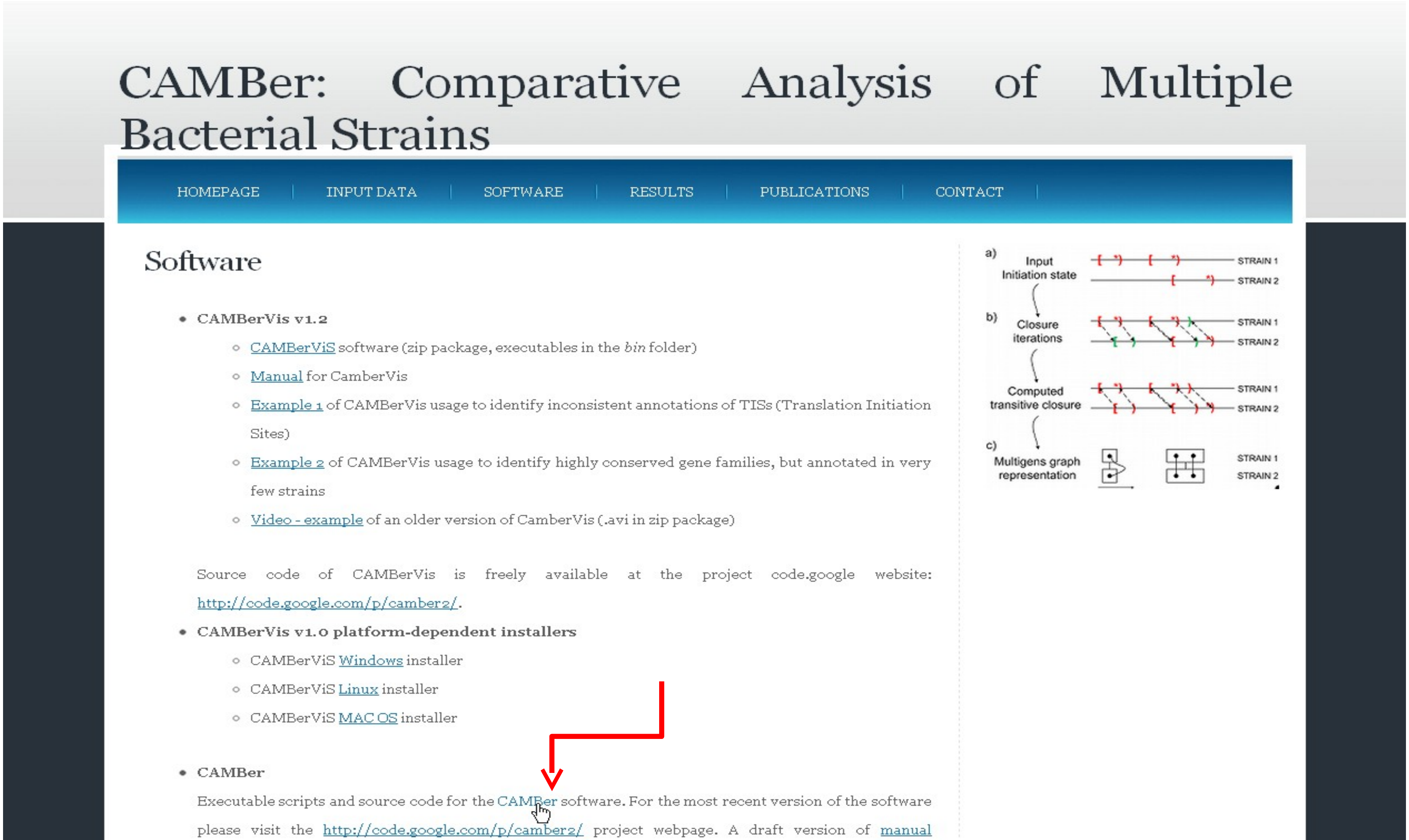
An example of CAMBer usage to generate input data for CAMBerVis on a small case study of 2 strains with 3 plasmid of *S. aureus* (due to computational time issues)

We download the CAMBer software from the project webpage: http://bioputer.mimuw.edu.pl/camber/software/camber2.zip



CAMBer: Comparative Analysis of Multiple Bacterial Strains

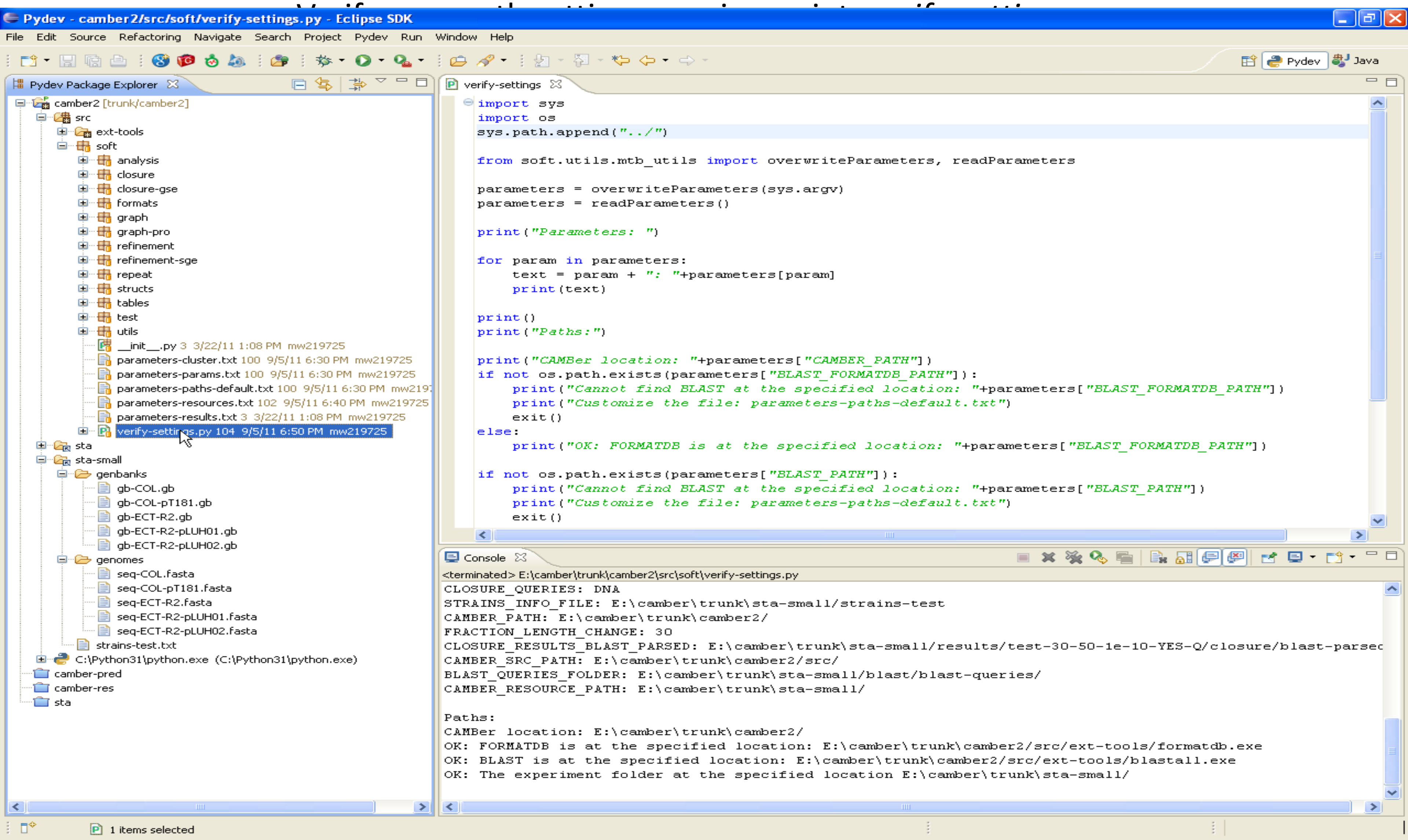
Software

- **CAMBerVis v1.2**
    - CAMBerViS software (zip package, executables in the *bin* folder)
    - Manual for CamberVis
    - Example 1 of CAMBerVis usage to identify inconsistent annotations of TISs (Translation Initiation Sites)
    - Example 2 of CAMBerVis usage to identify highly conserved gene families, but annotated in very few strains
    - Video - example of an older version of CamberVis (.avi in zip package)

  Source code of CAMBerVis is freely available at the project code.google website: http://code.google.com/p/camber2/.
- **CAMBerVis v1.0 platform-dependent installers**
    - CAMBerViS Windows installer
    - CAMBerViS Linux installer
    - CAMBerViS MAC OS installer
- **CAMBer**

  Executable scripts and source code for the CAMBer software. For the most recent version of the software please visit the http://code.google.com/p/camber2/ project webpage. A draft version of manual

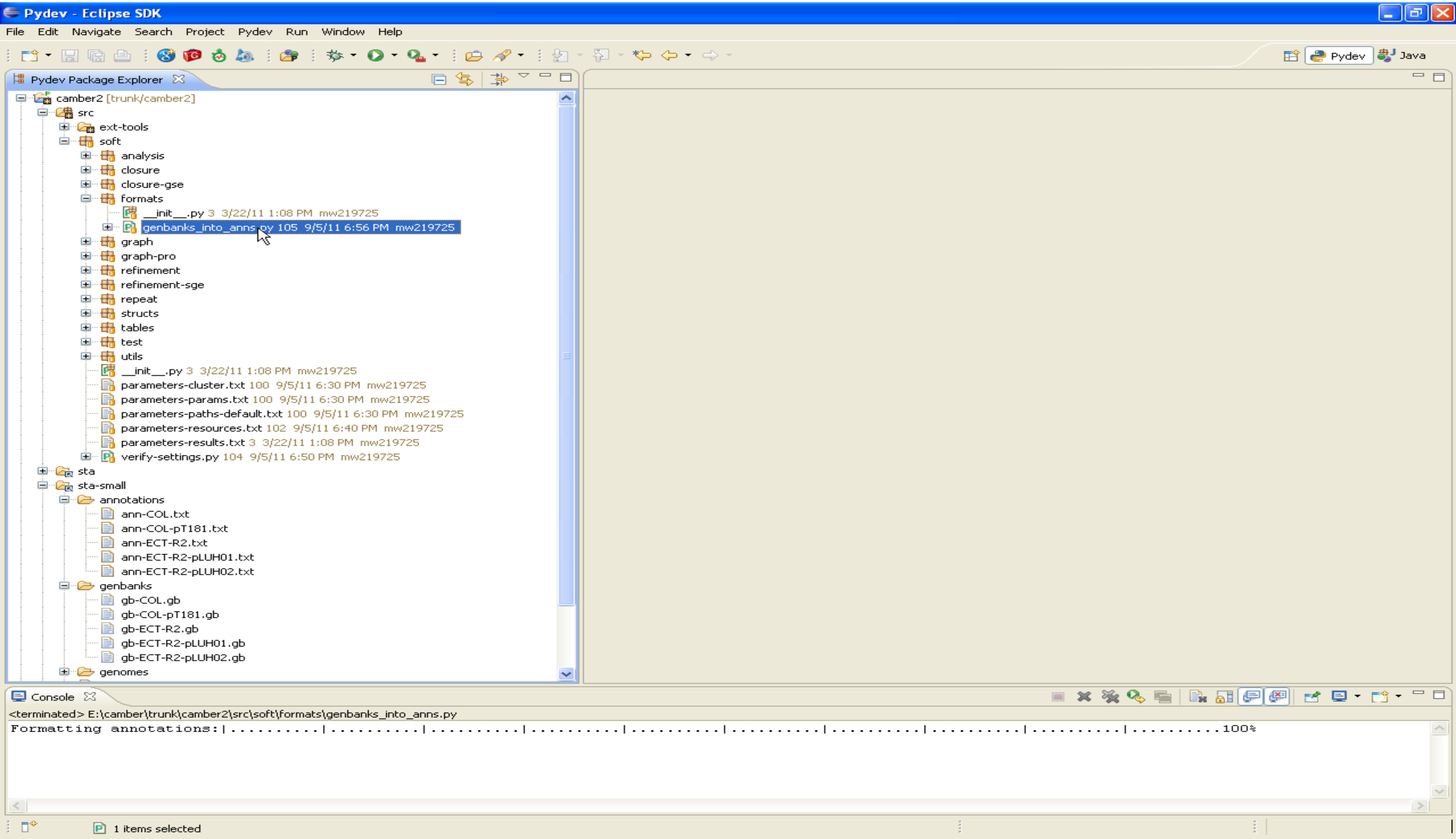
Open the project in Eclipse (OPTIONAL),
we present the project opened in Eclipse to show the structure of the directory tree
Configure paths to external tools (BLAST and BLAST formatdb in the file parameters-paths-default.txt)



```python
import sys
import os
sys.path.append("../")

from soft.utils.mtb_utils import overwriteParameters, readParameters

parameters = overwriteParameters(sys.argv)
parameters = readParameters()

print("Parameters: ")

for param in parameters:
    text = param + ": "+parameters[param]
    print(text)

print()
print("Paths:")

print("CAMBer location: "+parameters["CAMBER_PATH"])
if not os.path.exists(parameters["BLAST_FORMATDB_PATH"]):
    print("Cannot find BLAST at the specified location: "+parameters["BLAST_FORMATDB_PATH"])
    print("Customize the file: parameters-paths-default.txt")
    exit()
else:
    print("OK: FORMATDB is at the specified location: "+parameters["BLAST_FORMATDB_PATH"])

if not os.path.exists(parameters["BLAST_PATH"]):
    print("Cannot find BLAST at the specified location: "+parameters["BLAST_PATH"])
    print("Customize the file: parameters-paths-default.txt")
    exit()
```

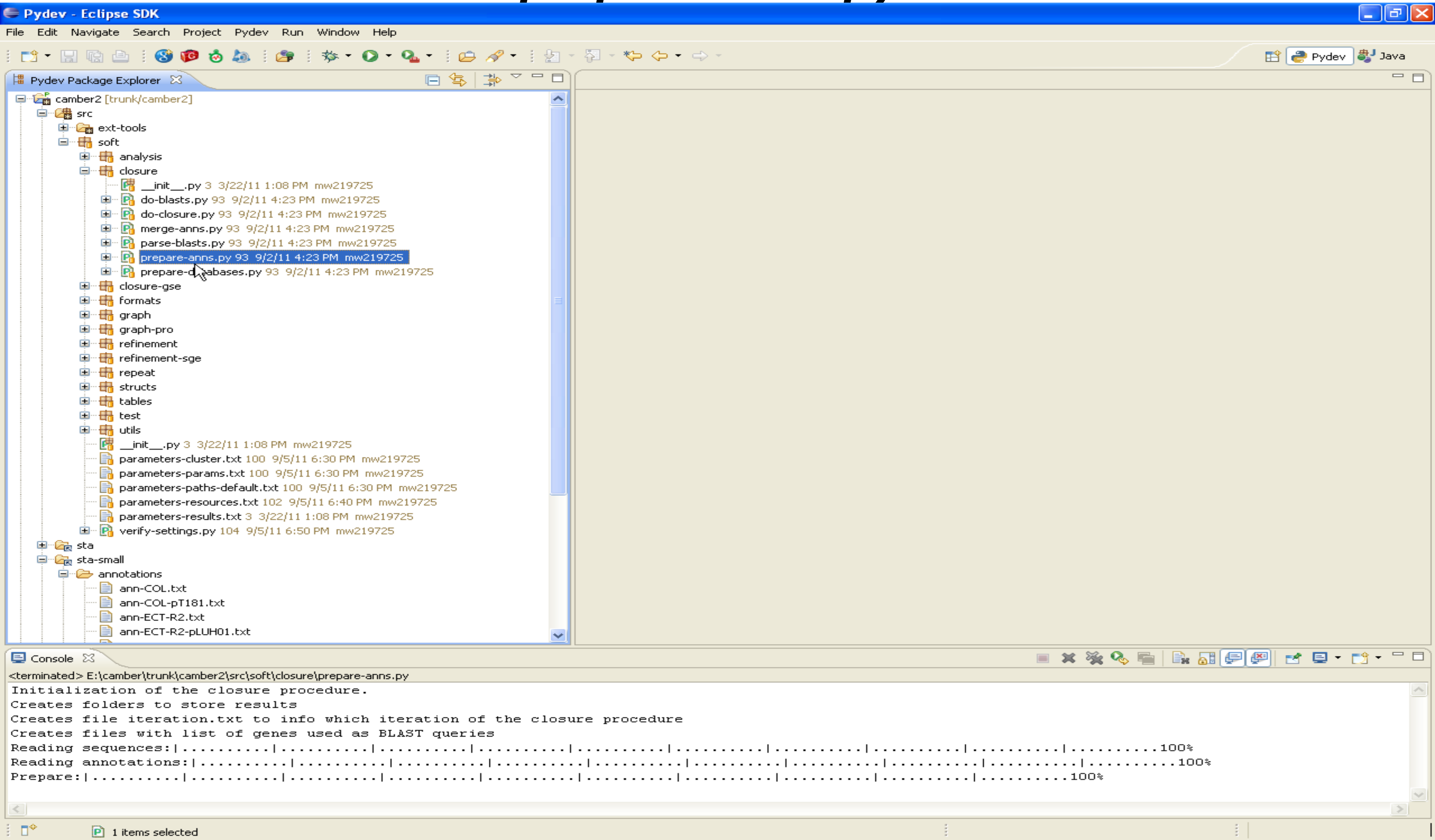
```
<terminated> E:\camber\trunk\camber2\src\soft\verify-settings.py
CLOSURE_QUERIES: DNA
STRAINS_INFO_FILE: E:\camber\trunk\sta-small/strains-test
CAMBER_PATH: E:\camber\trunk\camber2/
FRACTION_LENGTH_CHANGE: 30
CLOSURE_RESULTS_BLAST_PARSED: E:\camber\trunk\sta-small/results/test-30-50-1e-10-YES-Q/closure/blast-parse
CAMBER_SRC_PATH: E:\camber\trunk\camber2/src/
BLAST_QUERIES_FOLDER: E:\camber\trunk\sta-small/blast/blast-queries/
CAMBER_RESOURCE_PATH: E:\camber\trunk\sta-small/

Paths:
CAMBer location: E:\camber\trunk\camber2/
OK: FORMATDB is at the specified location: E:\camber\trunk\camber2/src/ext-tools/formatdb.exe
OK: BLAST is at the specified location: E:\camber\trunk\camber2/src/ext-tools/blastall.exe
OK: The experiment folder at the specified location E:\camber\trunk\sta-small/
```

Retrive information from GenBank files into a simpler format running the script: *genbanks_into_anns.py*



```
<terminated> E:\camber\trunk\camber2\src\soft\formats\genbanks_into_anns.py
Formatting annotations:|..........|..........|..........|..........|..........|..........|..........|..........|..........|..........|..........100%
```

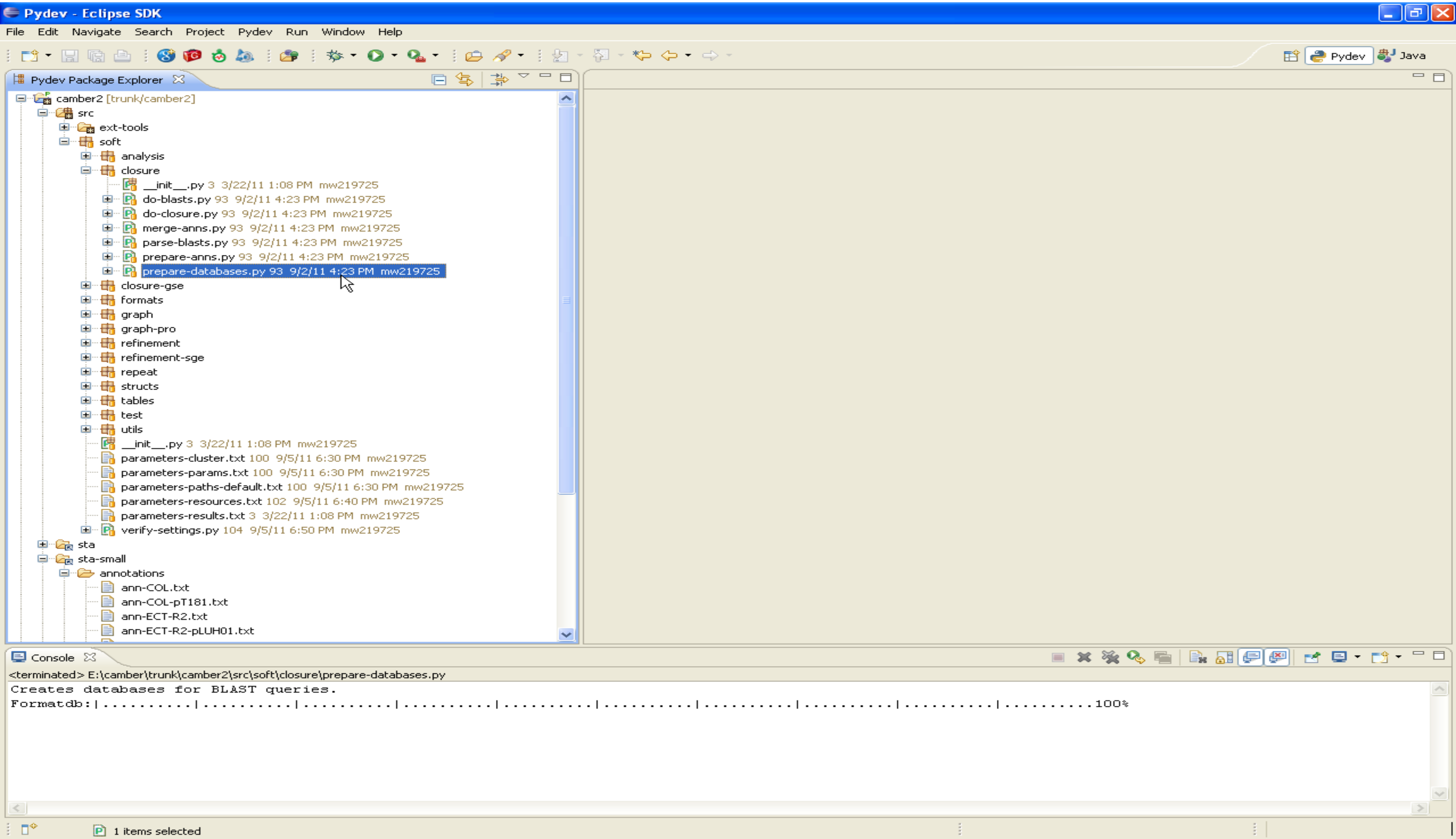
Initiate the directory structure for the closure procedure running script: ***prepare-anns.py***



```
camber2 [trunk/camber2]
  src
    ext-tools
    soft
      analysis
      closure
        __init__.py 3  3/22/11 1:08 PM  mw219725
        do-blasts.py 93  9/2/11 4:23 PM  mw219725
        do-closure.py 93  9/2/11 4:23 PM  mw219725
        merge-anns.py 93  9/2/11 4:23 PM  mw219725
        parse-blasts.py 93  9/2/11 4:23 PM  mw219725
        prepare-anns.py 93  9/2/11 4:23 PM  mw219725
        prepare-databases.py 93  9/2/11 4:23 PM  mw219725
      closure-gse
      formats
      graph
      graph-pro
      refinement
      refinement-sge
      repeat
      structs
      tables
      test
      utils
      __init__.py 3  3/22/11 1:08 PM  mw219725
      parameters-cluster.txt 100  9/5/11 6:30 PM  mw219725
      parameters-params.txt 100  9/5/11 6:30 PM  mw219725
      parameters-paths-default.txt 100  9/5/11 6:30 PM  mw219725
      parameters-resources.txt 102  9/5/11 6:40 PM  mw219725
      parameters-results.txt 3  3/22/11 1:08 PM  mw219725
      verify-settings.py 104  9/5/11 6:50 PM  mw219725
  sta
  sta-small
    annotations
      ann-COL.txt
      ann-COL-pT181.txt
      ann-ECT-R2.txt
      ann-ECT-R2-pLUH01.txt
```

```
<terminated> E:\camber\trunk\camber2\src\soft\closure\prepare-anns.py
Initialization of the closure procedure.
Creates folders to store results
Creates file iteration.txt to info which iteration of the closure procedure
Creates files with list of genes used as BLAST queries
Reading sequences:|.........|.........|.........|.........|.........|.........|.........|.........|.........|.........100%
Reading annotations:|.........|.........|.........|.........|.........|.........|.........|.........|.........|.........100%
Prepare:|.........|.........|.........|.........|.........|.........|.........|.........|.........|.........100%
```

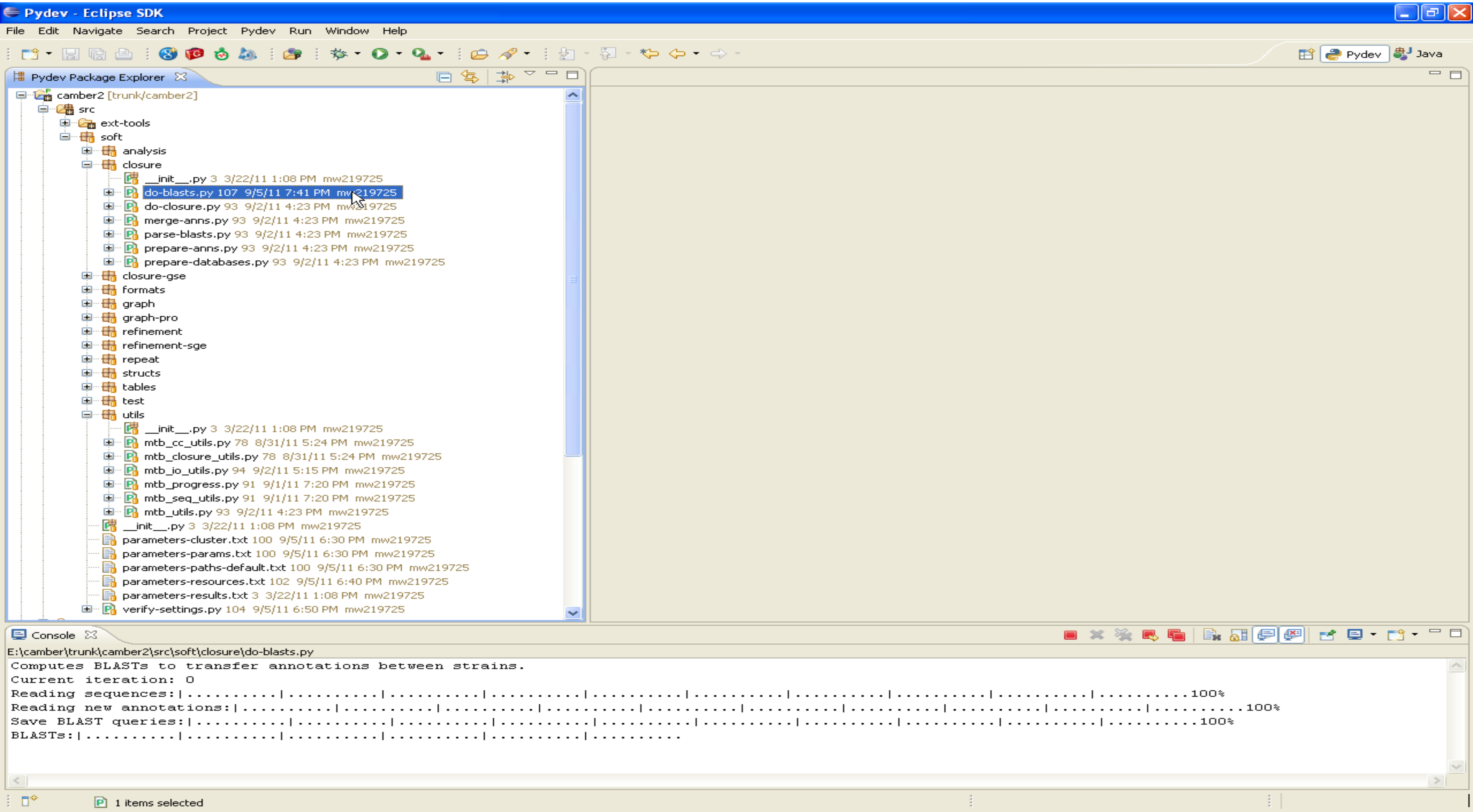
Create BLAST databases for queries running script: *prepare-databases.py*



```
camber2 [trunk/camber2]
  src
    ext-tools
    soft
      analysis
      closure
        __init__.py 3  3/22/11 1:08 PM  mw219725
        do-blasts.py 93  9/2/11 4:23 PM  mw219725
        do-closure.py 93  9/2/11 4:23 PM  mw219725
        merge-anns.py 93  9/2/11 4:23 PM  mw219725
        parse-blasts.py 93  9/2/11 4:23 PM  mw219725
        prepare-anns.py 93  9/2/11 4:23 PM  mw219725
        prepare-databases.py 93  9/2/11 4:23 PM  mw219725
      closure-gse
      formats
      graph
      graph-pro
      refinement
      refinement-sge
      repeat
      structs
      tables
      test
      utils
      __init__.py 3  3/22/11 1:08 PM  mw219725
      parameters-cluster.txt 100  9/5/11 6:30 PM  mw219725
      parameters-params.txt 100  9/5/11 6:30 PM  mw219725
      parameters-paths-default.txt 100  9/5/11 6:30 PM  mw219725
      parameters-resources.txt 102  9/5/11 6:40 PM  mw219725
      parameters-results.txt 3  3/22/11 1:08 PM  mw219725
      verify-settings.py 104  9/5/11 6:50 PM  mw219725
  sta
  sta-small
    annotations
      ann-COL.txt
      ann-COL-pT181.txt
      ann-ECT-R2.txt
      ann-ECT-R2-pLUH01.txt
```

```
<terminated> E:\camber\trunk\camber2\src\soft\closure\prepare-databases.py
Creates databases for BLAST queries.
Formatdb:|..........|..........|..........|..........|..........|..........|..........|..........|..........|..........100%
```

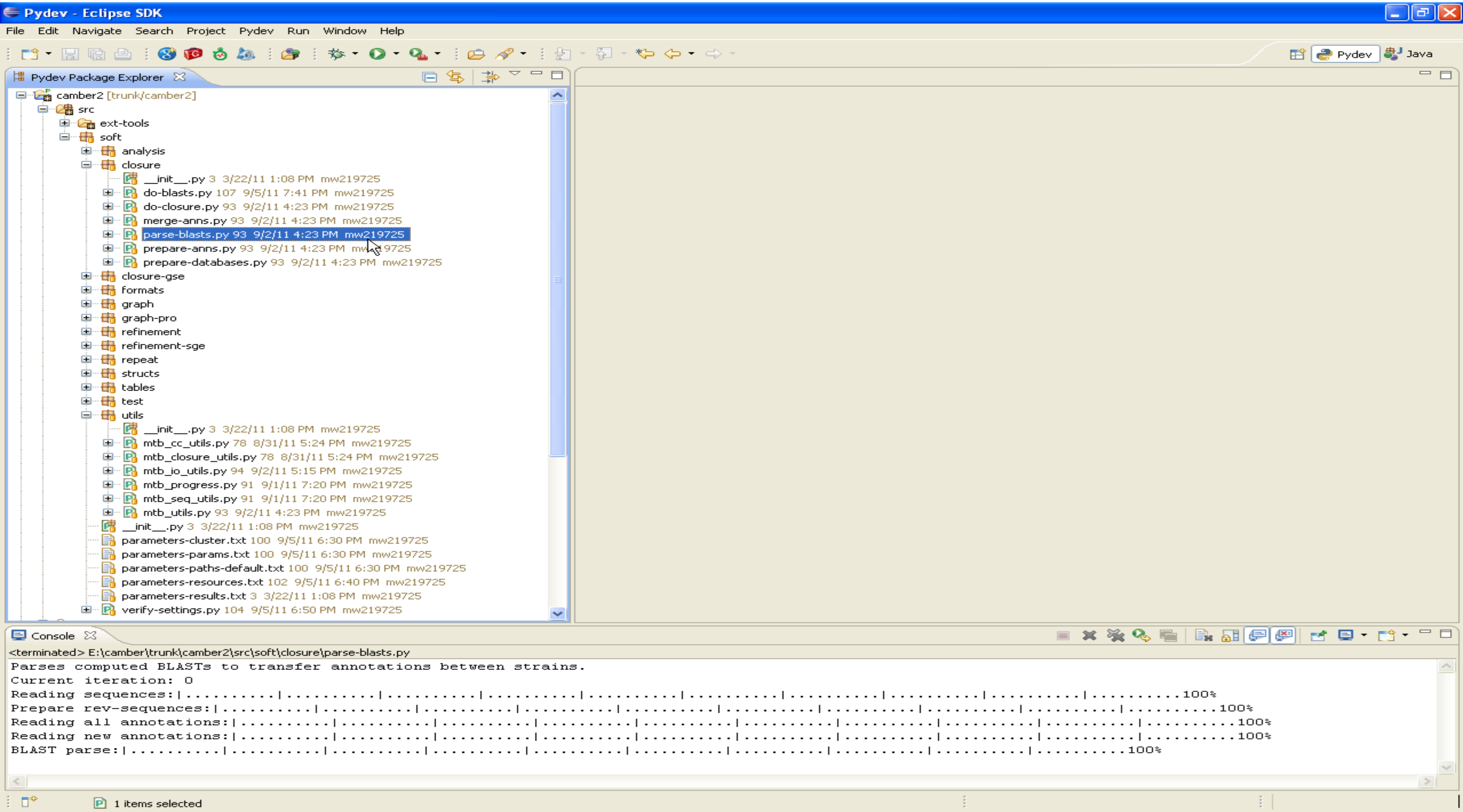
Iteration 1:
Compute BLASTs to transfer annotations
(1 iteration of the closure procedure) running script:



```
camber2 [trunk/camber2]
  src
    ext-tools
    soft
      analysis
      closure
        __init__.py 3  3/22/11 1:08 PM  mw219725
        do-blasts.py 107  9/5/11 7:41 PM  mw219725
        do-closure.py 93  9/2/11 4:23 PM  mw219725
        merge-anns.py 93  9/2/11 4:23 PM  mw219725
        parse-blasts.py 93  9/2/11 4:23 PM  mw219725
        prepare-anns.py 93  9/2/11 4:23 PM  mw219725
        prepare-databases.py 93  9/2/11 4:23 PM  mw219725
      closure-gse
      formats
      graph
      graph-pro
      refinement
      refinement-sge
      repeat
      structs
      tables
      test
      utils
        __init__.py 3  3/22/11 1:08 PM  mw219725
        mtb_cc_utils.py 78  8/31/11 5:24 PM  mw219725
        mtb_closure_utils.py 78  8/31/11 5:24 PM  mw219725
        mtb_io_utils.py 94  9/2/11 5:15 PM  mw219725
        mtb_progress.py 91  9/1/11 7:20 PM  mw219725
        mtb_seq_utils.py 91  9/1/11 7:20 PM  mw219725
        mtb_utils.py 93  9/2/11 4:23 PM  mw219725
      __init__.py 3  3/22/11 1:08 PM  mw219725
      parameters-cluster.txt 100  9/5/11 6:30 PM  mw219725
      parameters-params.txt 100  9/5/11 6:30 PM  mw219725
      parameters-paths-default.txt 100  9/5/11 6:30 PM  mw219725
      parameters-resources.txt 102  9/5/11 6:40 PM  mw219725
      parameters-results.txt 3  3/22/11 1:08 PM  mw219725
      verify-settings.py 104  9/5/11 6:50 PM  mw219725
```

```
E:\camber\trunk\camber2\src\soft\closure\do-blasts.py
Computes BLASTs to transfer annotations between strains.
Current iteration: 0
Reading sequences:|..........|..........|..........|..........|..........|..........|..........|..........|..........|..........100%
Reading new annotations:|..........|..........|..........|..........|..........|..........|..........|..........|..........|..........100%
Save BLAST queries:|..........|..........|..........|..........|..........|..........|..........|..........|..........|..........100%
BLASTs:|..........|..........|..........|..........|..........|.........
```

Iteration 1:
Parse and rate (accept or reject) BLAST hits running script: ***parse-blasts.py***

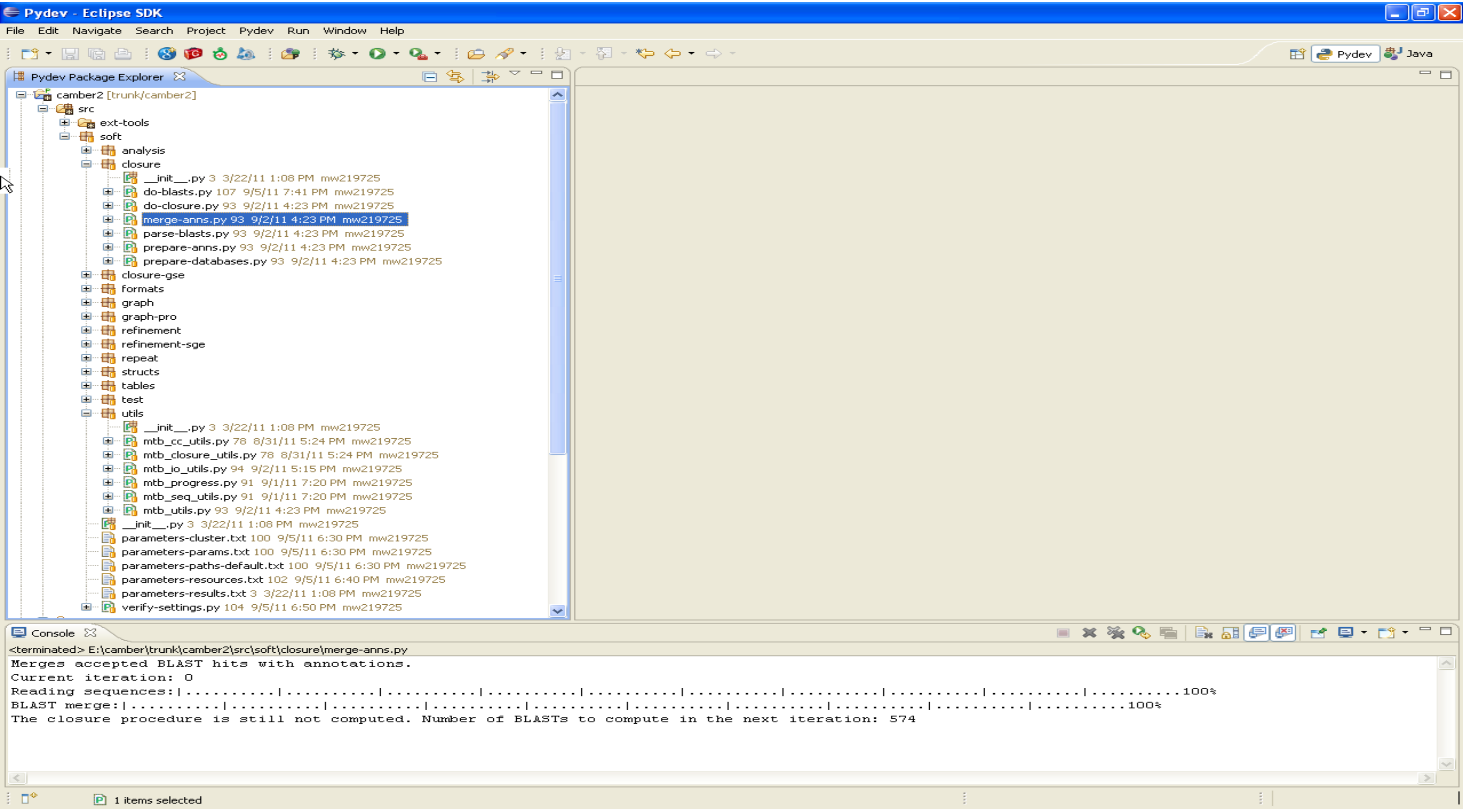


```
camber2 [trunk/camber2]
  src
    ext-tools
    soft
      analysis
      closure
        __init__.py 3  3/22/11 1:08 PM  mw219725
        do-blasts.py 107  9/5/11 7:41 PM  mw219725
        do-closure.py 93  9/2/11 4:23 PM  mw219725
        merge-anns.py 93  9/2/11 4:23 PM  mw219725
        parse-blasts.py 93  9/2/11 4:23 PM  mw219725
        prepare-anns.py 93  9/2/11 4:23 PM  mw219725
        prepare-databases.py 93  9/2/11 4:23 PM  mw219725
      closure-gse
      formats
      graph
      graph-pro
      refinement
      refinement-sge
      repeat
      structs
      tables
      test
      utils
        __init__.py 3  3/22/11 1:08 PM  mw219725
        mtb_cc_utils.py 78  8/31/11 5:24 PM  mw219725
        mtb_closure_utils.py 78  8/31/11 5:24 PM  mw219725
        mtb_io_utils.py 94  9/2/11 5:15 PM  mw219725
        mtb_progress.py 91  9/1/11 7:20 PM  mw219725
        mtb_seq_utils.py 91  9/1/11 7:20 PM  mw219725
        mtb_utils.py 93  9/2/11 4:23 PM  mw219725
      __init__.py 3  3/22/11 1:08 PM  mw219725
      parameters-cluster.txt 100  9/5/11 6:30 PM  mw219725
      parameters-params.txt 100  9/5/11 6:30 PM  mw219725
      parameters-paths-default.txt 100  9/5/11 6:30 PM  mw219725
      parameters-resources.txt 102  9/5/11 6:40 PM  mw219725
      parameters-results.txt 3  3/22/11 1:08 PM  mw219725
      verify-settings.py 104  9/5/11 6:50 PM  mw219725
```

```
<terminated> E:\camber\trunk\camber2\src\soft\closure\parse-blasts.py
Parses computed BLASTs to transfer annotations between strains.
Current iteration: 0
Reading sequences:|..........|..........|..........|..........|..........|..........|..........|..........|..........|..........100%
Prepare rev-sequences:|..........|..........|..........|..........|..........|..........|..........|..........|..........|..........100%
Reading all annotations:|..........|..........|..........|..........|..........|..........|..........|..........|..........|..........100%
Reading new annotations:|..........|..........|..........|..........|..........|..........|..........|..........|..........|..........100%
BLAST parse:|..........|..........|..........|..........|..........|..........|..........|..........|..........|..........100%
```

1 items selected

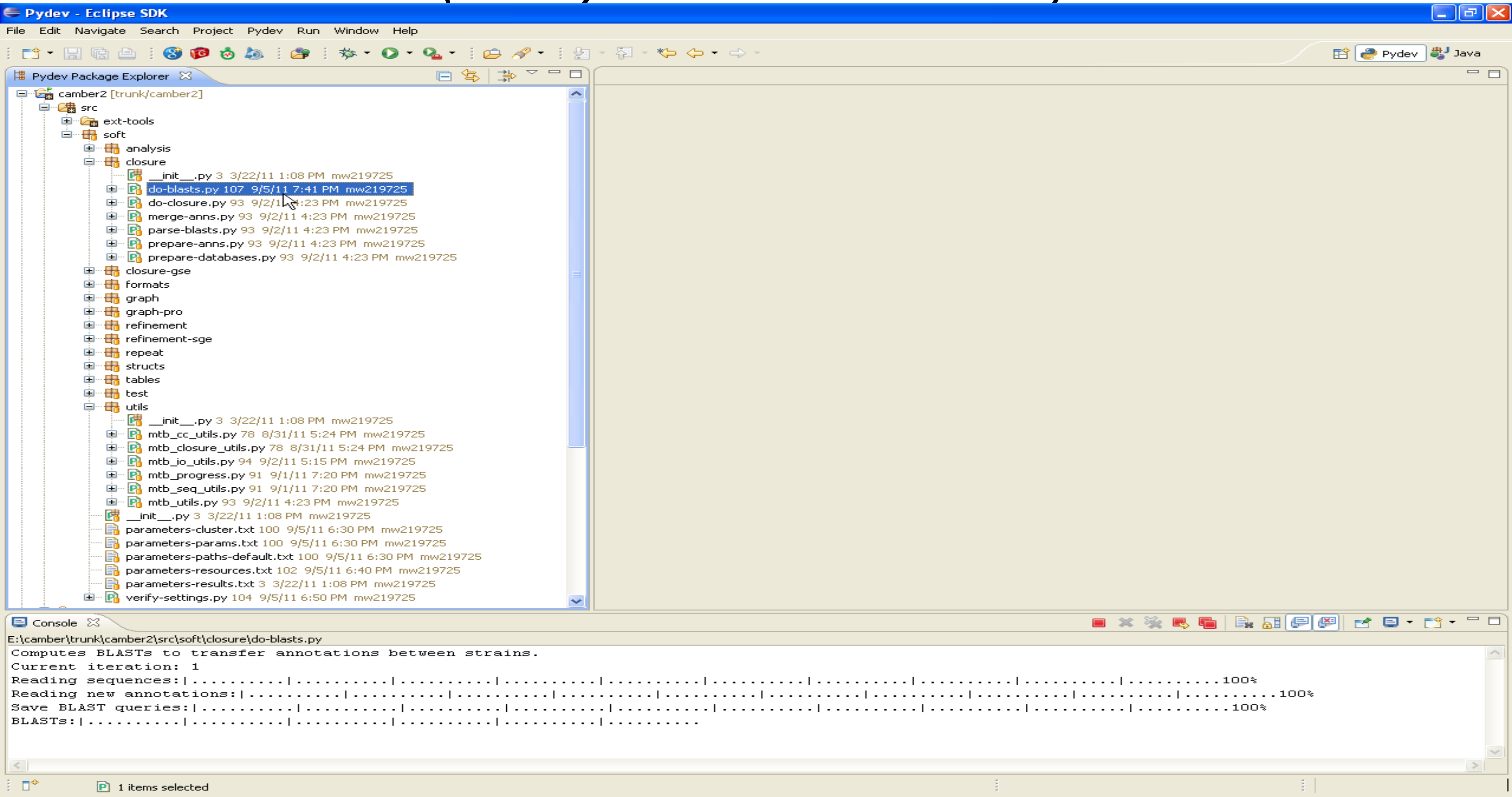
Iteration 1:
Merge transfered annotations running script: ***merge-anns.py***
1 iteration will be finished with 574 newly annotated ORFs



```
camber2 [trunk/camber2]
  src
    ext-tools
    soft
      analysis
      closure
        __init__.py 3  3/22/11 1:08 PM  mw219725
        do-blasts.py 107  9/5/11 7:41 PM  mw219725
        do-closure.py 93  9/2/11 4:23 PM  mw219725
        merge-anns.py 93  9/2/11 4:23 PM  mw219725
        parse-blasts.py 93  9/2/11 4:23 PM  mw219725
        prepare-anns.py 93  9/2/11 4:23 PM  mw219725
        prepare-databases.py 93  9/2/11 4:23 PM  mw219725
      closure-gse
      formats
      graph
      graph-pro
      refinement
      refinement-sge
      repeat
      structs
      tables
      test
      utils
        __init__.py 3  3/22/11 1:08 PM  mw219725
        mtb_cc_utils.py 78  8/31/11 5:24 PM  mw219725
        mtb_closure_utils.py 78  8/31/11 5:24 PM  mw219725
        mtb_io_utils.py 94  9/2/11 5:15 PM  mw219725
        mtb_progress.py 91  9/1/11 7:20 PM  mw219725
        mtb_seq_utils.py 91  9/1/11 7:20 PM  mw219725
        mtb_utils.py 93  9/2/11 4:23 PM  mw219725
      __init__.py 3  3/22/11 1:08 PM  mw219725
      parameters-cluster.txt 100  9/5/11 6:30 PM  mw219725
      parameters-params.txt 100  9/5/11 6:30 PM  mw219725
      parameters-paths-default.txt 100  9/5/11 6:30 PM  mw219725
      parameters-resources.txt 102  9/5/11 6:40 PM  mw219725
      parameters-results.txt 3  3/22/11 1:08 PM  mw219725
      verify-settings.py 104  9/5/11 6:50 PM  mw219725
```

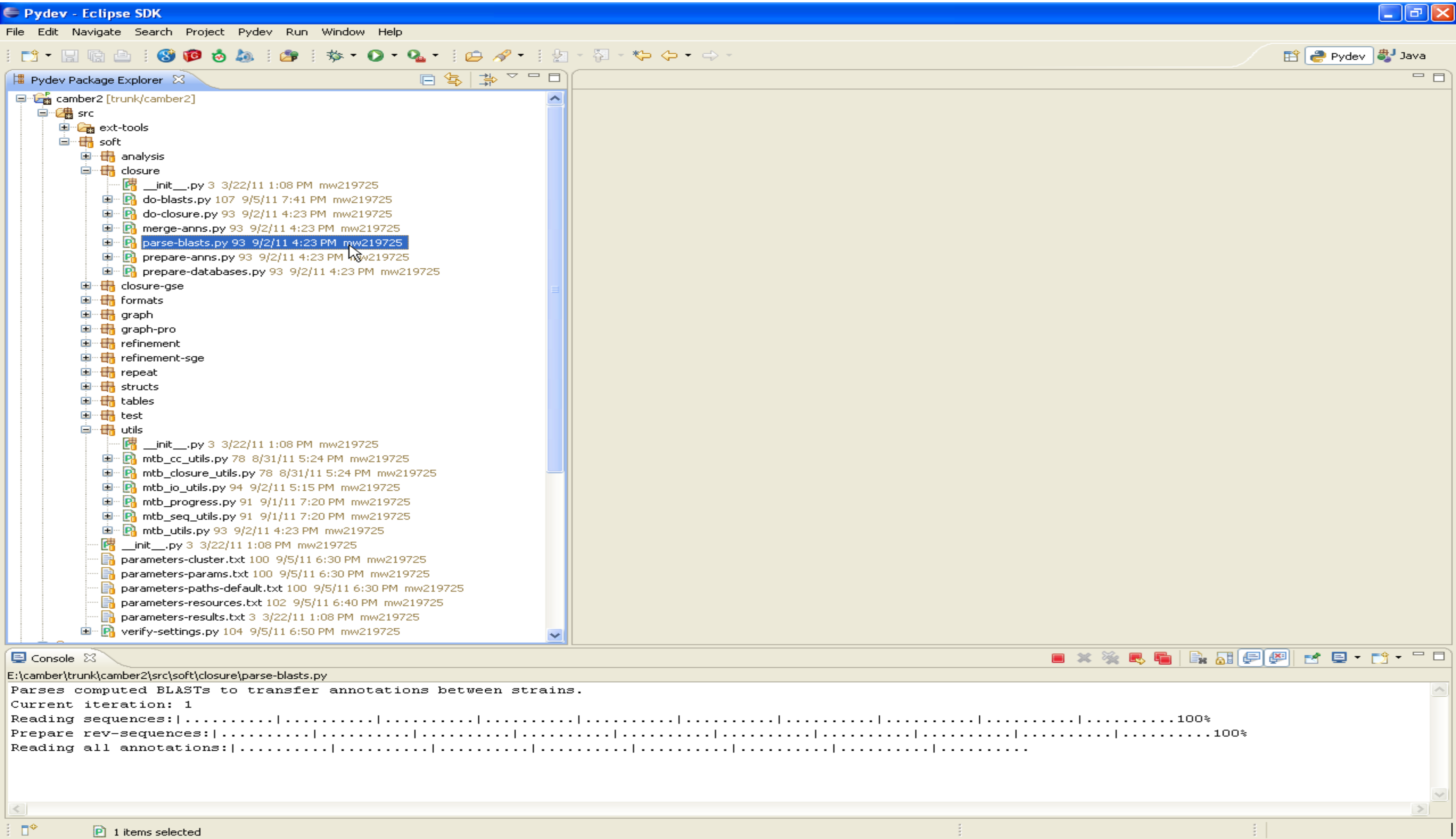
```
<terminated> E:\camber\trunk\camber2\src\soft\closure\merge-anns.py
Merges accepted BLAST hits with annotations.
Current iteration: 0
Reading sequences:|..........|..........|..........|..........|..........|..........|..........|..........|..........|..........100%
BLAST merge:|..........|..........|..........|..........|..........|..........|..........|..........|..........|..........100%
The closure procedure is still not computed. Number of BLASTs to compute in the next iteration: 574
```

Iteration 2:
Compute BLASTs to transfer annotations (2 iteration)
running script: ***do-blasts.py***
(it may take around 1 min)



```
E:\camber\trunk\camber2\src\soft\closure\do-blasts.py
Computes BLASTs to transfer annotations between strains.
Current iteration: 1
Reading sequences:|.........|.........|.........|.........|.........|.........|.........|.........|.........|..........100%
Reading new annotations:|.........|.........|.........|.........|.........|.........|.........|.........|.........|..........100%
Save BLAST queries:|.........|.........|.........|.........|.........|.........|.........|.........|.........|..........100%
BLASTs:|.........|.........|.........|.........|.........|.........
```

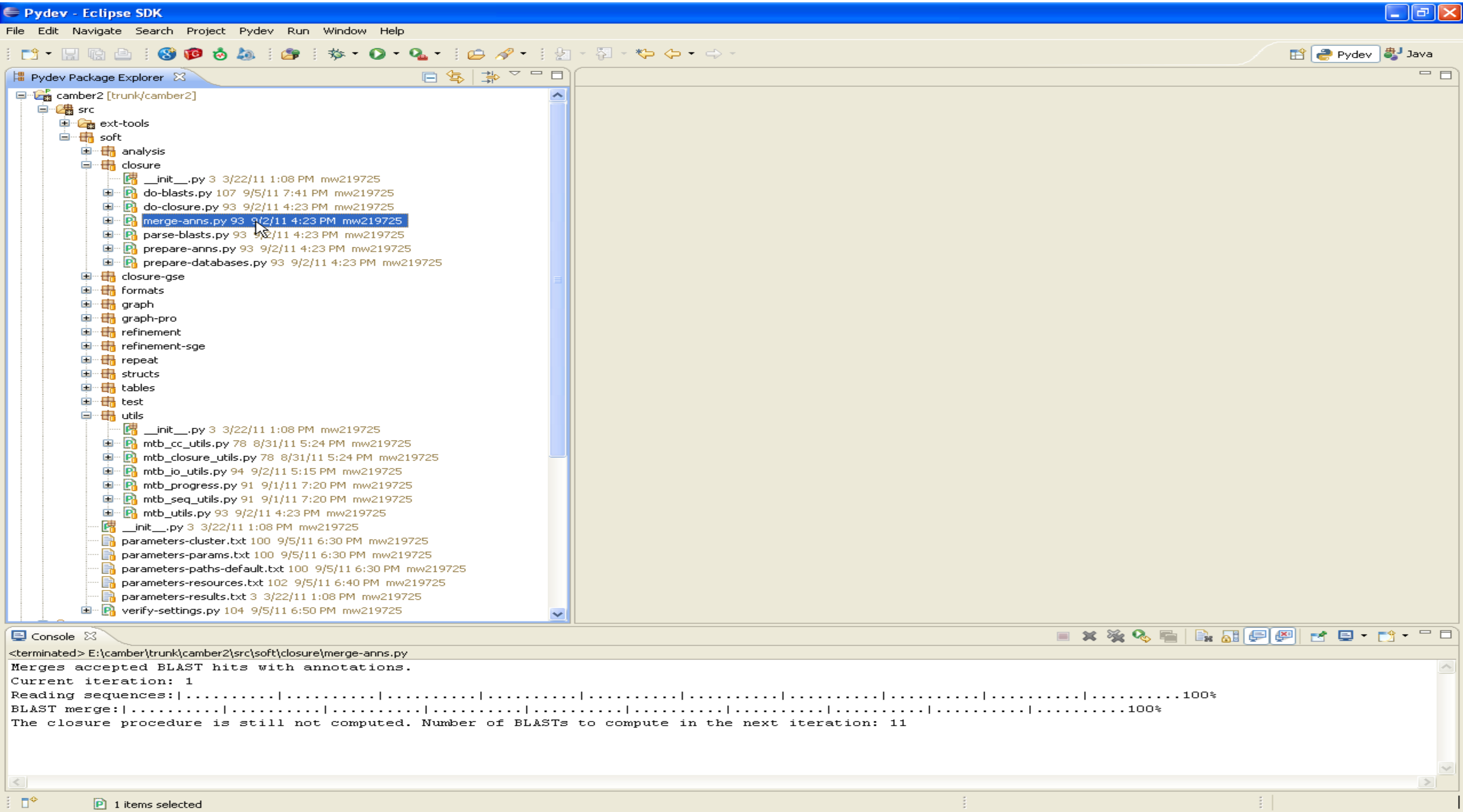
Iteration 2:
Parse and rate (accept or reject) BLAST hits running script:
parse-blasts.py



E:\camber\trunk\camber2\src\soft\closure\parse-blasts.py

```
Parses computed BLASTs to transfer annotations between strains.
Current iteration: 1
Reading sequences:|..........|..........|..........|..........|..........|..........|..........|..........|..........|..........100%
Prepare rev-sequences:|..........|..........|..........|..........|..........|..........|..........|..........|..........|..........100%
Reading all annotations:|..........|..........|..........|..........|..........|..........|..........|..........
```

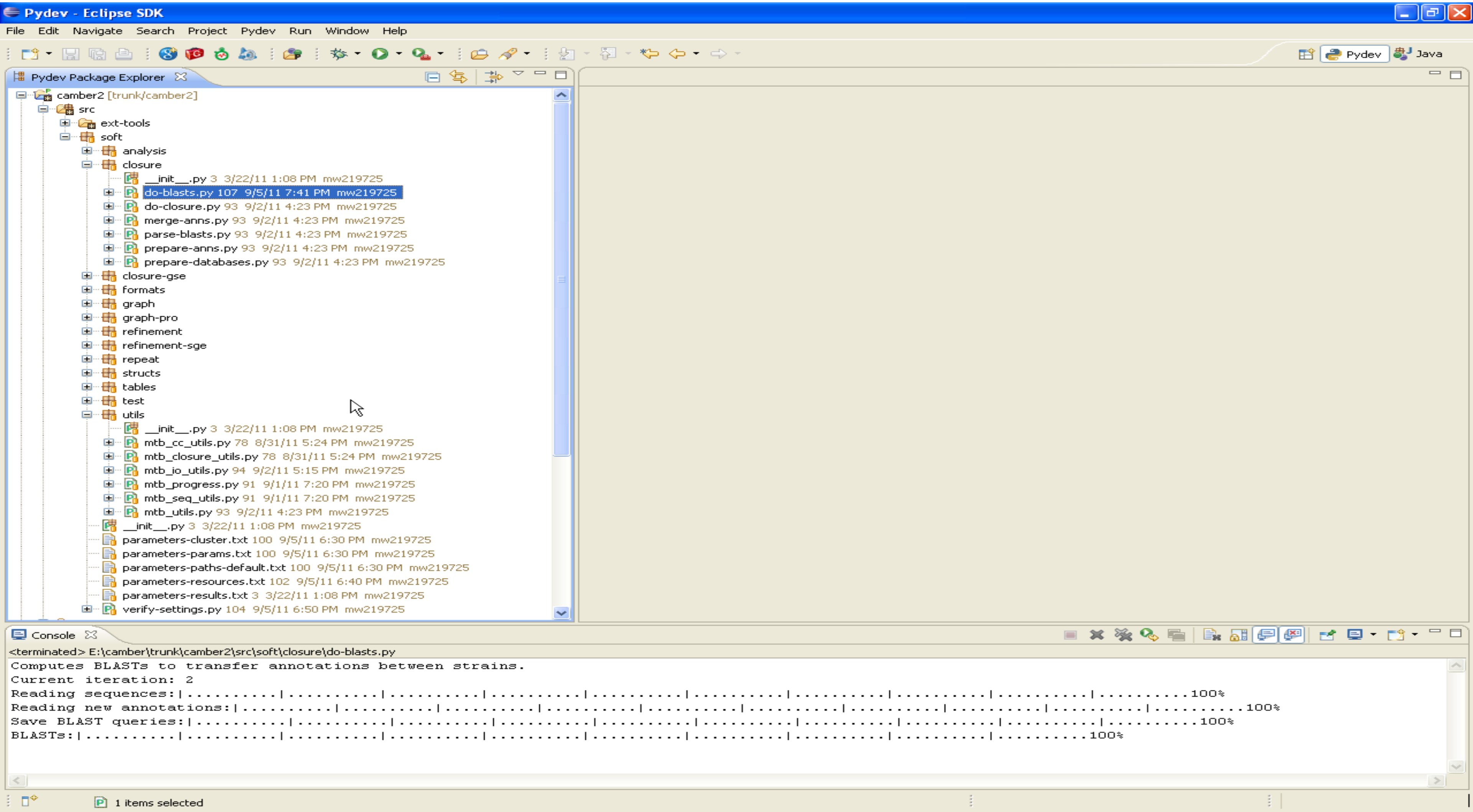
Iteration 2:
Merge transfered annotations running script: ***merge-anns.py***
2 iteration will be finished with 11 newly annotated ORFs



```
camber2 [trunk/camber2]
  src
    ext-tools
    soft
      analysis
      closure
        __init__.py 3 3/22/11 1:08 PM mw219725
        do-blasts.py 107 9/5/11 7:41 PM mw219725
        do-closure.py 93 9/2/11 4:23 PM mw219725
        merge-anns.py 93 9/2/11 4:23 PM mw219725
        parse-blasts.py 93 9/2/11 4:23 PM mw219725
        prepare-anns.py 93 9/2/11 4:23 PM mw219725
        prepare-databases.py 93 9/2/11 4:23 PM mw219725
      closure-gse
      formats
      graph
      graph-pro
      refinement
      refinement-sge
      repeat
      structs
      tables
      test
      utils
        __init__.py 3 3/22/11 1:08 PM mw219725
        mtb_cc_utils.py 78 8/31/11 5:24 PM mw219725
        mtb_closure_utils.py 78 8/31/11 5:24 PM mw219725
        mtb_io_utils.py 94 9/2/11 5:15 PM mw219725
        mtb_progress.py 91 9/1/11 7:20 PM mw219725
        mtb_seq_utils.py 91 9/1/11 7:20 PM mw219725
        mtb_utils.py 93 9/2/11 4:23 PM mw219725
      __init__.py 3 3/22/11 1:08 PM mw219725
      parameters-cluster.txt 100 9/5/11 6:30 PM mw219725
      parameters-params.txt 100 9/5/11 6:30 PM mw219725
      parameters-paths-default.txt 100 9/5/11 6:30 PM mw219725
      parameters-resources.txt 102 9/5/11 6:40 PM mw219725
      parameters-results.txt 3 3/22/11 1:08 PM mw219725
      verify-settings.py 104 9/5/11 6:50 PM mw219725
```

```
<terminated> E:\camber\trunk\camber2\src\soft\closure\merge-anns.py
Merges accepted BLAST hits with annotations.
Current iteration: 1
Reading sequences:|..........|..........|..........|..........|..........|..........|..........|..........|..........|..........100%
BLAST merge:|..........|..........|..........|..........|..........|..........|..........|..........|..........|..........100%
The closure procedure is still not computed. Number of BLASTs to compute in the next iteration: 11
```

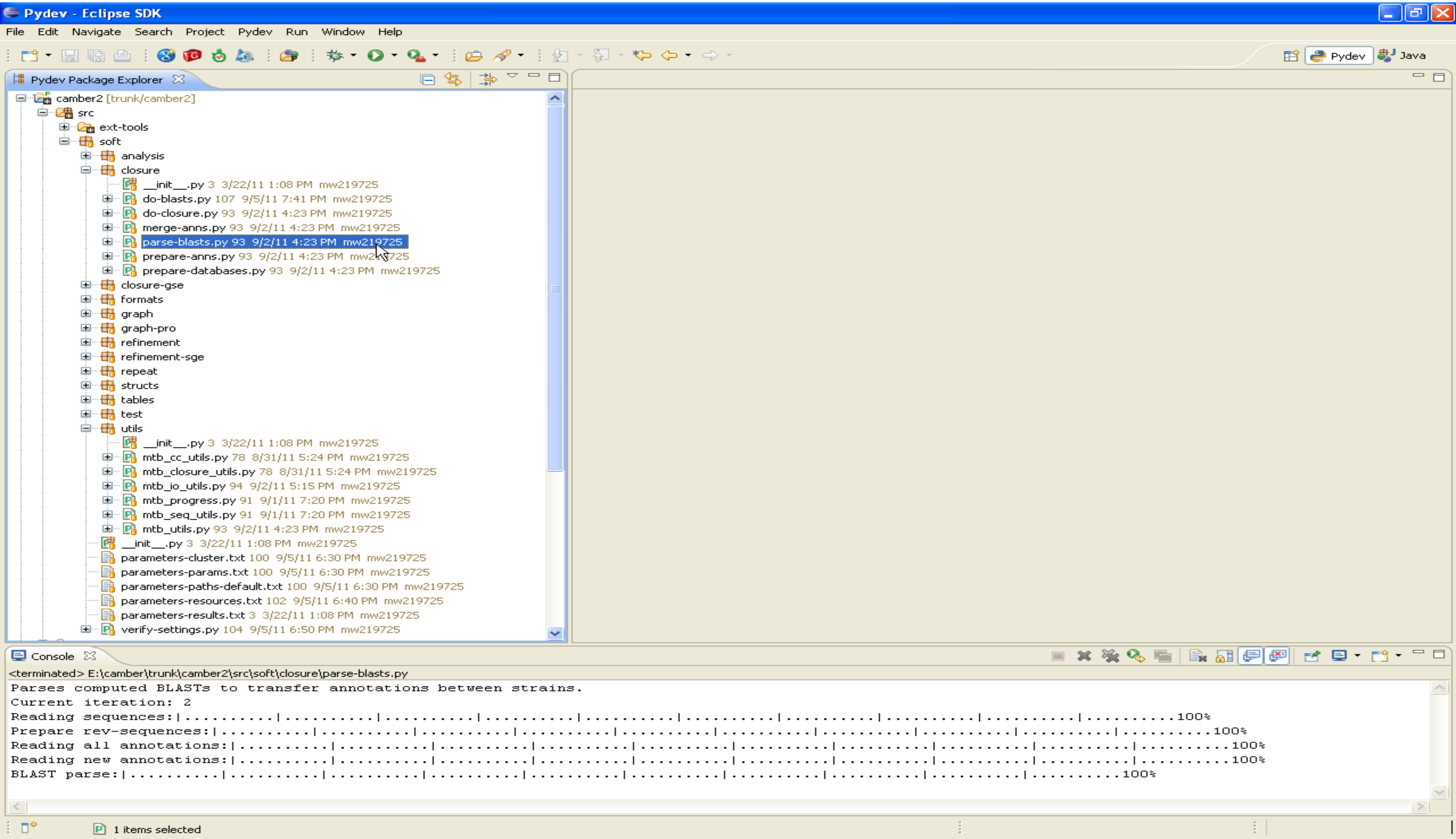
Iteration 3:
Compute BLASTs to transfer annotations running script:
do-blasts.py *(only a few seconds)*



```
camber2 [trunk/camber2]
  src
    ext-tools
    soft
      analysis
      closure
        __init__.py 3  3/22/11 1:08 PM  mw219725
        do-blasts.py 107  9/5/11 7:41 PM  mw219725
        do-closure.py 93  9/2/11 4:23 PM  mw219725
        merge-anns.py 93  9/2/11 4:23 PM  mw219725
        parse-blasts.py 93  9/2/11 4:23 PM  mw219725
        prepare-anns.py 93  9/2/11 4:23 PM  mw219725
        prepare-databases.py 93  9/2/11 4:23 PM  mw219725
      closure-gse
      formats
      graph
      graph-pro
      refinement
      refinement-sge
      repeat
      structs
      tables
      test
      utils
        __init__.py 3  3/22/11 1:08 PM  mw219725
        mtb_cc_utils.py 78  8/31/11 5:24 PM  mw219725
        mtb_closure_utils.py 78  8/31/11 5:24 PM  mw219725
        mtb_io_utils.py 94  9/2/11 5:15 PM  mw219725
        mtb_progress.py 91  9/1/11 7:20 PM  mw219725
        mtb_seq_utils.py 91  9/1/11 7:20 PM  mw219725
        mtb_utils.py 93  9/2/11 4:23 PM  mw219725
      __init__.py 3  3/22/11 1:08 PM  mw219725
      parameters-cluster.txt 100  9/5/11 6:30 PM  mw219725
      parameters-params.txt 100  9/5/11 6:30 PM  mw219725
      parameters-paths-default.txt 100  9/5/11 6:30 PM  mw219725
      parameters-resources.txt 102  9/5/11 6:40 PM  mw219725
      parameters-results.txt 3  3/22/11 1:08 PM  mw219725
      verify-settings.py 104  9/5/11 6:50 PM  mw219725
```

```
<terminated> E:\camber\trunk\camber2\src\soft\closure\do-blasts.py
Computes BLASTs to transfer annotations between strains.
Current iteration: 2
Reading sequences:|..........|..........|..........|..........|..........|..........|..........|..........|..........|..........100%
Reading new annotations:|..........|..........|..........|..........|..........|..........|..........|..........|..........|..........100%
Save BLAST queries:|..........|..........|..........|..........|..........|..........|..........|..........|..........|..........100%
BLASTs:|..........|..........|..........|..........|..........|..........|..........|..........|..........|..........100%
```

Iteration 3:
Parse and rate (accept or reject) BLAST hits running script:
parse-blasts.py

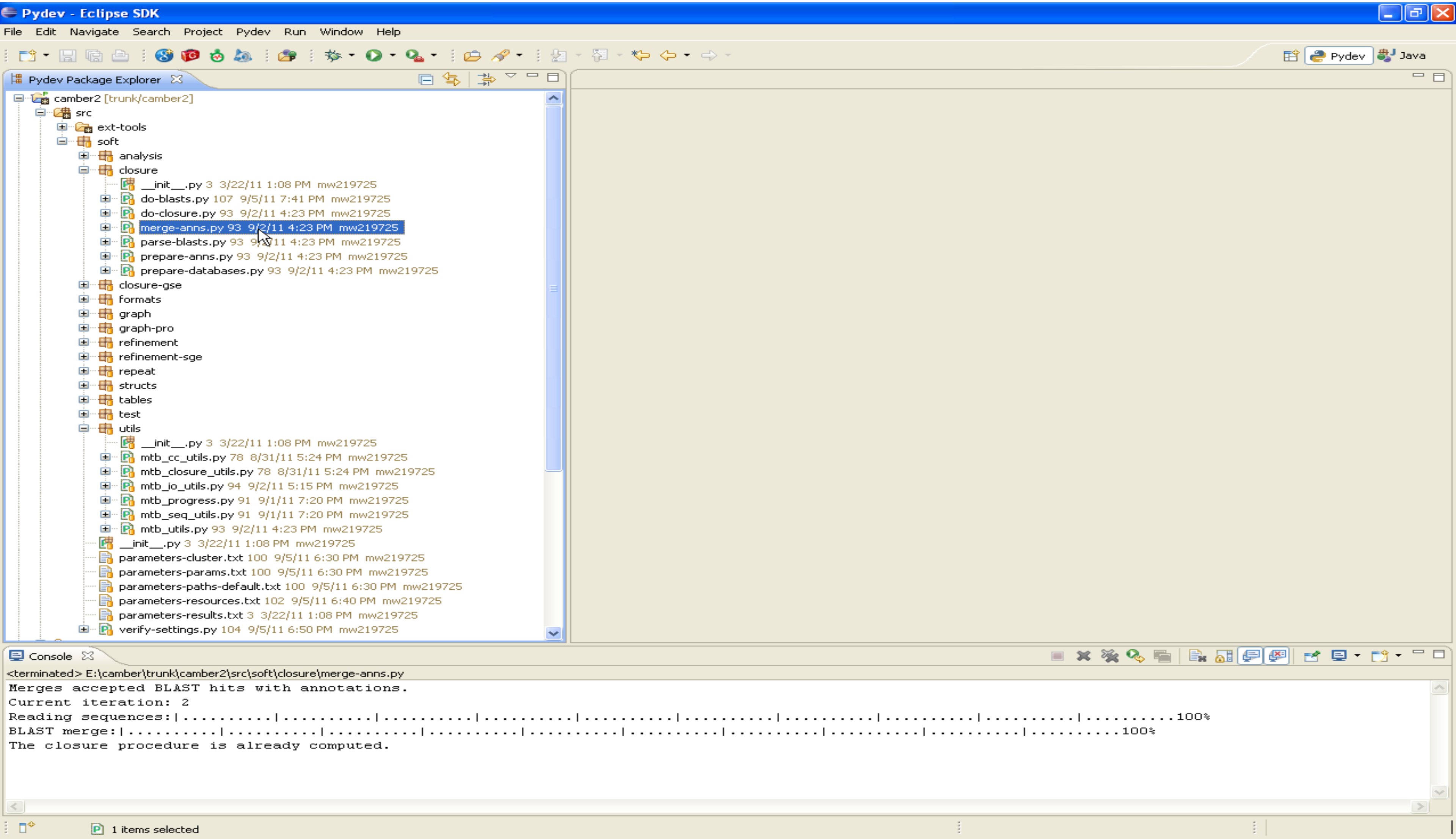


```
camber2 [trunk/camber2]
  src
    ext-tools
    soft
      analysis
      closure
        __init__.py 3  3/22/11 1:08 PM  mw219725
        do-blasts.py 107  9/5/11 7:41 PM  mw219725
        do-closure.py 93  9/2/11 4:23 PM  mw219725
        merge-anns.py 93  9/2/11 4:23 PM  mw219725
        parse-blasts.py 93  9/2/11 4:23 PM  mw219725
        prepare-anns.py 93  9/2/11 4:23 PM  mw219725
        prepare-databases.py 93  9/2/11 4:23 PM  mw219725
      closure-gse
      formats
      graph
      graph-pro
      refinement
      refinement-sge
      repeat
      structs
      tables
      test
      utils
        __init__.py 3  3/22/11 1:08 PM  mw219725
        mtb_cc_utils.py 78  8/31/11 5:24 PM  mw219725
        mtb_closure_utils.py 78  8/31/11 5:24 PM  mw219725
        mtb_io_utils.py 94  9/2/11 5:15 PM  mw219725
        mtb_progress.py 91  9/1/11 7:20 PM  mw219725
        mtb_seq_utils.py 91  9/1/11 7:20 PM  mw219725
        mtb_utils.py 93  9/2/11 4:23 PM  mw219725
      __init__.py 3  3/22/11 1:08 PM  mw219725
      parameters-cluster.txt 100  9/5/11 6:30 PM  mw219725
      parameters-params.txt 100  9/5/11 6:30 PM  mw219725
      parameters-paths-default.txt 100  9/5/11 6:30 PM  mw219725
      parameters-resources.txt 102  9/5/11 6:40 PM  mw219725
      parameters-results.txt 3  3/22/11 1:08 PM  mw219725
      verify-settings.py 104  9/5/11 6:50 PM  mw219725
```

```
<terminated> E:\camber\trunk\camber2\src\soft\closure\parse-blasts.py
Parses computed BLASTs to transfer annotations between strains.
Current iteration: 2
Reading sequences:|..........|..........|..........|..........|..........|..........|..........|..........|..........|..........100%
Prepare rev-sequences:|..........|..........|..........|..........|..........|..........|..........|..........|..........|..........100%
Reading all annotations:|..........|..........|..........|..........|..........|..........|..........|..........|..........|..........100%
Reading new annotations:|..........|..........|..........|..........|..........|..........|..........|..........|..........|..........100%
BLAST parse:|..........|..........|..........|..........|..........|..........|..........|..........|..........|..........100%
```

1 items selected

Iteration 3:
Merge transfered annotations running script: ***merge-anns.py***
The closure procedure is computed.



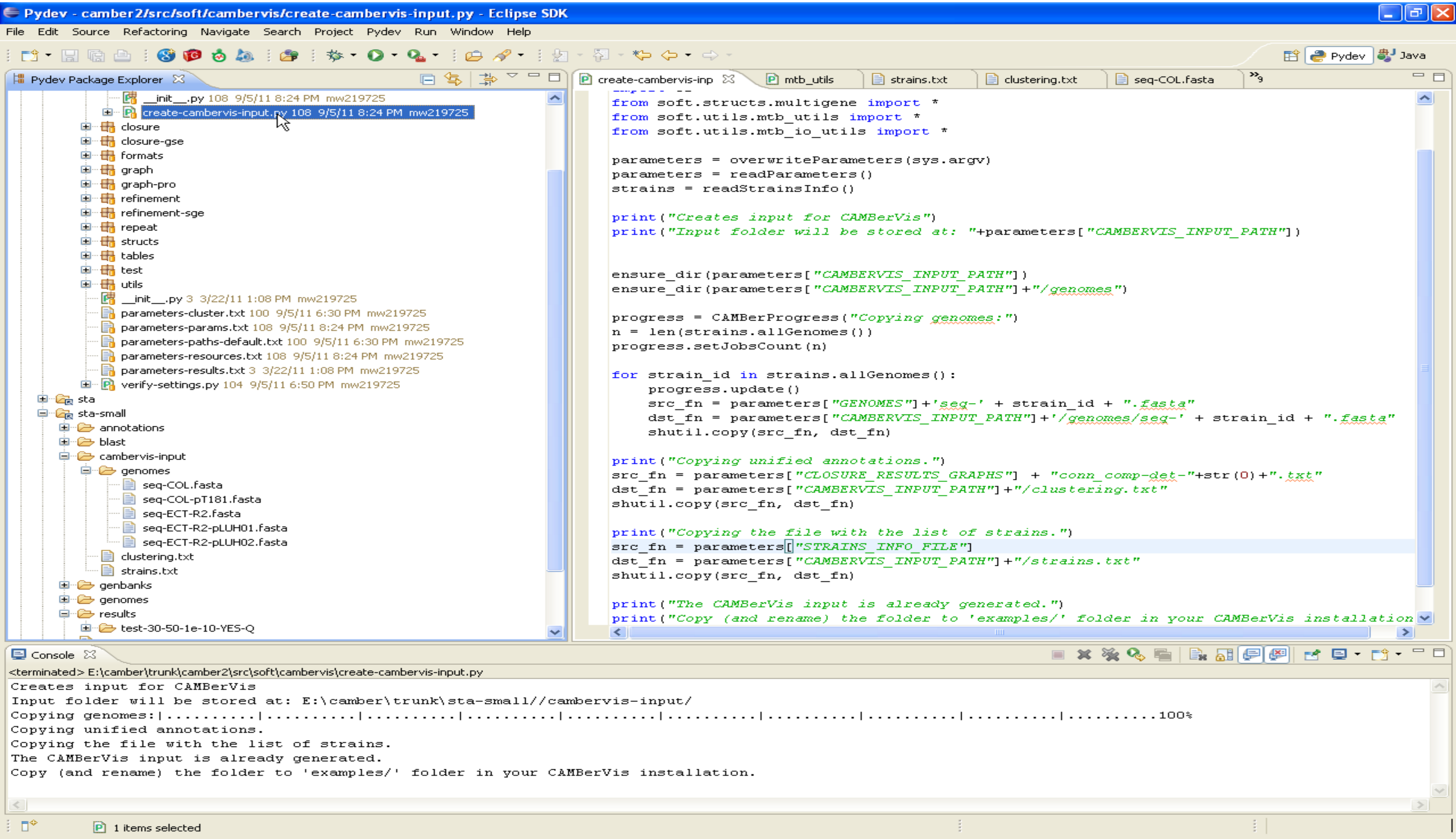
```
camber2 [trunk/camber2]
  src
    ext-tools
    soft
      analysis
      closure
        __init__.py 3 3/22/11 1:08 PM mw219725
        do-blasts.py 107 9/5/11 7:41 PM mw219725
        do-closure.py 93 9/2/11 4:23 PM mw219725
        merge-anns.py 93 9/2/11 4:23 PM mw219725
        parse-blasts.py 93 9/2/11 4:23 PM mw219725
        prepare-anns.py 93 9/2/11 4:23 PM mw219725
        prepare-databases.py 93 9/2/11 4:23 PM mw219725
      closure-gse
      formats
      graph
      graph-pro
      refinement
      refinement-sge
      repeat
      structs
      tables
      test
      utils
        __init__.py 3 3/22/11 1:08 PM mw219725
        mtb_cc_utils.py 78 8/31/11 5:24 PM mw219725
        mtb_closure_utils.py 78 8/31/11 5:24 PM mw219725
        mtb_io_utils.py 94 9/2/11 5:15 PM mw219725
        mtb_progress.py 91 9/1/11 7:20 PM mw219725
        mtb_seq_utils.py 91 9/1/11 7:20 PM mw219725
        mtb_utils.py 93 9/2/11 4:23 PM mw219725
      __init__.py 3 3/22/11 1:08 PM mw219725
      parameters-cluster.txt 100 9/5/11 6:30 PM mw219725
      parameters-params.txt 100 9/5/11 6:30 PM mw219725
      parameters-paths-default.txt 100 9/5/11 6:30 PM mw219725
      parameters-resources.txt 102 9/5/11 6:40 PM mw219725
      parameters-results.txt 3 3/22/11 1:08 PM mw219725
      verify-settings.py 104 9/5/11 6:50 PM mw219725
```

```
<terminated> E:\camber\trunk\camber2\src\soft\closure\merge-anns.py
Merges accepted BLAST hits with annotations.
Current iteration: 2
Reading sequences:|..........|..........|..........|..........|..........|..........|..........|..........|..........|..........100%
BLAST merge:|..........|..........|..........|..........|..........|..........|..........|..........|..........|..........100%
The closure procedure is already computed.
```

Run subsequently scripts:

- ***create-gene-graph.py***
- ***create-multigene-graph.py***
- ***save-multigene-details.py***
- ***compute-components.py***
- ***save-component-details.py***

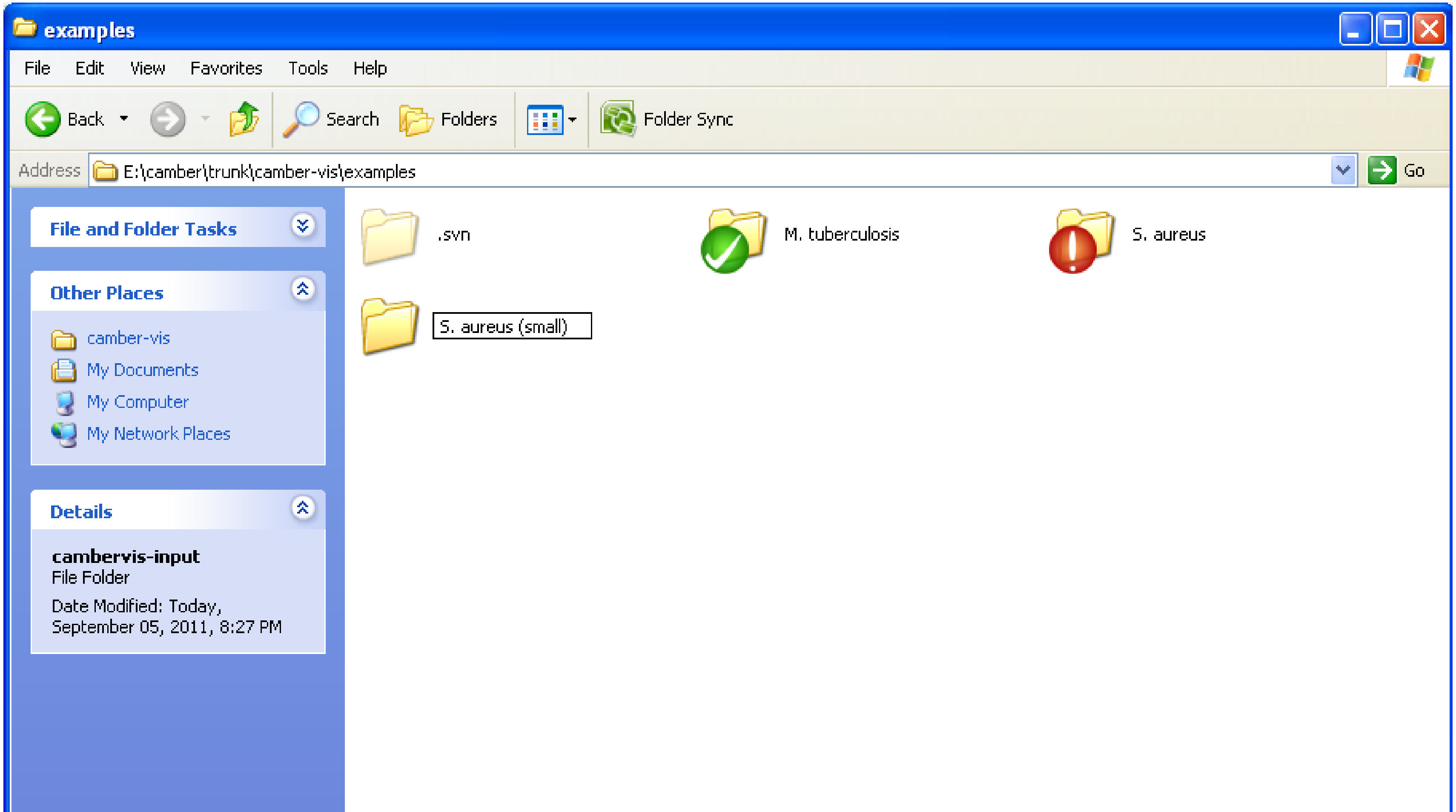
Generate the input data for CAMBerVis running the script: ***create-cambervis-input.py***



```python
from soft.structs.multigene import *
from soft.utils.mtb_utils import *
from soft.utils.mtb_io_utils import *

parameters = overwriteParameters(sys.argv)
parameters = readParameters()
strains = readStrainsInfo()

print("Creates input for CAMBerVis")
print("Input folder will be stored at: "+parameters["CAMBERVIS_INPUT_PATH"])


ensure_dir(parameters["CAMBERVIS_INPUT_PATH"])
ensure_dir(parameters["CAMBERVIS_INPUT_PATH"]+"/genomes")

progress = CAMBerProgress("Copying genomes:")
n = len(strains.allGenomes())
progress.setJobsCount(n)

for strain_id in strains.allGenomes():
    progress.update()
    src_fn = parameters["GENOMES"]+'seq-' + strain_id + ".fasta"
    dst_fn = parameters["CAMBERVIS_INPUT_PATH"]+'/genomes/seq-' + strain_id + ".fasta"
    shutil.copy(src_fn, dst_fn)

print("Copying unified annotations.")
src_fn = parameters["CLOSURE_RESULTS_GRAPHS"] + "conn_comp-det-"+str(0)+".txt"
dst_fn = parameters["CAMBERVIS_INPUT_PATH"]+"/clustering.txt"
shutil.copy(src_fn, dst_fn)

print("Copying the file with the list of strains.")
src_fn = parameters["STRAINS_INFO_FILE"]
dst_fn = parameters["CAMBERVIS_INPUT_PATH"]+"/strains.txt"
shutil.copy(src_fn, dst_fn)

print("The CAMBerVis input is already generated.")
print("Copy (and rename) the folder to 'examples/' folder in your CAMBerVis installation
```

```
<terminated> E:\camber\trunk\camber2\src\soft\cambervis\create-cambervis-input.py
Creates input for CAMBerVis
Input folder will be stored at: E:\camber\trunk\sta-small//cambervis-input/
Copying genomes:|..........|..........|..........|..........|..........|..........|..........|..........|..........|..........100%
Copying unified annotations.
Copying the file with the list of strains.
The CAMBerVis input is already generated.
Copy (and rename) the folder to 'examples/' folder in your CAMBerVis installation.
```

Last step generated the input folder cambervis-input, copy and rename (OPTIONAL) the the folder into examples folder in CAMBerVis installation. In this example we rename it as „S.aureus (small)”

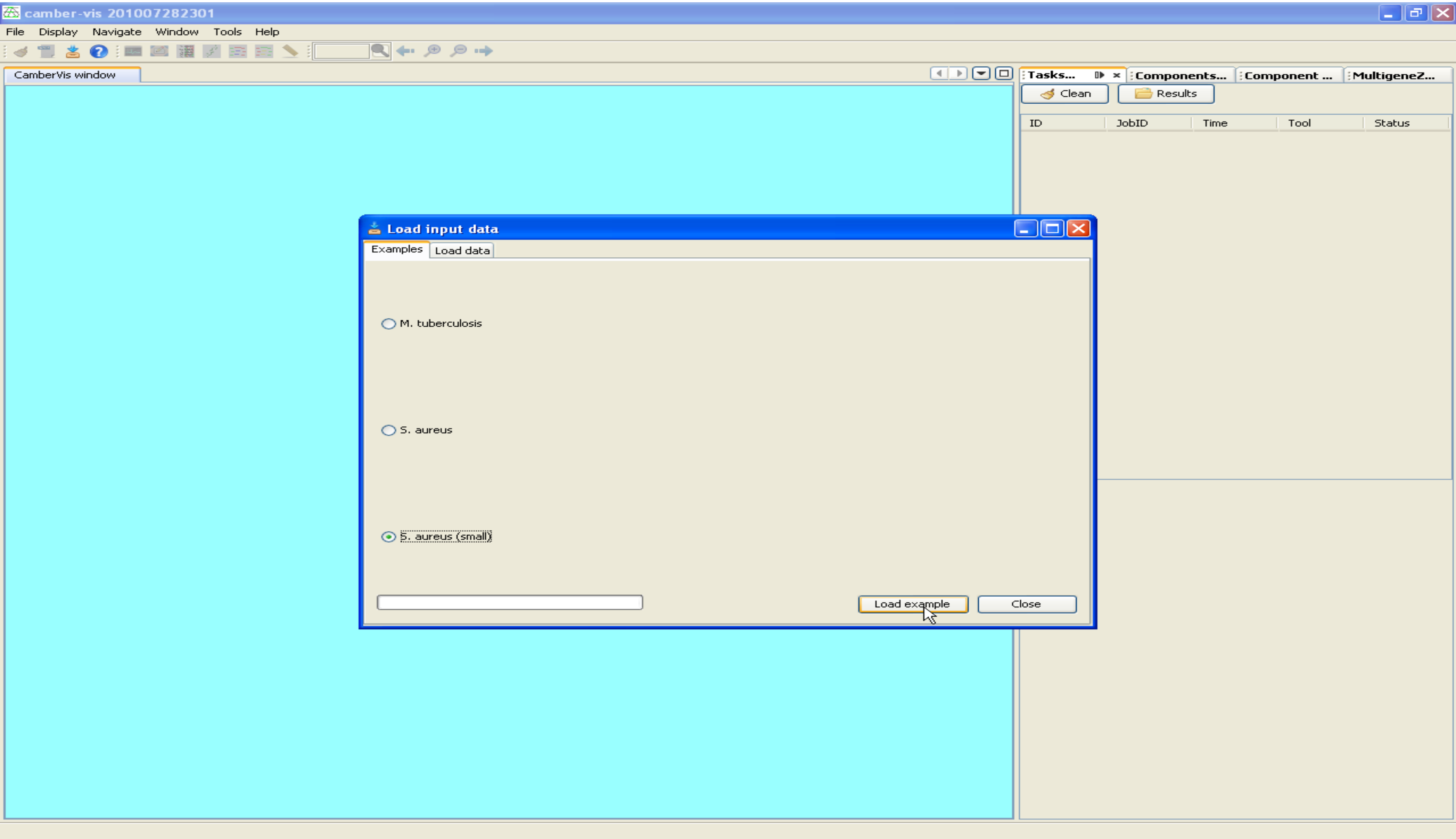


E:\camber\trunk\camber-vis\examples

S. aureus (small)

cambervis-input
File Folder
Date Modified: Today, September 05, 2011, 8:27 PM

Run CAMBerVis, the new input data S.aures (small) should be available



○ M. tuberculosis

○ S. aureus

● S. aureus (small)