must start with a unique identifier, which is identical to one of the leaves labels in the newick file
Then you have a series of key{value} which will be used to annotate the tree.

Keys should contain no space, i.e. if you want to have for example "Type Strain", you should write it either "TypeStrain" or "Type_Strain".

Values can contain several values, their use is not explained in the present document.

In this hands-on we will use the tree and annotation files provided with TreeDyn and contained in `\treedynpack\data\dataSet06`
(`Vibrio_ezurae.tree` and `Vibrio_ezurae.tlf`)

When a key has no value, it can either be absent or in the form "key {}" as shown in the present example.

```
119448 Name {Vibrio ezurae} TypeStrain {T} Strain {HDS1-1T} Accession {AY426980}
74341 Name {Vibrio HDS1-1} TypeStrain {} Strain {} Accession {}
74342 Name {Vibrio HDS1-2} TypeStrain {} Strain {} Accession {}
119449 Name {Vibrio ezurae} TypeStrain {} Strain { HDS1-2} Accession {AY426981}
119452 Name {Vibrio haliotocoli} TypeStrain {T} Strain { subsp. discuss HDD3-1T} Accession {AY426979}
119441 Name {Vibrio ezurae} TypeStrain {T} Strain { HDD3-1T} Accession {AY426979}
74340 Name {Vibrio HDD3-1} TypeStrain {} Strain {} Accession {}
119447 Name {Vibrio fortis} TypeStrain {T} Strain { LMG 21557T} Accession {AJ514916}
46678 Name {Listonella pelagia} TypeStrain {T} Strain { CECT 4202T} Accession {AJ293802}
86109 Name {Vibrio pomeroyi} TypeStrain {T} Strain { LMG 20537T} Accession {AJ491290}
```

Load tree, root, swap and resize

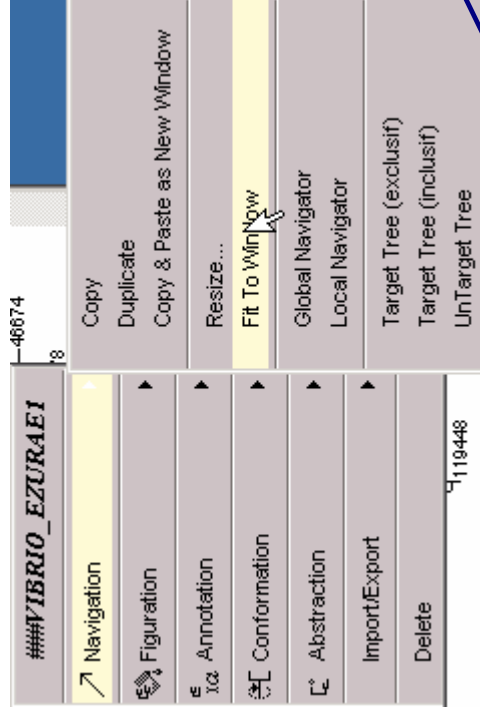
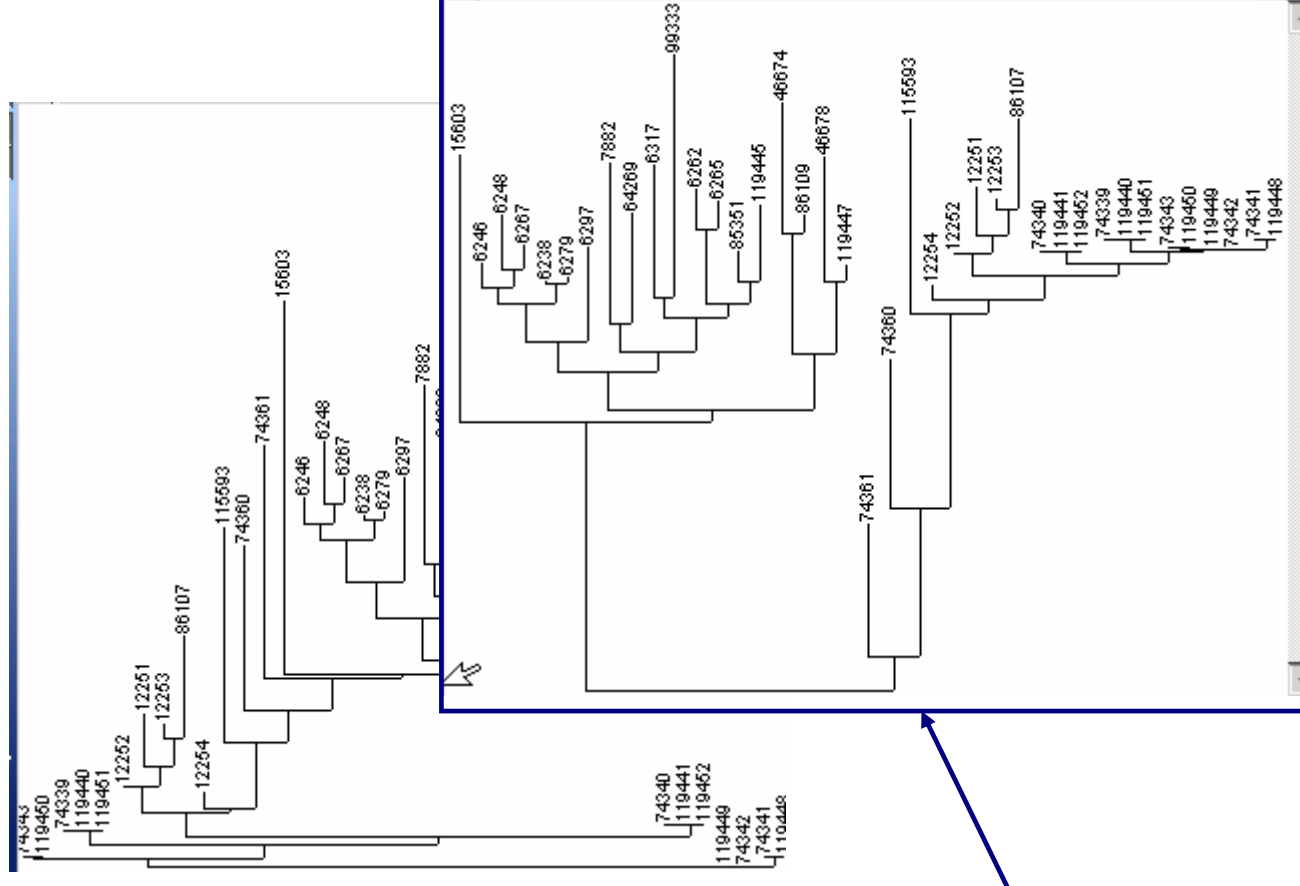
Load the tree as usual.

The first step is to root as required and resize.

It is necessary to do that first, as resizing for example will affect the canvas, not the tree and might perturb the labellisation process (not always, but sometimes)

You may use the simplified toolbar to do that

Also for example, right clic on the tree to open the contextual menu and fit the tree to window

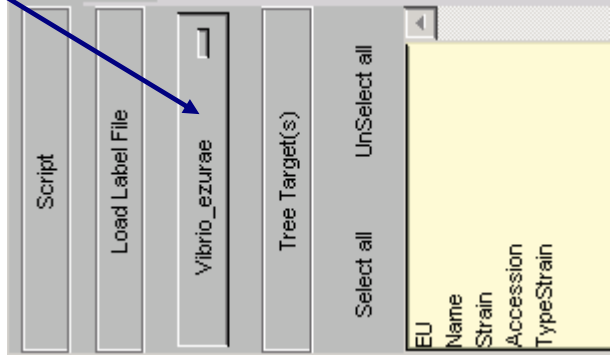
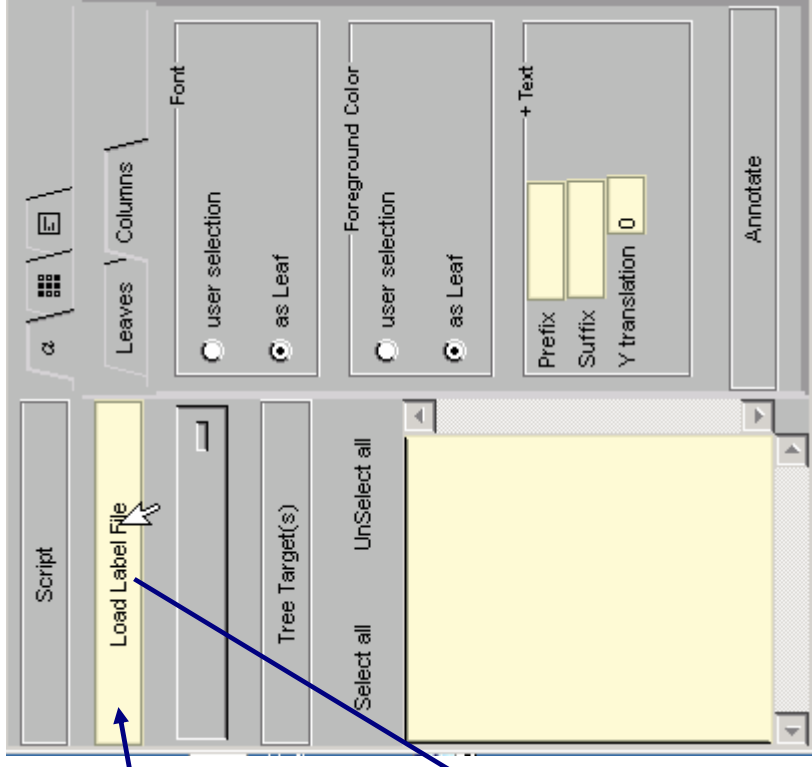
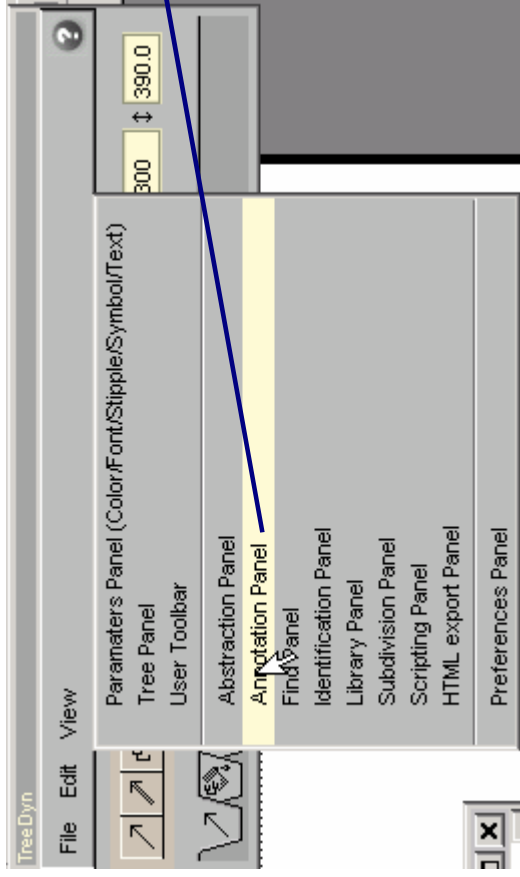


Final tree obtained :



1rst, replace leaves_id by an annotation

The first step is to choose which annotation file to use. Menu View-->Annotation Panel, allows to select a file

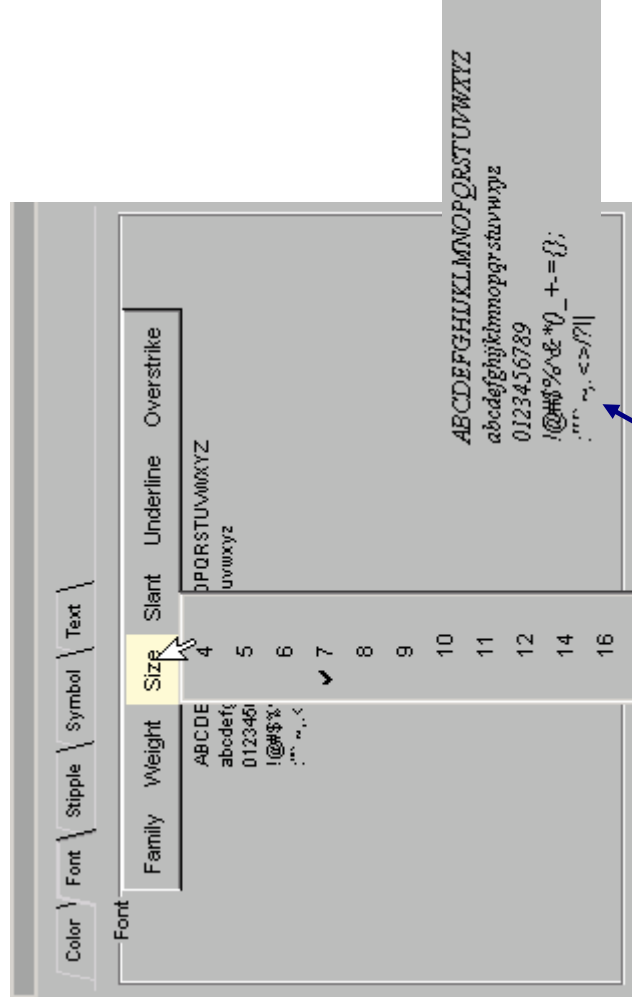


You can now see every kind of key available to annotate the tree (with the values contained for each key)

Select the tab "Leaves"

Choose Font : "user selection"

This opens a panel to select font, case, ...

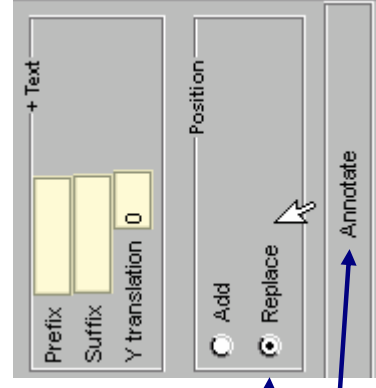
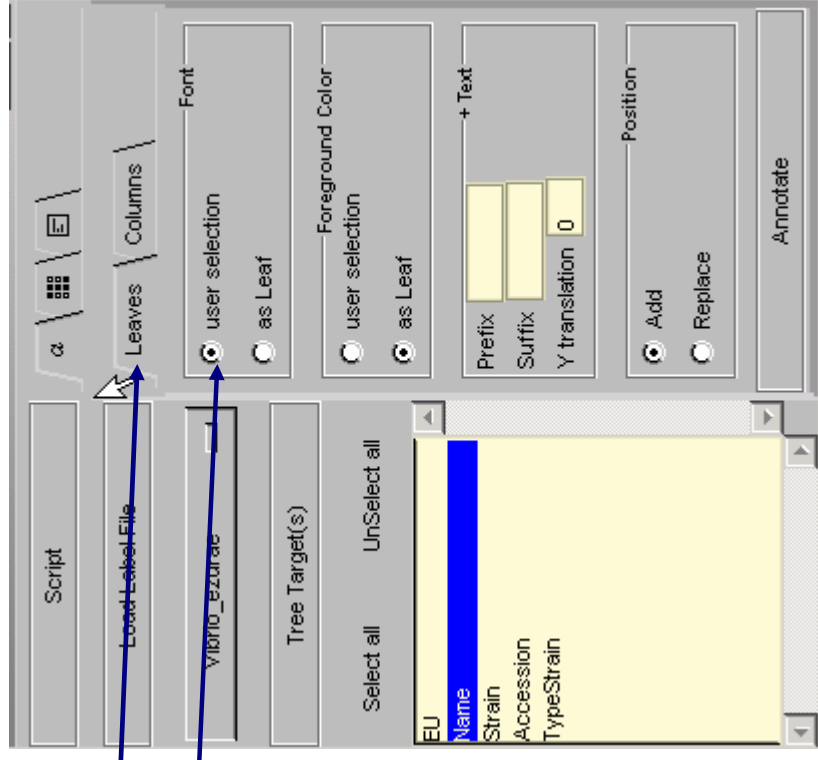


I will choose, times new roman, 9, italics

The result of my choices are shown

Finally, I choose option "Replace"

And I clic "Annotate"



Add more annotations

This is the result of my first operation.

Next, instead of replacing the text on the leaves, I want to add more annotation

In the present I want to add T as superscript (case 6) just after the latin name

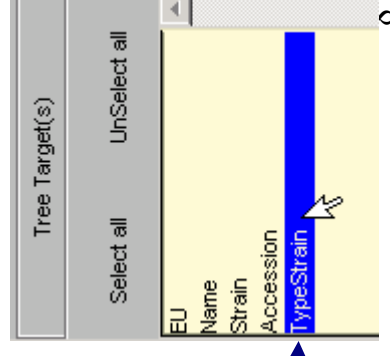
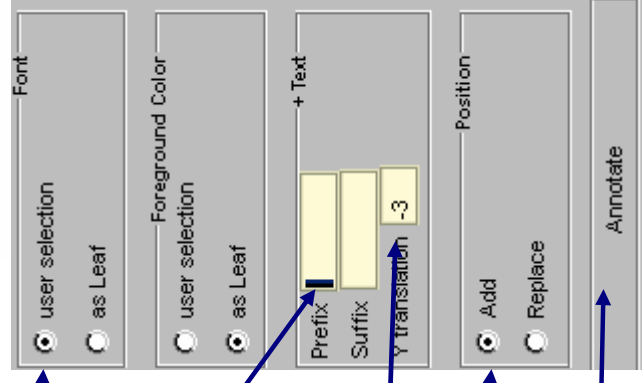
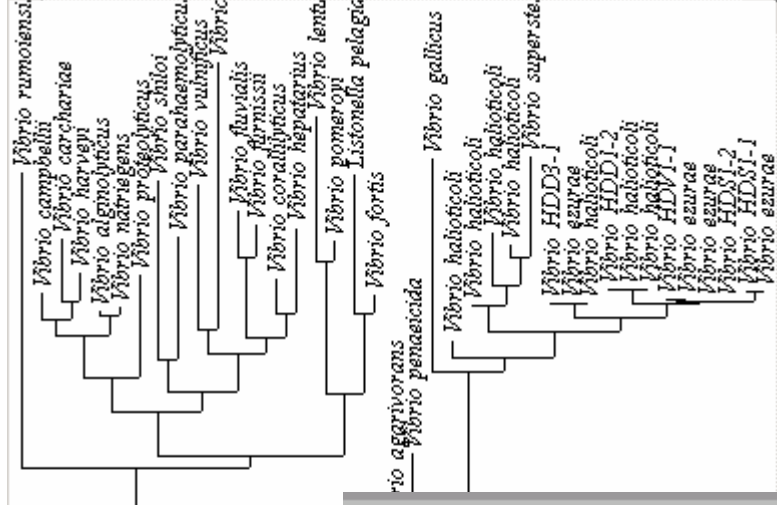
I clic on Font, "user selection" to change the font (as before)

I clic on "prefix" to remove the space which is added by default

I indicate the amount of superscript (here -3)

I choose "Add" instead of replace

I clic "Annotate"



NOTE : do not forget to choose the proper key to use (here this is TypeStrain)

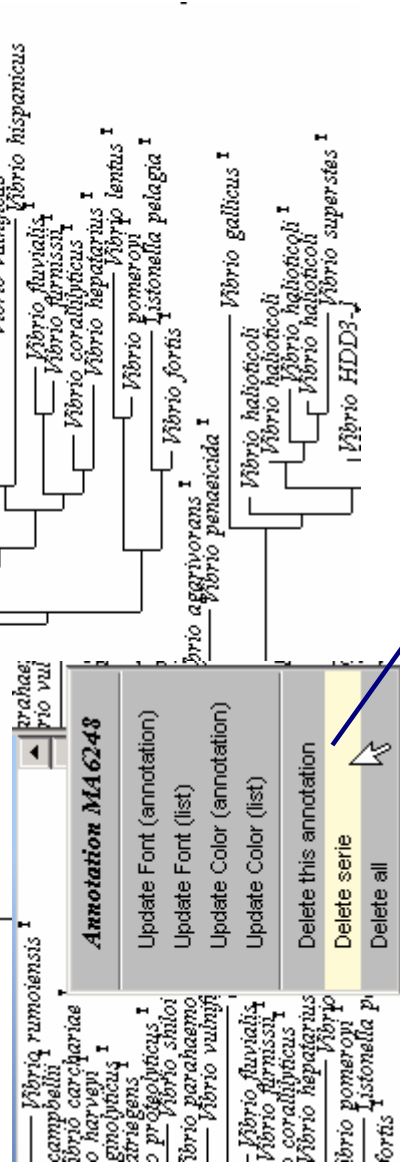
Ooops...

I had forgotten to remove the white space, and the T are separated from the name !

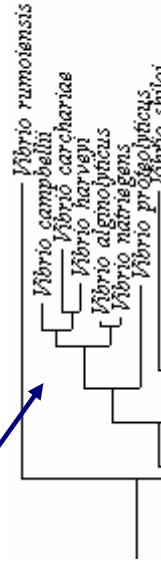
No panic

Right clic on a "T"

From the contextual menu, choose "delete serie"

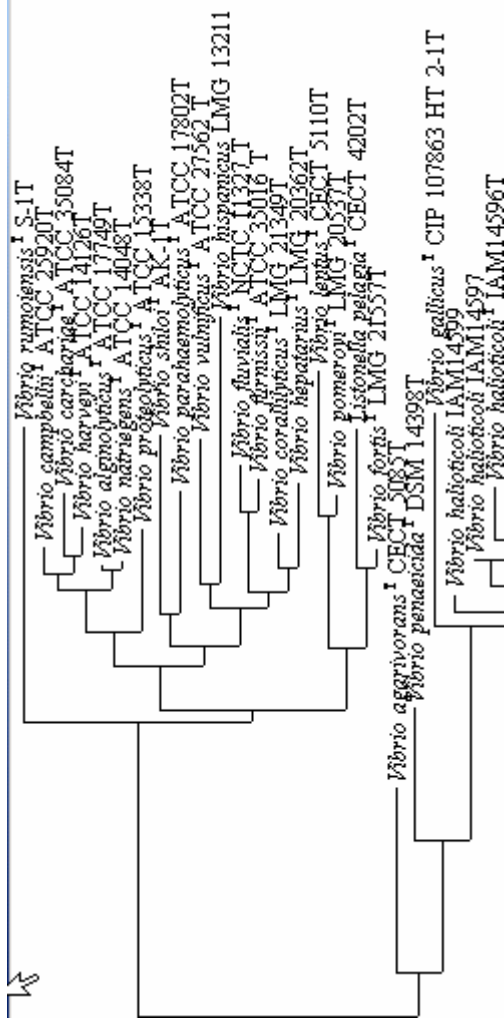
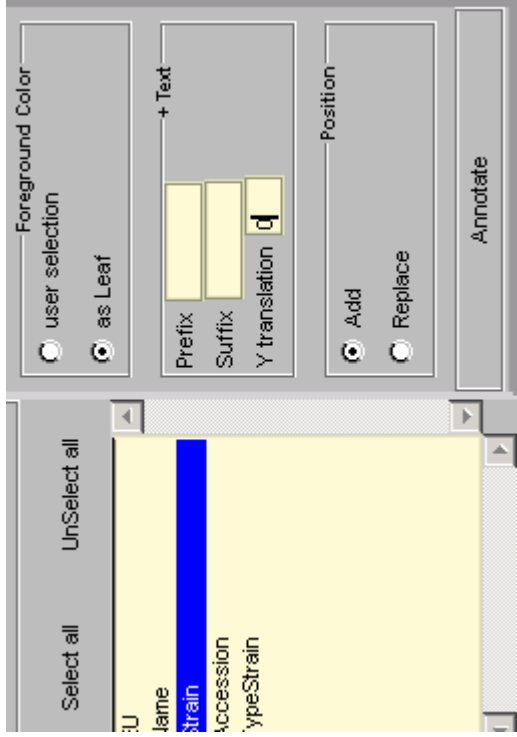


And now annotate correctly



Add more annotations...

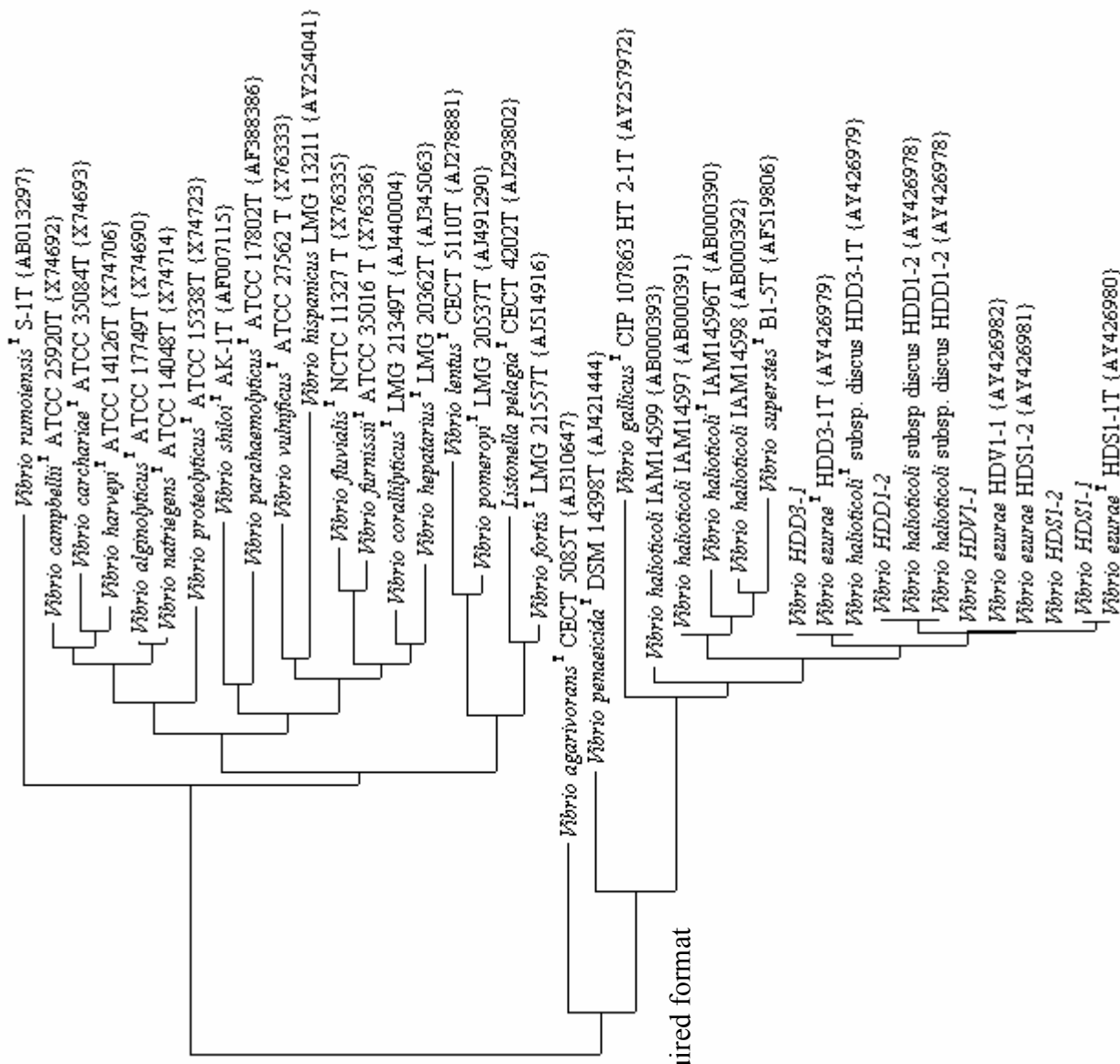
Add strain, no slant, times 9, a space in front (make sure "Ytranslation is =0" and proper key is selected)



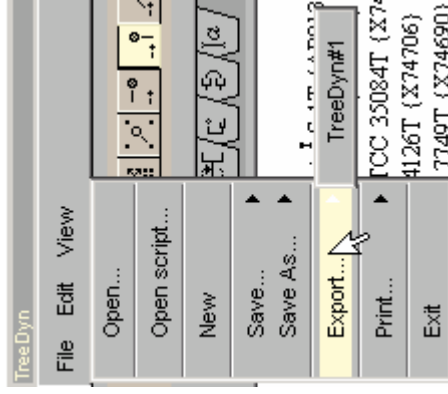
Almost done :
I have added the accession numbers
included in {}
and in size 8



A last vertical zoom is possible



End with save + "saves as" or "export" in the required format



Build a script file that does it all

```
loadtree D:/Bases/A_facon/treedyn/Vibrio_ezurae.tree  
loadlabel D:/Bases/A_facon/treedyn/Vibrio_ezurae.tlf
```

Load the tree file
Load the annotation file

```
color black  
font {Times 9 italic}  
AN LeavesReplace {Vibrio_ezurae {Name}}
```

define the color to be used
define the font
Annotation, replace leaves by the values contained in the annotation keys of the "Name" taken from the annotation file "Vibrio_ezurae".

```
font {Times 6 normal}  
AN LeavesAdd {Vibrio_ezurae {TypeStrain}} {prefix "" exponent -3}
```

Reduce font size
Annotate, addind to leaves the values of the key TypeStain, using no prefix and turning into superscript

```
font {Times 9 normal}  
AN LeavesAdd {Vibrio_ezurae {Strain}}
```

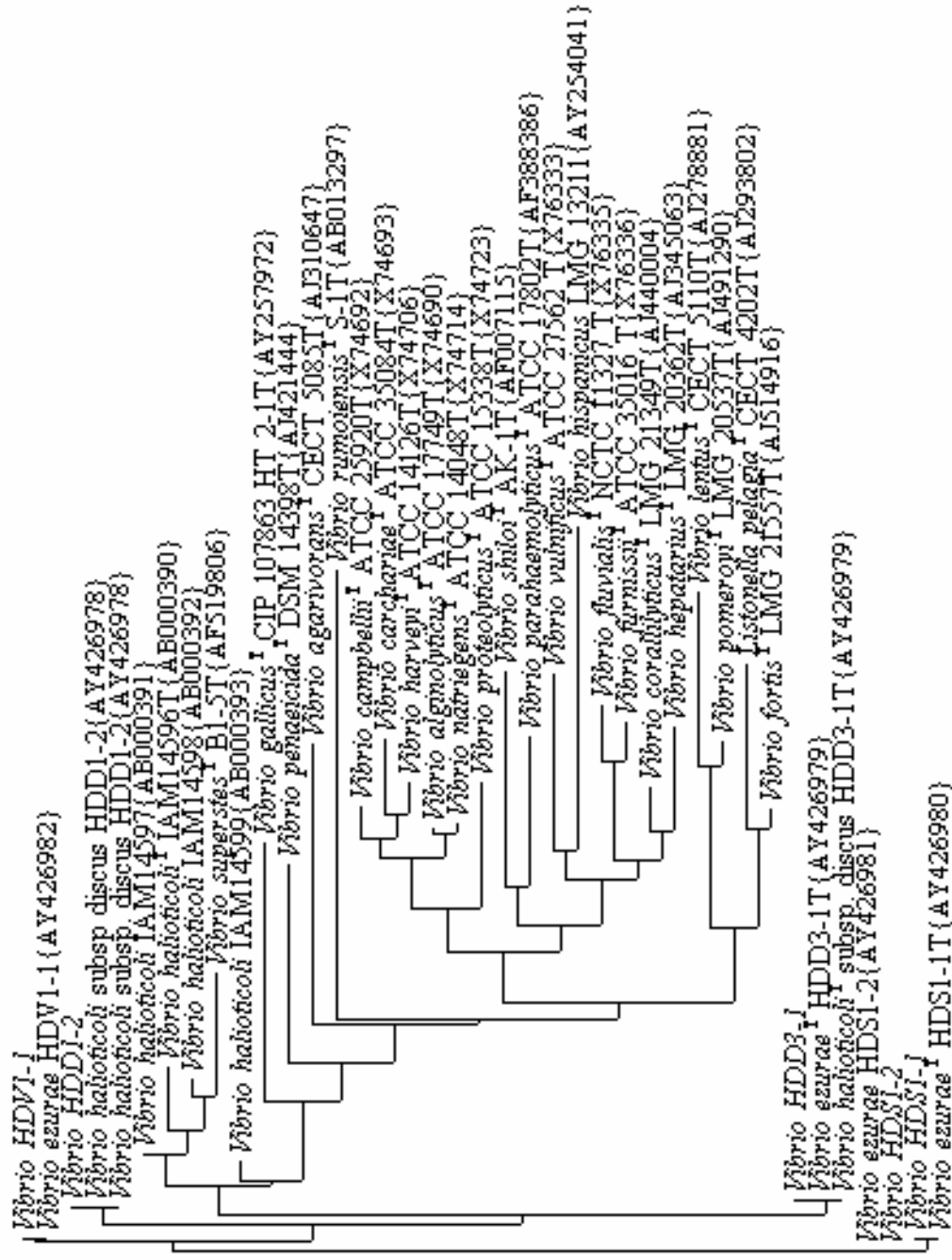
back to Times 9 normal
add annotations of type "strain" from the proper annotation file

```
font {Times 8 normal}  
AN LeavesAdd {Vibrio_ezurae {Accession}} {prefix "{" suffix "}"}
```

Time 8 normal
add annotation with a prefix and a suffix

NOTE : the name of the annotation file is required, since you can load several annotation files

Resulting tree



Conclusions

See more details on annotations and scripts in the various tutorials