

Submitting RCC sequences to Genbank with Geneious

Daniel Vaulot & Adriana Lopes dos Santos

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1 Aim of document

This document explains how to use Geneious to :

- assemble and clean final sequences from several traces using different internal primers
- annotate the sequences
- submit to Genbank using Bankit through the Genious plug-in
- submit to Genbank for 18S, ITS and 16S that cannot be any more be submitted using Bankit

Notes

- Look at legends **below** screen captures for directions.
- Changes from previous versions have been labelled with 

2 Assemble and clean sequences

- Import the ab1 trace
 - Drag and Drop



Figure 1: Import trace sequences

- Trim the sequences
 - Annotate & Predict → Trim Ends
 - Use error probability limit from 0.01 to 0.02 (increase to 0.05 if cannot assemble correctly, the trimming will be less drastic). For single reads (e.g. 528F) use a maximum of 0.02.

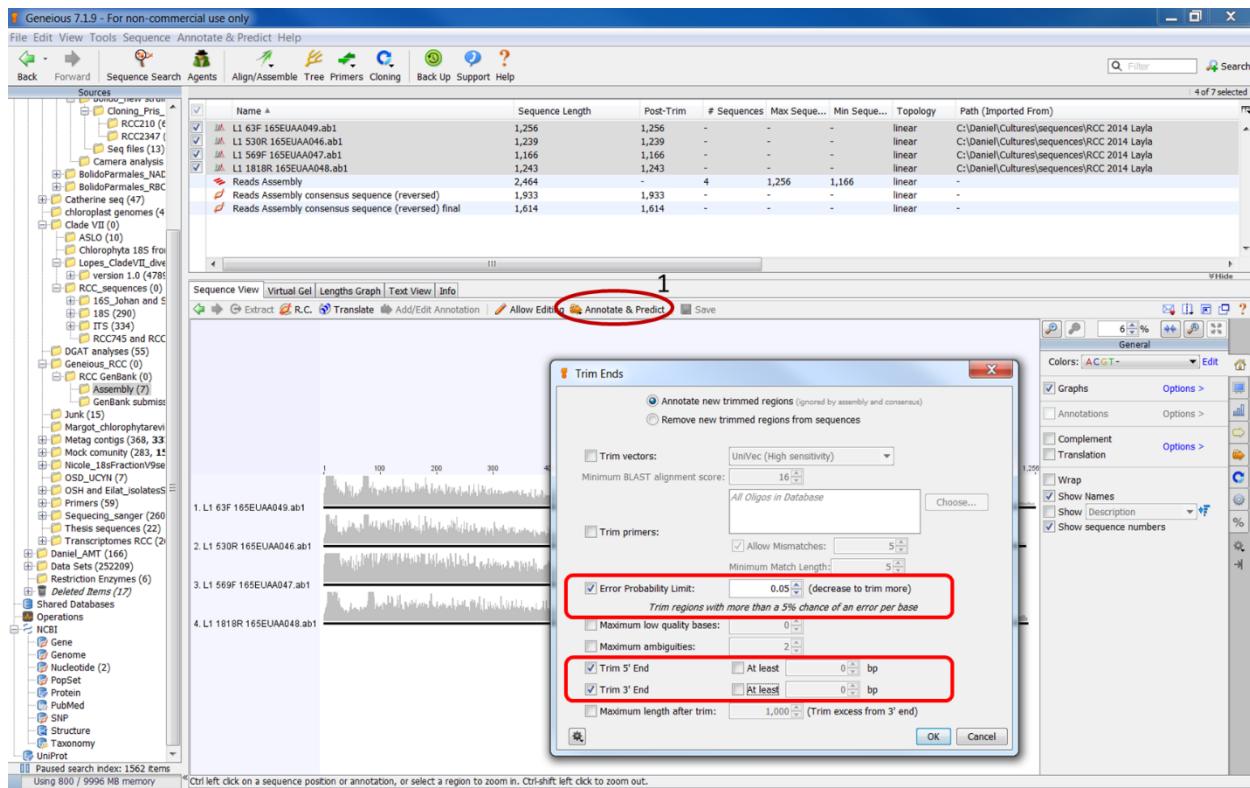


Figure 2: Trim sequences

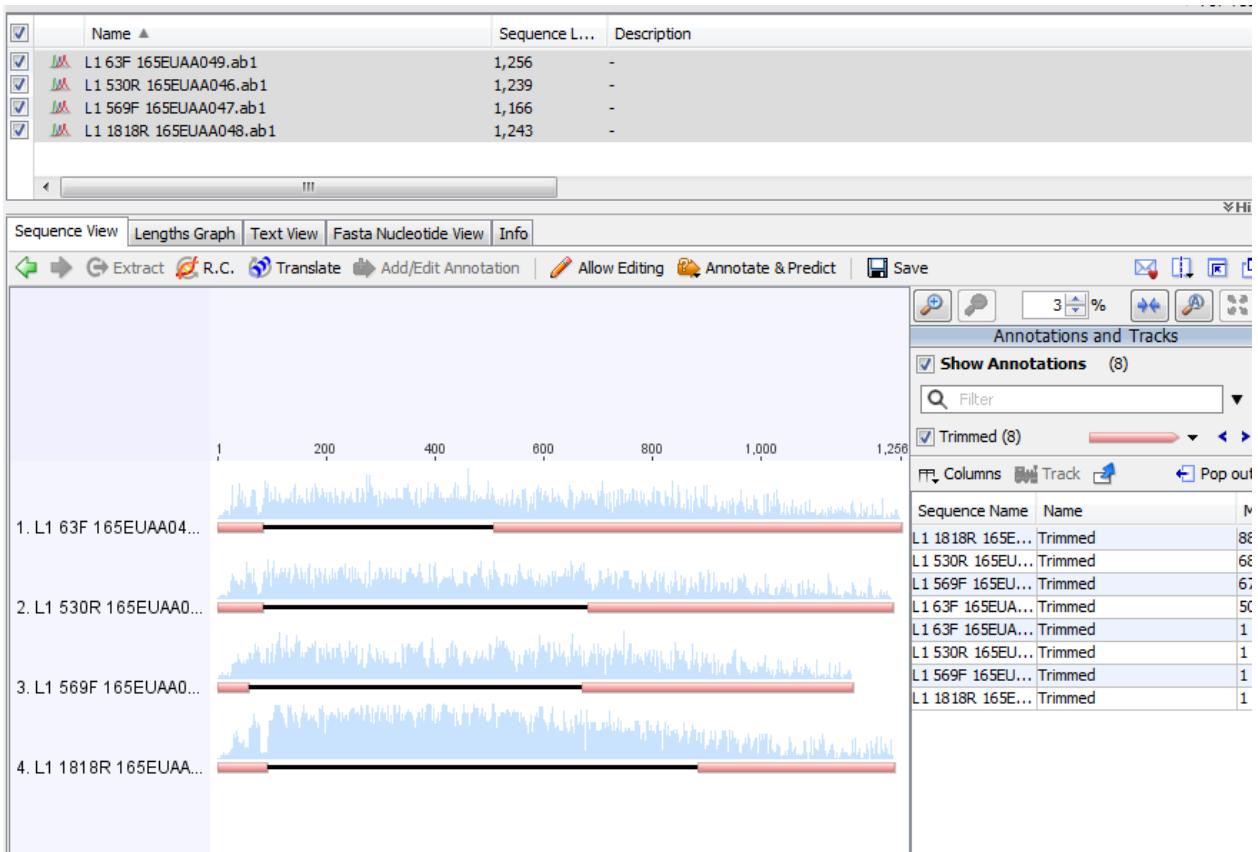


Figure 3: Visualize the trimmed sequences

- Assemble if several primers have been used
 - Align/Assemble → De Novo Assemble
 - Use for assembly name: RCC####_gene-name_your-initials_date
 - * e.g. RCC2497_18S_PG_2018_02_15
-  The name should not contain any space
- Select “save the consensus”
 - Select “save contigs”.
 - You may have to change the trimming level (increase probability level - see above) if traces cannot be assembled

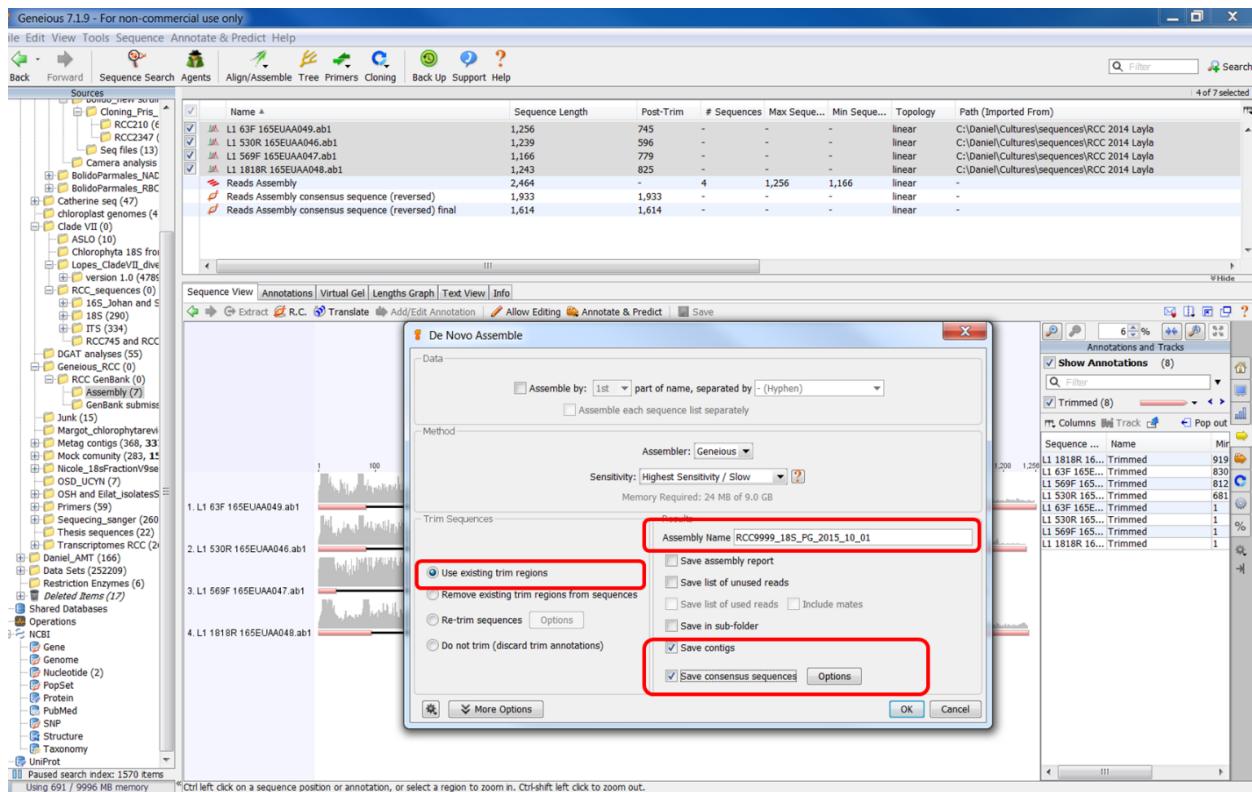


Figure 4: Assemble sequences

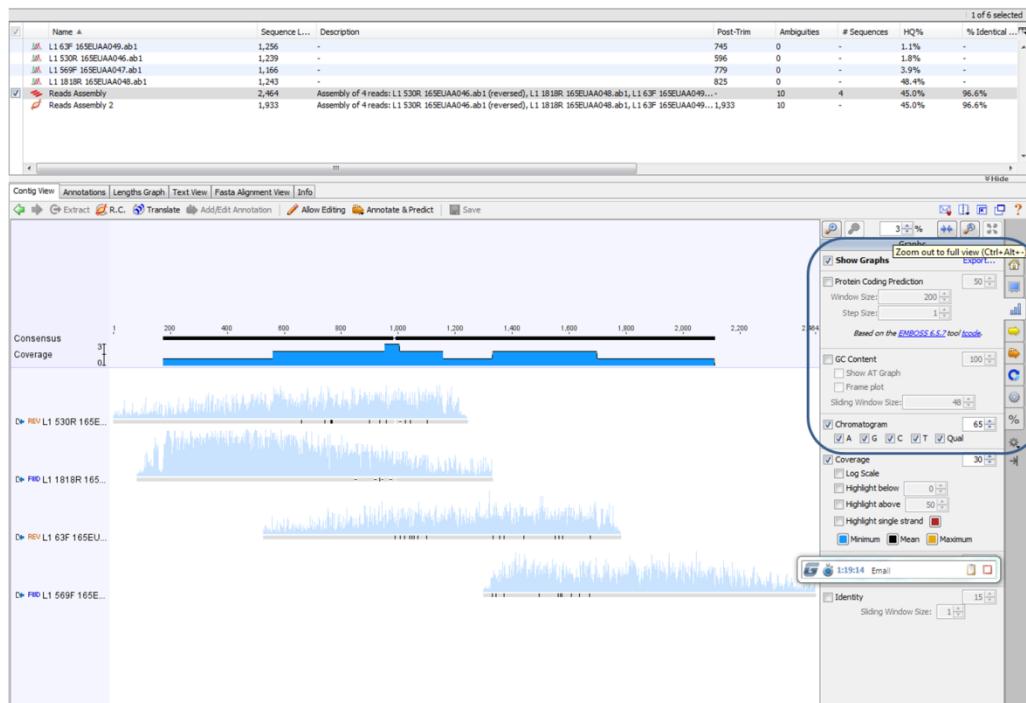


Figure 5: Visualize the assembled sequences

- Check the assembly and edit the consensus if necessary.



This is very important to make sure that your sequence is clean.
 – Allow editing
 – Edit bases that maybe wrongly assigned in one the trace.

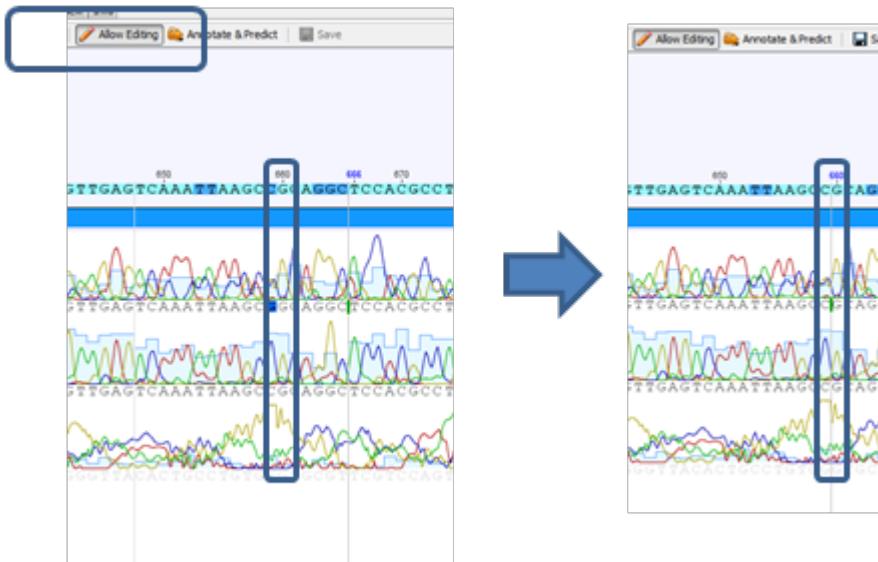


Figure 6: Check and correct assembly

- Select and extract consensus

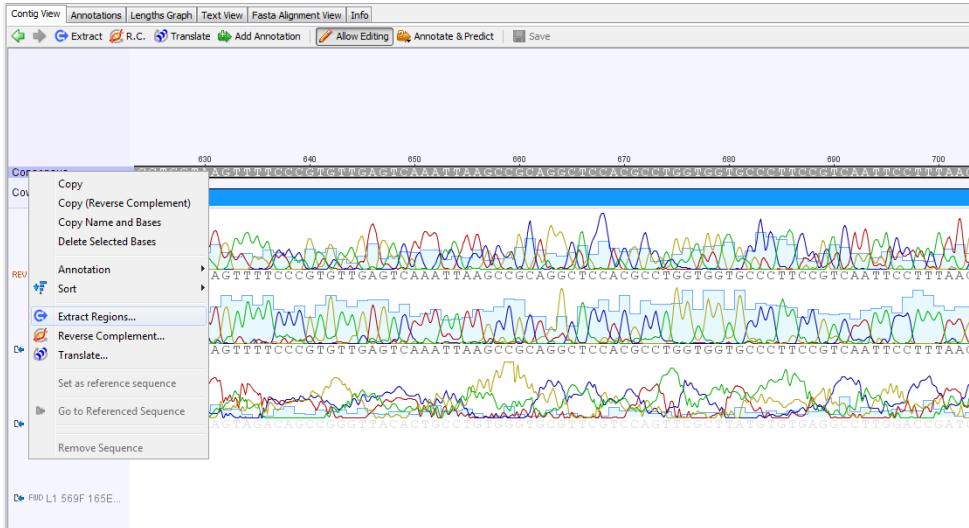


Figure 7: Extract consensus

- Reverse complement if necessary (if the sequence was assembled the other way around).
- Locate primers, test forward and reverse separately.
 – Tools -> Primers > Test with saved primers

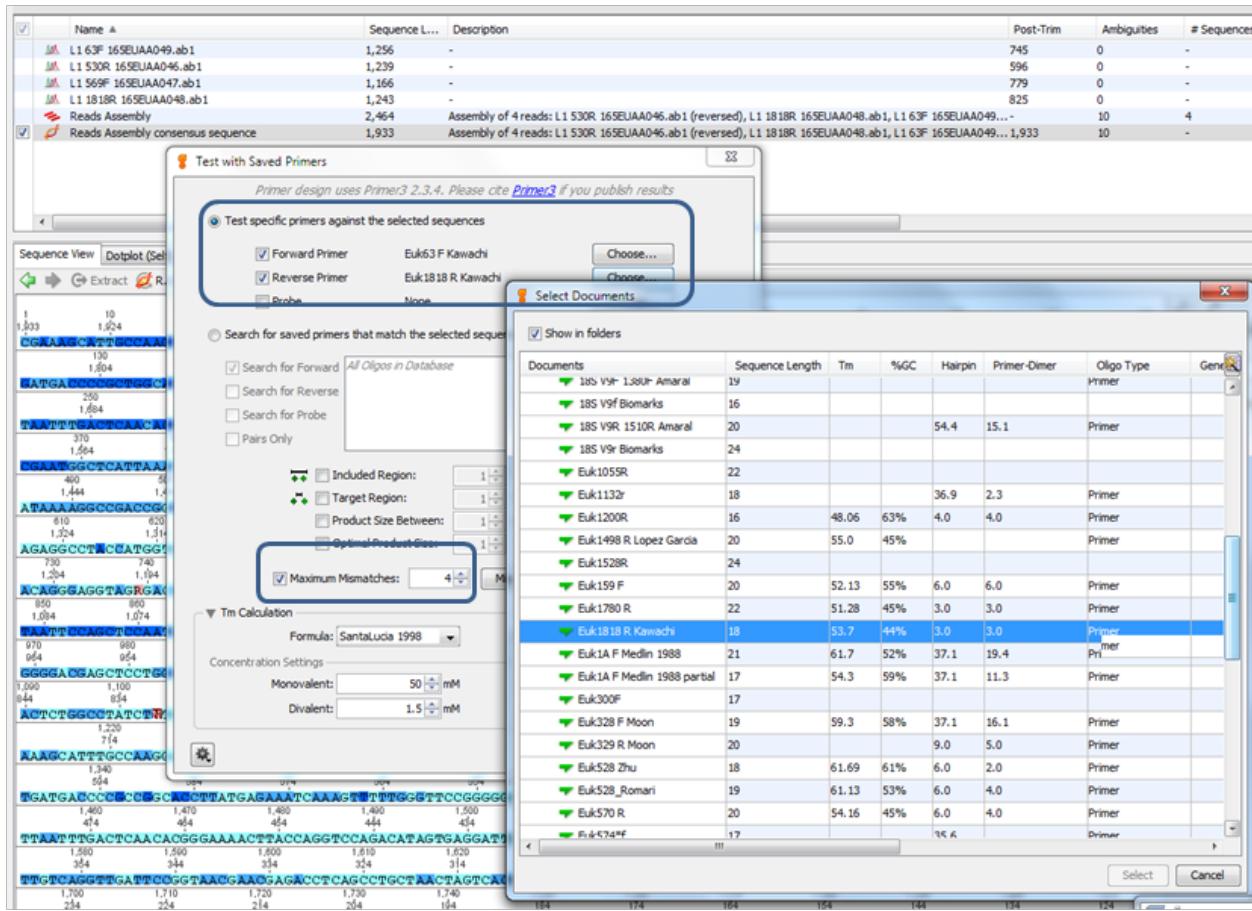


Figure 8: Test with saved primers

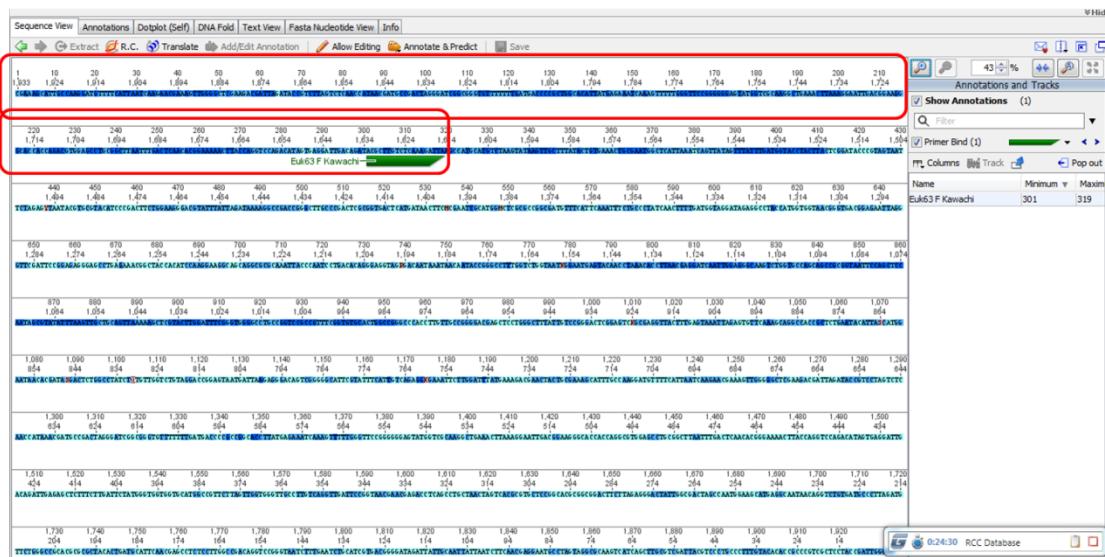


Figure 9: Locate primers

- Remove everything which is outside of primers **including the primers**.
 - allow editing
 - pressing the left button of the mouse, mark the region to be delete, It will show in green
 - press delete



Figure 10: Remove everything outside primers

- Et voilà, you have a clean sequence
 - The coloring corresponds to sequence quality based on the traces and assembly.

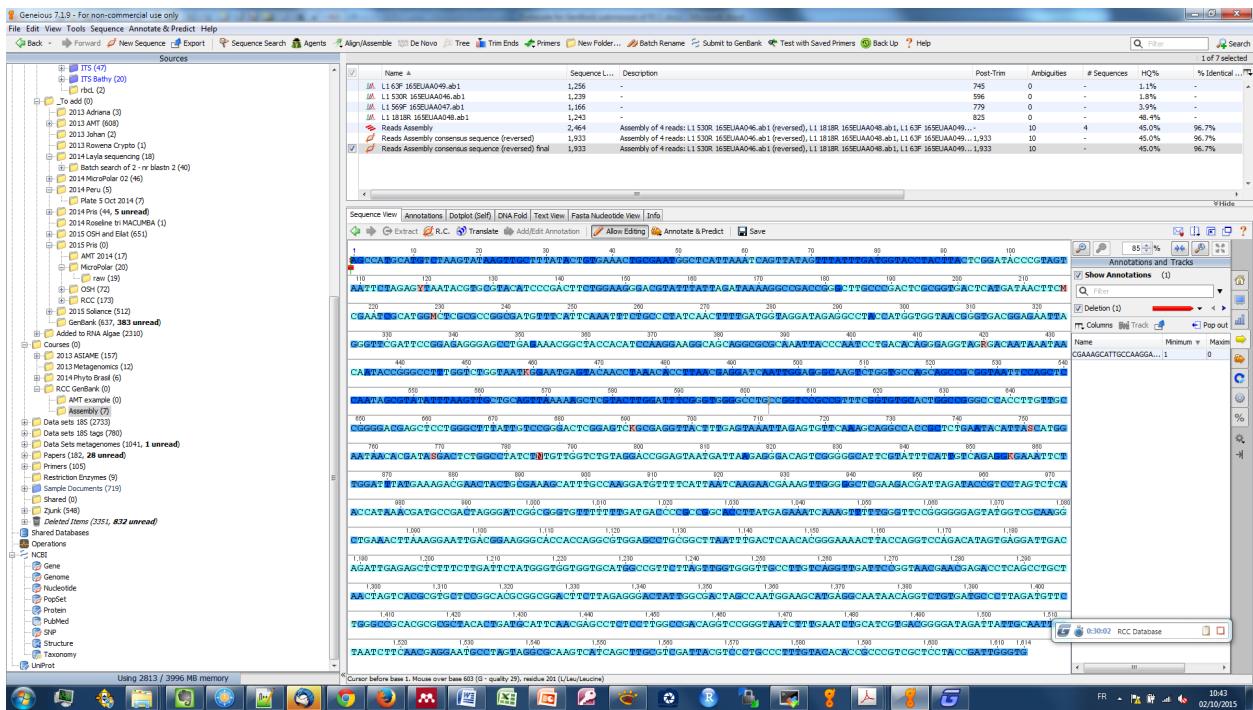


Figure 11: Final sequence

3 Add informations to sequences

3.1 Taxonomy

- Do a batch BLAST search
 - Select the files -> "sequence search" or "Blast search"
 - Sometimes it does not work so you can do with the NCBI BLAST server
 - Pay attention to the following parameters:
 - * **database** : nr genbank
 - * **program** : blastn (for protein coding gene like rbcL the blastX can be also use to confirmed)
 - * **results** : hit table
 - * **maximum hits** : 25 at least
 - Parameters can be saved, recalled and deleted by clicking at the bottom of dialog box
 - * 'save current settings -> name -> save.
 - You can request from NCBI an API key which increase the number of request you can do. The process is explained on the NCBI web site

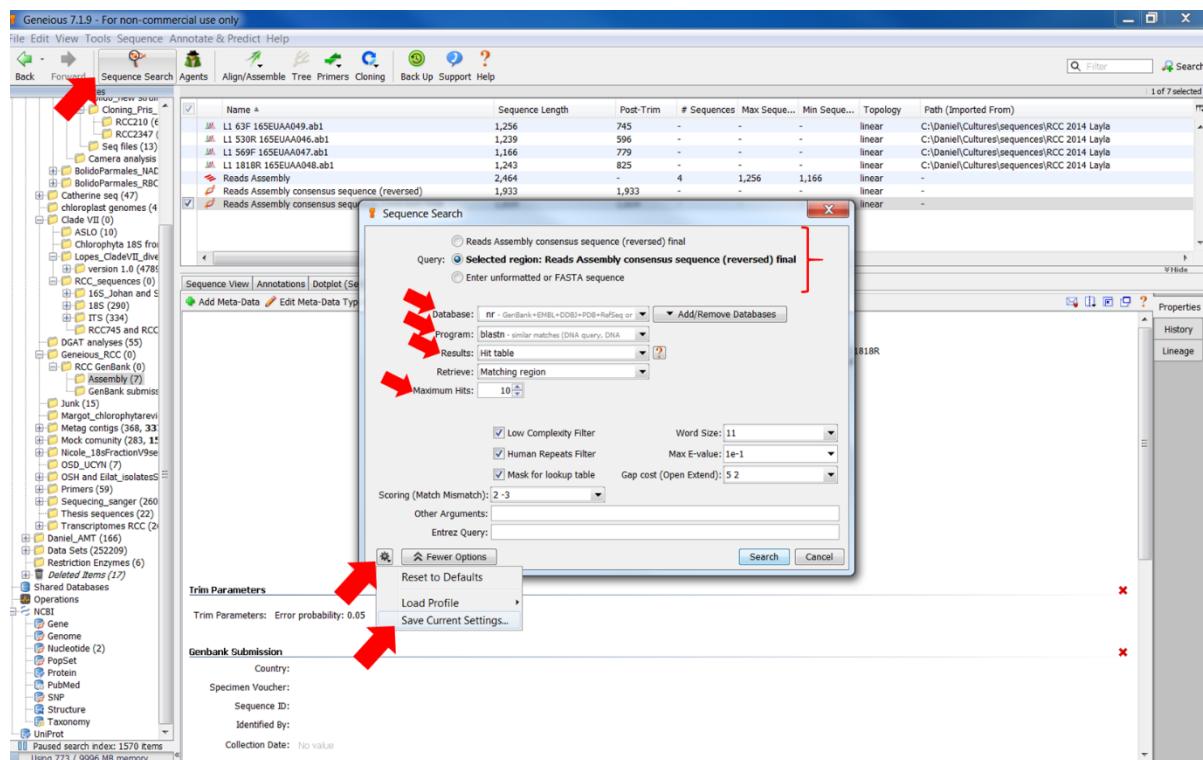


Figure 12: BLASTN

The screenshot shows the 'NCBI Account Settings' page. At the top, there's a message: 'Your API Key has been created successfully.' Below this, the 'Email' section displays the email address 'vaulot@sb-roscoff.fr (confirmed)' with a 'Change' button. The 'Native NCBI Account' section shows the username 'vaulot', password (redacted), security question ('What is your contact email address?'), and a 'Change' button for the question. Under 'Linked accounts', it says 'None'. The 'Delegates' section allows adding delegates to manage bibliographies and SciENcv profiles, with a 'Add a Delegate' link. The 'API Key Management' section shows an API key '97ce6407215b5d1b6f5ee3ce8a6703793608' with 'Replace' and 'Delete' buttons. A red arrow points from the text 'Click here' to the 'Sign Out' link in the top right. Another red arrow points from the text 'Generate API' to the 'Replace' button.

Your API Key has been created successfully.

My NCBI » Settings

NCBI Account Settings

Email

vaulot@sb-roscoff.fr (confirmed)

This email is used for delivery of saved searches and recovery of password for your native NCBI account.

Change

Native NCBI Account The following username and password is maintained by NCBI.

Username: **vaulot**

Password: *********

Security Question: What is your contact email address?

Change

Linked accounts You can sign in via these 3rd-parties. Contact the 3rd party for sign-in related issues.

None

Change

Delegates

You can add delegates to help you manage your bibliography and/or SciENcv profiles.

Add a Delegate

API Key Management

API Key

97ce6407215b5d1b6f5ee3ce8a6703793608

Replace Delete

Click here

Generate API

Figure 13: Request a NCBI key

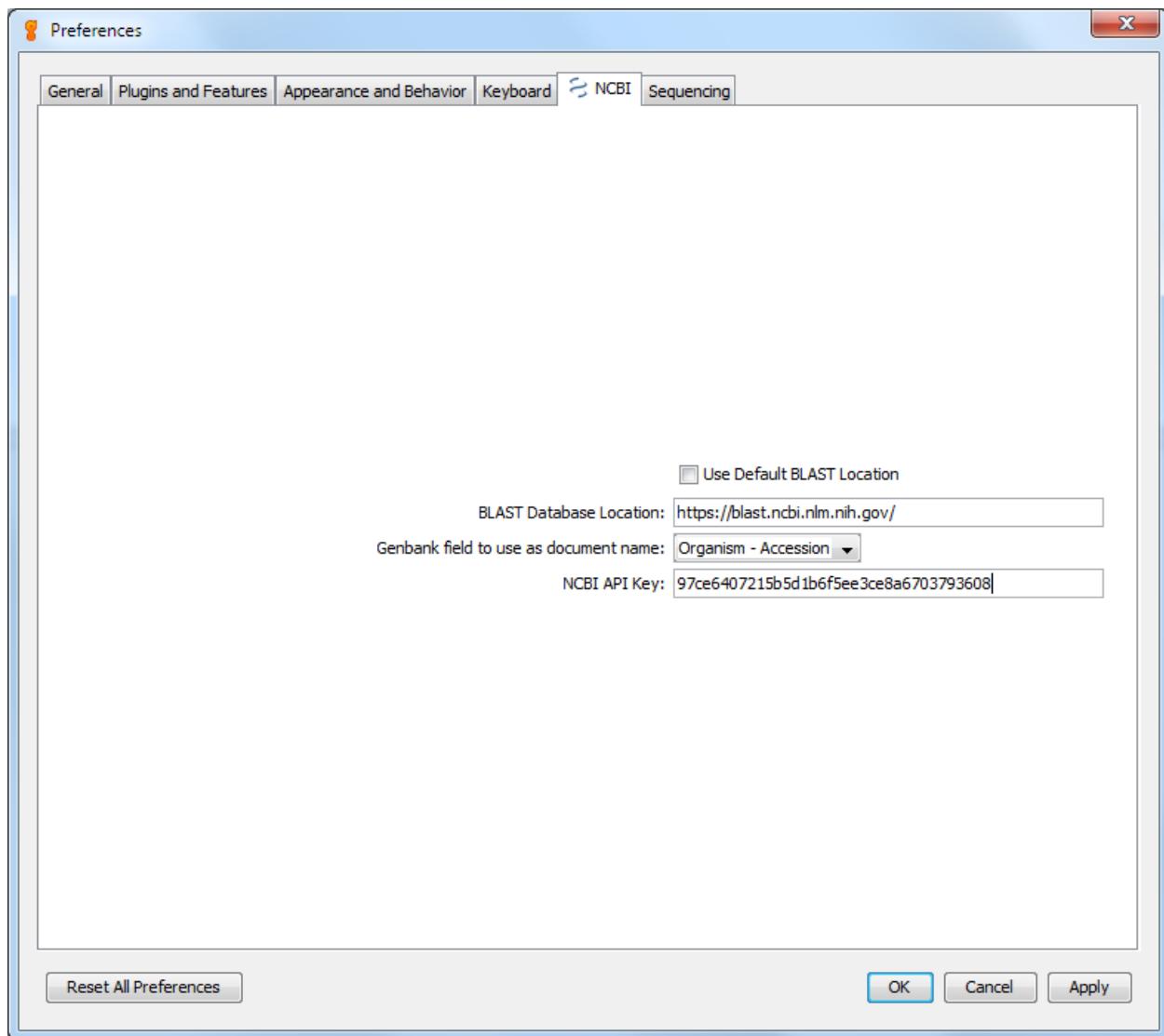


Figure 14: Enter they key in Geneious preferences

- Retrieve the closest sequence from GenBank (*Optional*)
 - From Geneious folder with the Blast results, select the closest result, drag the file into your folder in your local database if you wish to retain the file and/or modify it.
 - From Genbank: Copy the accession number → go to NCBI → nucleotide → paste the accession number (look the figure bellow). You drag the file into your folder in your local database if you wish to retain the file and/or modify it.

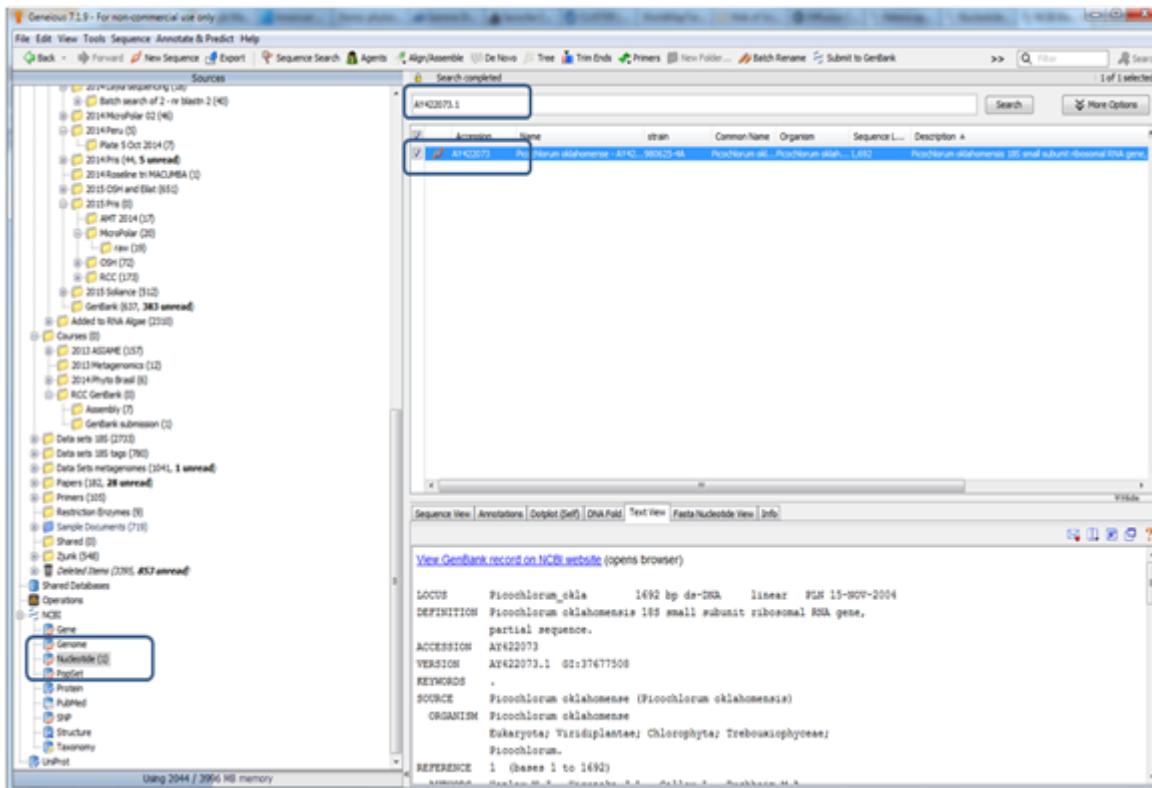


Figure 15: Retrieve closely related sequences from Genbank

- Do a manual alignment (*Optional*)
 - This is very useful to detect introns, for ITS sequences, combine gene sequencing partial 18S + 28S for example.
 - Align/Assemble -> Pairwise Align - MAFFT using the default parameters

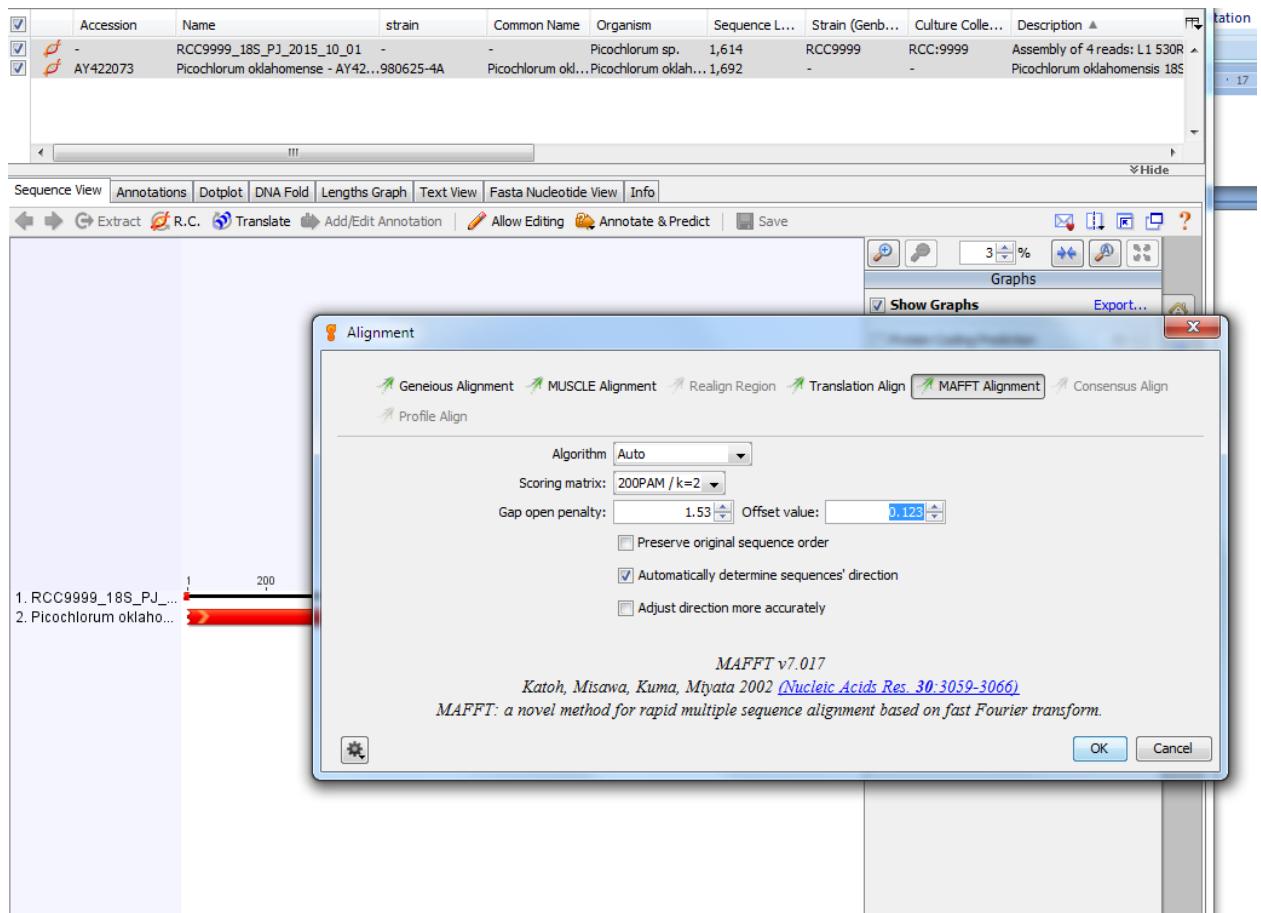


Figure 16: Alignement parameters

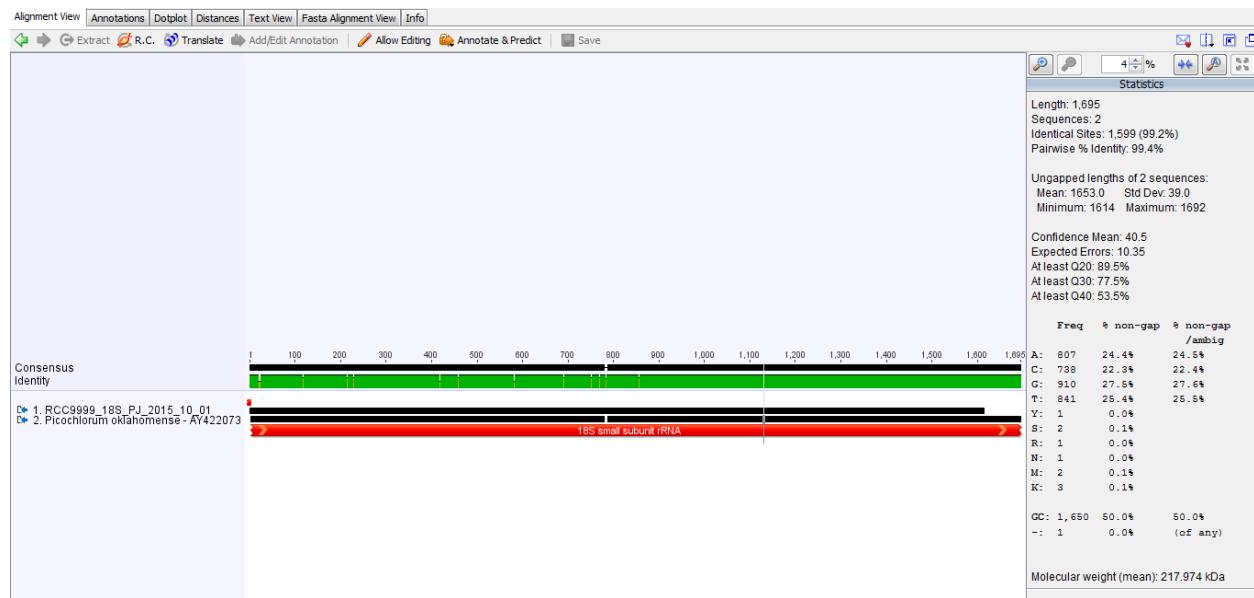


Figure 17: Alignement results

3.2 Gene annotation



This step is NOT necessary for 16S, 18S, ITS

- With the mouse, select your sequence, add notation
- Parameters to be changed (look the picture below)
 - Name:** name of the gene
 - Type:**
 - * select rRNA for 18S, ITS, 16S platidial and 28S
 - * CDS or gene coding sequence for example rbcl
- Add property using the 1st ADD: name = product, value = name of gene, for example 18S rRNA.
- Add annotation using the 2nd ADD (click in INTERVALS to see it): click in “truncated left end” and “truncated right end”. This is to tell that the sequence is not complete. For example, the 18S in this tutorial had the extremities before the primer removed, so is incomplete.



Make sure you do not have two annotations for the same gene !

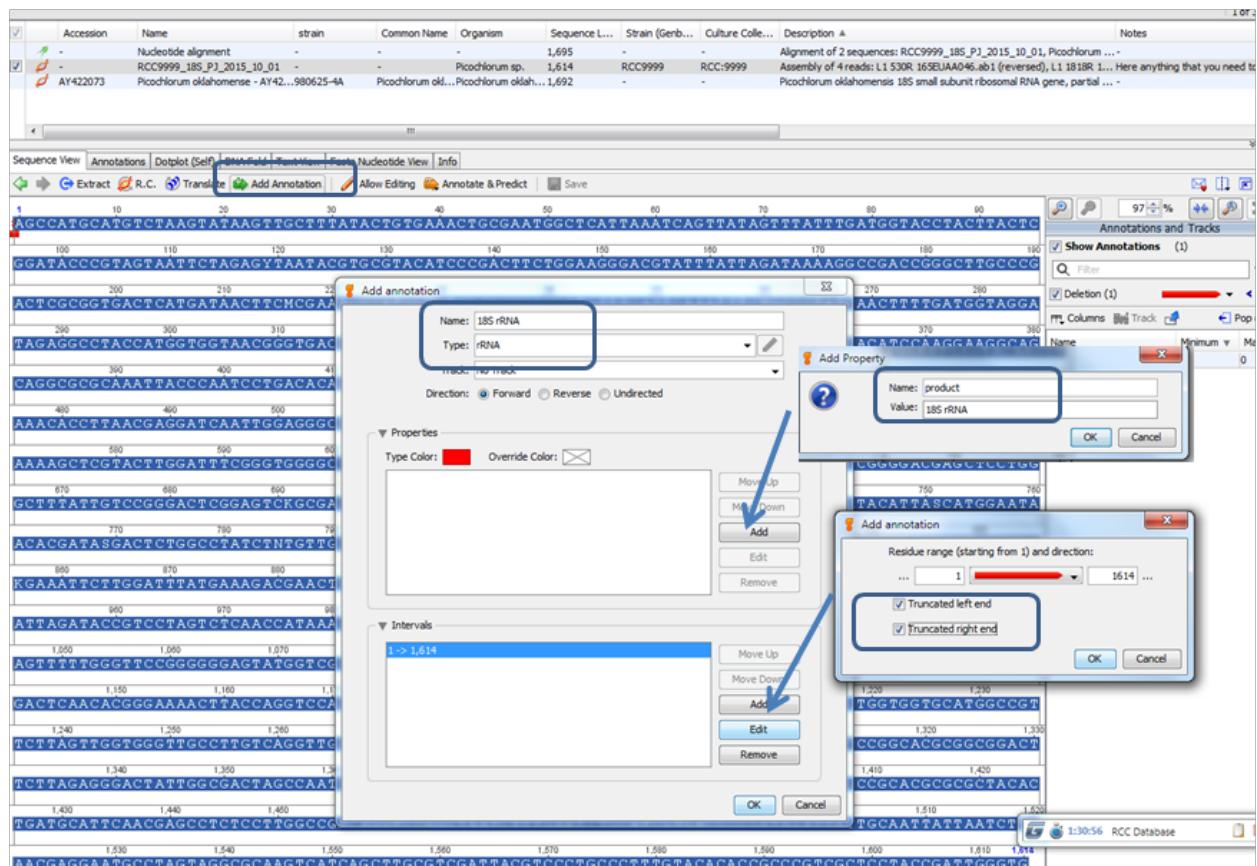


Figure 18: Annotate genes

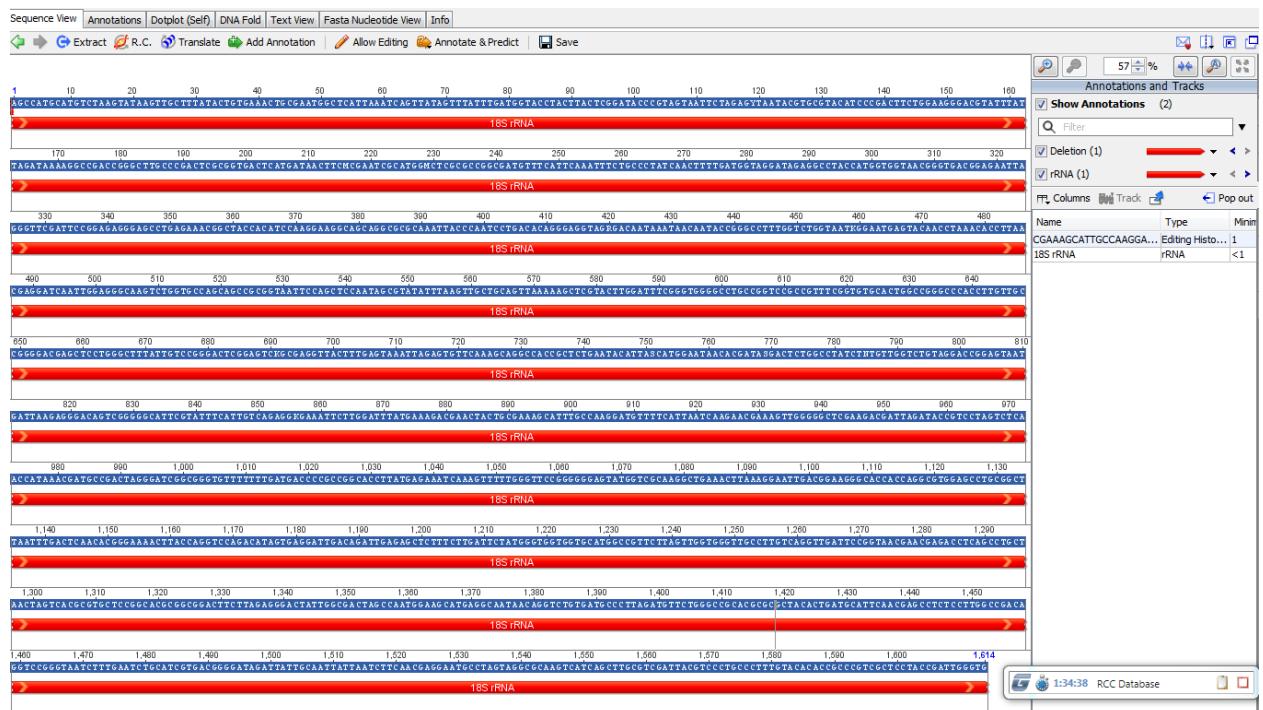


Figure 19: Annotated genes

3.3 Metadata

- Add two new type of metadata (it has to be done only once) in the GenBank submission category:
 - Strain
 - Culture_collection Edit Meta data Types → Genbank Submission → click on the + on the right side → write Culture Collection on the new field → ok

⚠ Make sure that these new fields are in the Genbank Submission category. Do not recreate a new category.

⚠ Use exactly the orthograph for names especially with underscores “Culture_collection” and not as before “Culture Collection”.

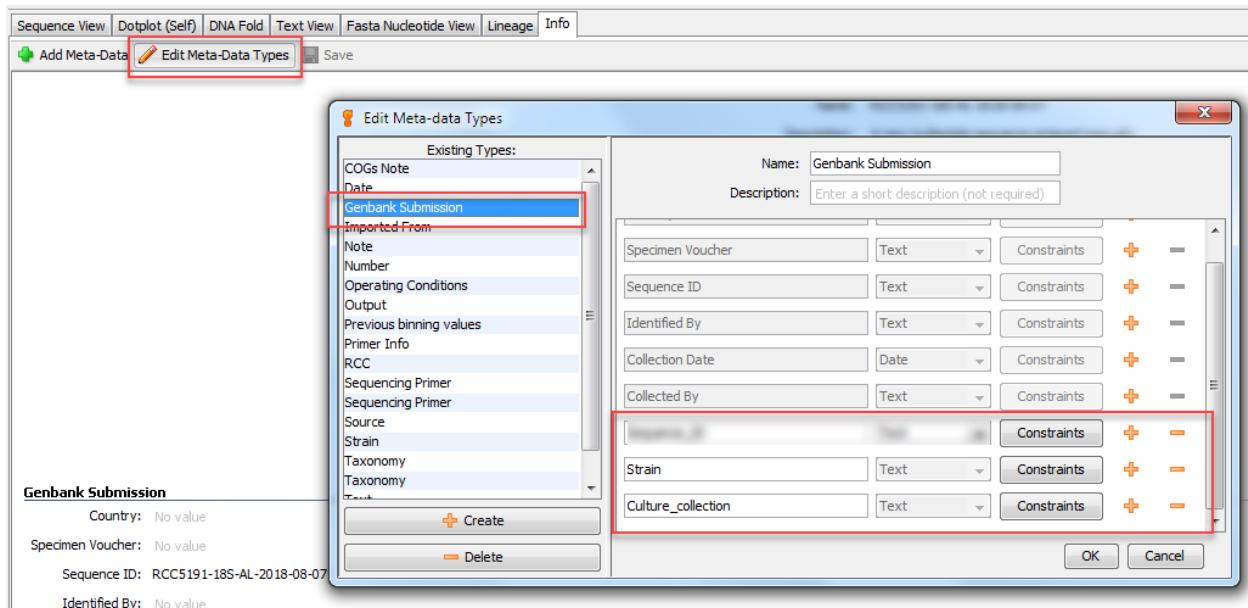


Figure 20: Add new meta-date type: Culture Collection

- Click on the final sequence, go to info and change or correct the following fields.
 - **Name** : RCC####_gene-name_your initials_date, e.g. RCC9999_18S_PG_2015_10_01 (change if it is not in this format at this point).
 - * This will be the ID of the sequence submitted to GenBank.
 - * This name must not contain any space
 - * This name must be unique. For example if you submit 2 sequences for the same strain and same gene you must use different names e.g. RCC9999_18S_PG_2015_10_01_A and RCC9999_18S_PG_2015_10_01_B
 - **Organism** : Picochlorum sp. or Trebouxiophyceae.
 - * Enter the genus name or, if not known, the lowest taxonomic level known.
 - * **⚠** Only use the species name if **you are absolutely sure** of the species as determined by microscopy or ITS. Do not rely on BLAST!!
 - * DO NOT add the RCC number at the end of the organism name. **NEW**
 - * For levels above the genus, do not use sp. For example use Trebouxiophyceae and not

- Trebouxiophyceae sp. or Chlorophyta and not Chlorophyta sp. NEW
- Strain :** This is the RCC code as **RCCxxxx** without space between RCC and number e.g. RCC1236.
 - Culture_collection :** This is the RCC number as **RCC:xxxx** with “:” between RCC and number e.g. RCC:1236.

	Name	Organism	Sequence L...	Strain (Genb...)	Culture Colle...	Description	Notes	Post-Trim
<input checked="" type="checkbox"/>	RCC9999_18S_PJ_2015_10_01	Picohlorum sp.	1,614	RCC9999	RCC:9999	Assembly of 4 reads: L1 530R 16SEUAA046.ab1 (reversed), L1 1818R 1... Here anything that you need to remember....		1,614

Sequence View | Annotations | Dotplot (Self) | DNA Fold | Text View | Fasta Nucleotide View | Info | Add Meta-Data | Edit Meta-Data Types | Save | NEW

Name: RCC9999_18S_PJ_2015_10_01
Assembly of 4 reads: L1 530R 16SEUAA046.ab1 (reversed), L1 1818R 16SEUAA048.ab1, L1 63F 16SEUAA049.ab1 (reversed), L1 569F 16SEUAA047.ab1

Description: 1818R 16SEUAA048.ab1, L1 63F 16SEUAA049.ab1 (reversed), L1 569F 16SEUAA047.ab1

Common Name: No value

Genetic Code: No value

Free end gaps: true

Modified: 02 Oct 2015

Molecule Type: DNA

Organism: Picohlorum sp.

Taxonomy: No value

Topology: linear

Notes: Here anything that you need to remember....

Trim Parameters
Trim Parameters: Error probability: 0.05

Genbank Submission
Country: No value
Specimen Voucher ID: No value
Sequence ID: No value
Identified By: No value
Collection Date: No value
Collected By: No value
Specimen Voucher: No value
Strain: RCC9999
Culture Collection: RCC:9999

Figure 21: Update the different meta-data fields

- It is possible to quickly change metadata for a set of sequences using the Batch edit mode. For example you can :
 - Copy the Strain field to the Culture Collection field
 - Add the “:” automatically for all sequences by replacing “RCC” by “RCC:”.

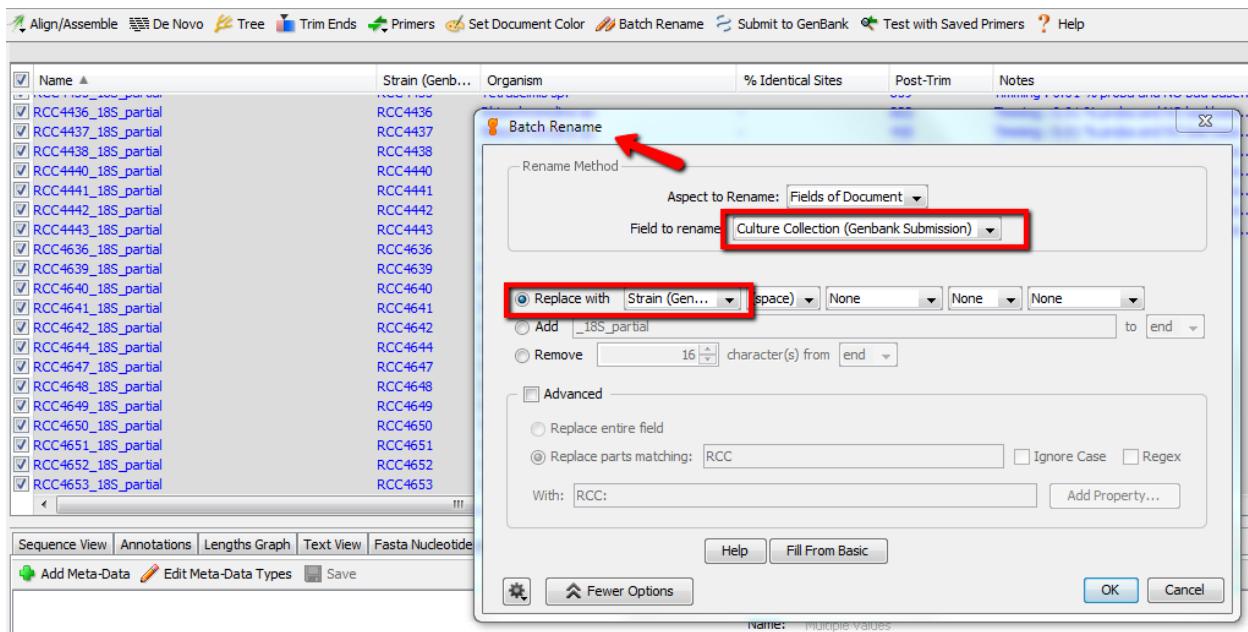


Figure 22: Batch edit - simple

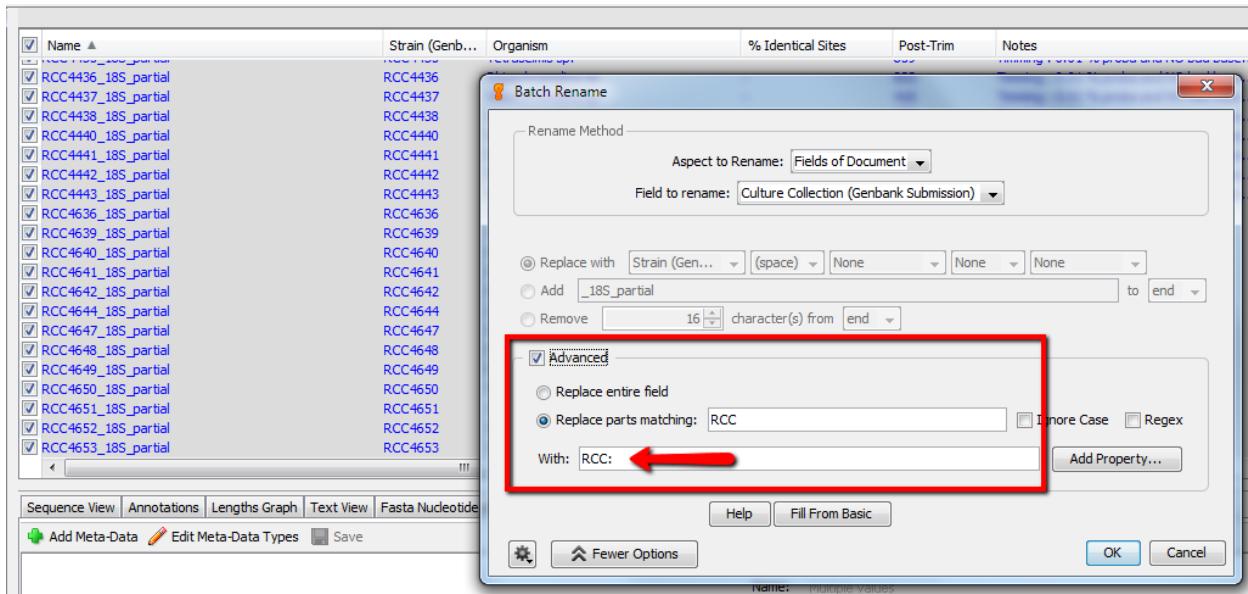


Figure 23: Batch edit - advanced

3.4 Primers information

⚠ This step is Optional for 18S, but must be added for ITS, 28S and other genes

Edit Meta data Types -> Sequencing Primer -> OK

You can also use **Batch edit** to go faster

Sequencing Primer

Forward PCR Primer Name: 18S 63F

Forward PCR Primer Sequence: ACGCTTGTCCTCAAAGATTA

Reverse PCR Primer Name: 18S 1818R

Reverse PCR Primer Sequence: ACGGAAACCTTGTACGA

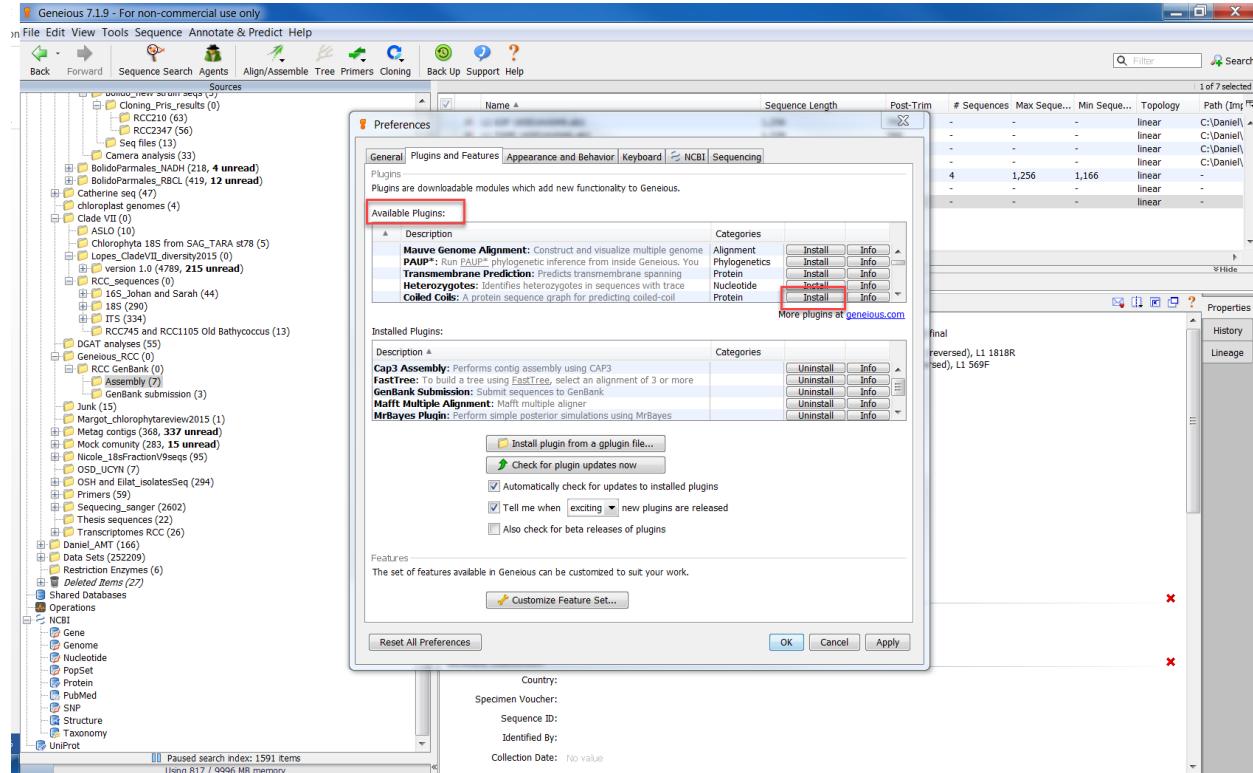
Forward Sequencing Primer Name: No value

Forward Sequencing Primer Sequence: No value

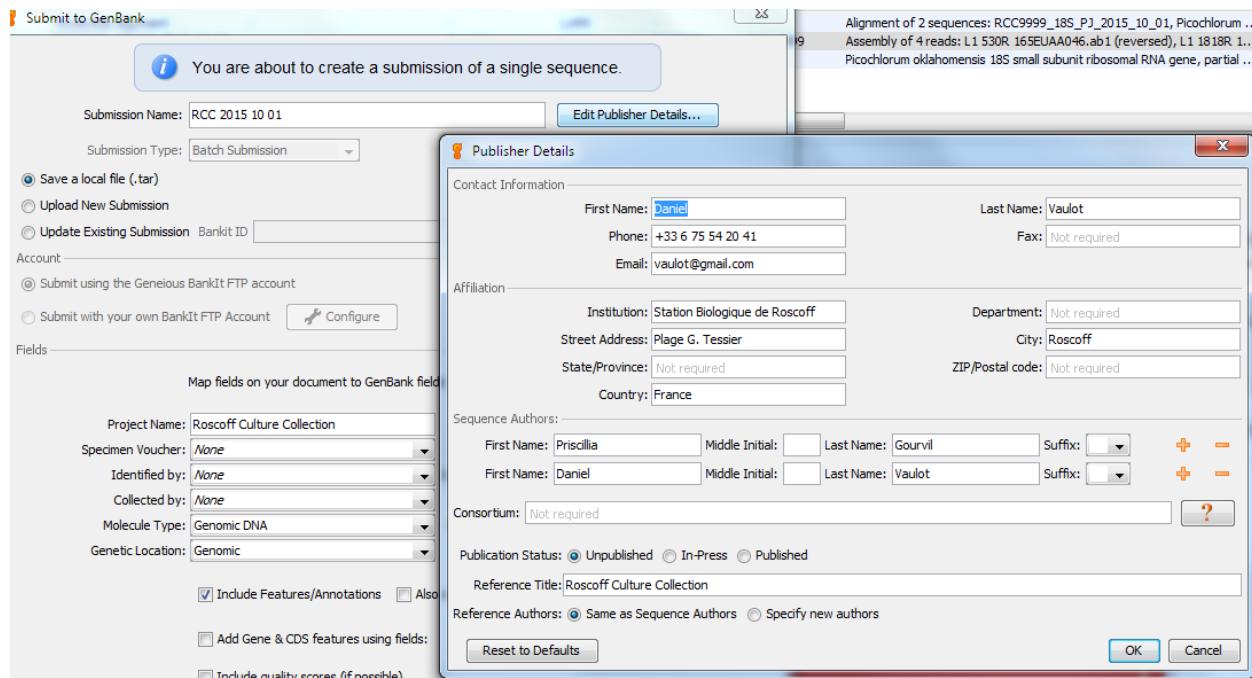
Figure 24: Add primer information to meta-data

4 GenBank submission - General case (not for 16S, 18S or ITS, see next part)

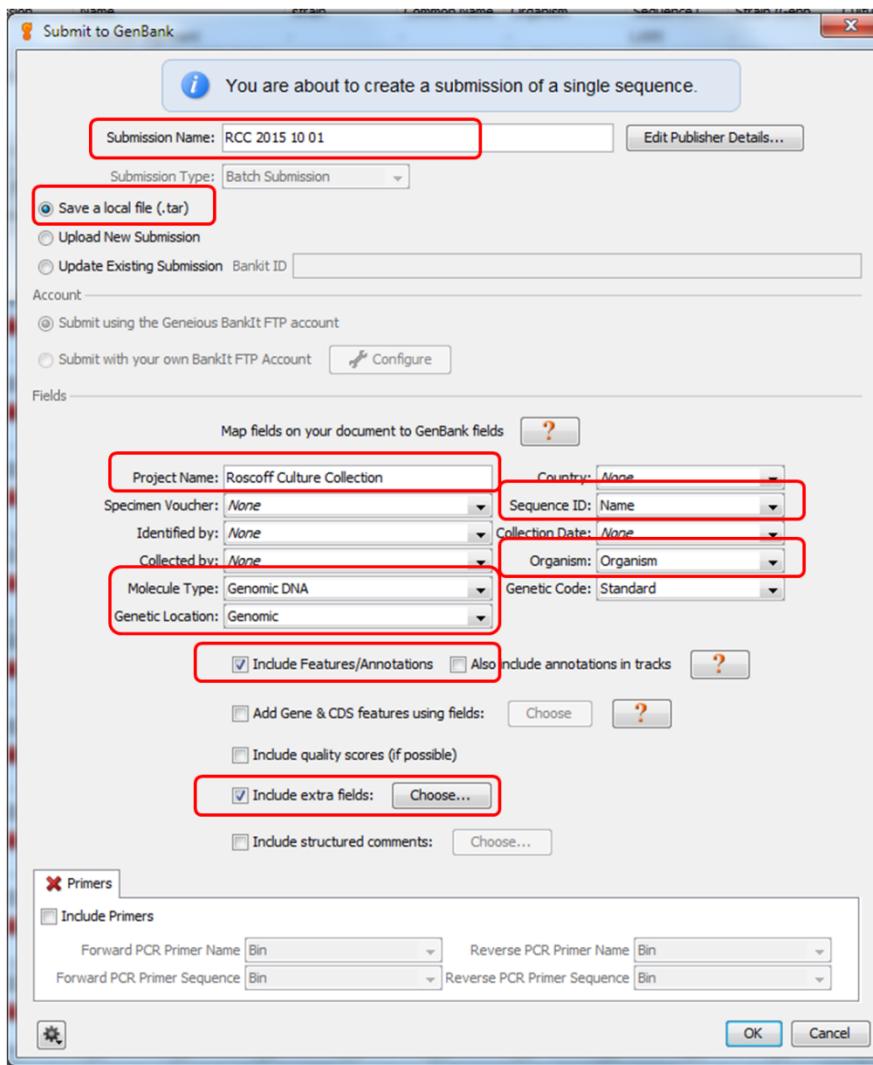
- Note that since August 2018 16S, 18S, 28S and ITS cannot be submitted by BankIt and must submitted through a web interface.
- Install plugin GenBank submission
 - Tools → plugin → choose the plugin and click in install

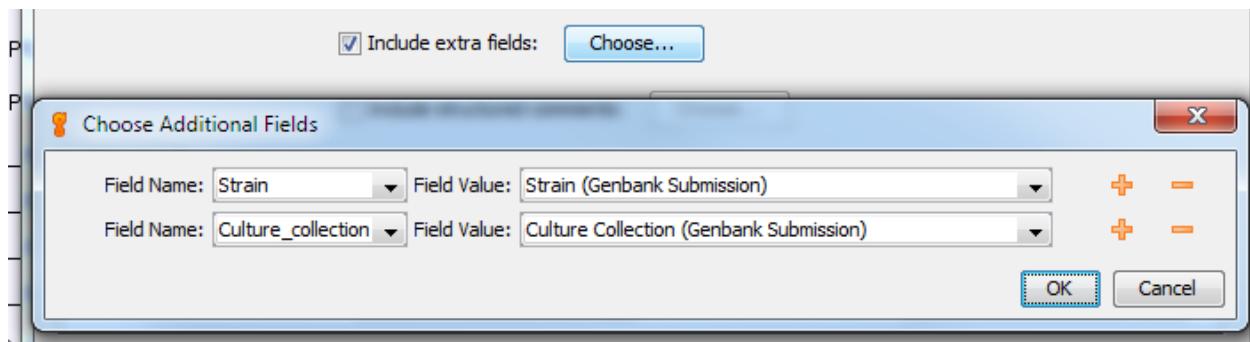


- Select the sequences you want to submit
- Select GenBank submission
- Enter first the **Publisher details** (add the info like the picture bellow, except that the sequence authors is Daniel Vaulot + who did the sequence)
 1. Name
 2. email
 3. Adress
 4. Sequence authors
 5. Select Unpublished
 6. Reference should be “Roscoff Culture Collection”



- Check very carefully all the fields
 - **Submission name** : the name of the file to be saved (this should be kept on the Databases computer)
 - **Save a local file** (only upload when everything is OK)
 - **Project name** : Roscoff Culture Collection
 - **Molecule type** : Genomic DNA
 - **Genetic location** : in general Genomic but can also be Plastid or Mitochondrion or Nucleomorph for Cryptophytes
 - **Sequence ID** : Name
 - **Organism** : Organism
 - **Include features/annotation** : Yes
 - **Include other fields** : Yes
 - * **Culture_collection** : Culture_collection (GenBank submission)
 - * **Strain** : Strain (GenBank submission).
 - **Primers** : You can put the primers if necessary but they need to be entered Sequencing primers





- Check submission in the Preview mode
 - If Errors you need to correct
 - Ignore warning about “Organism not found” and “Collection”

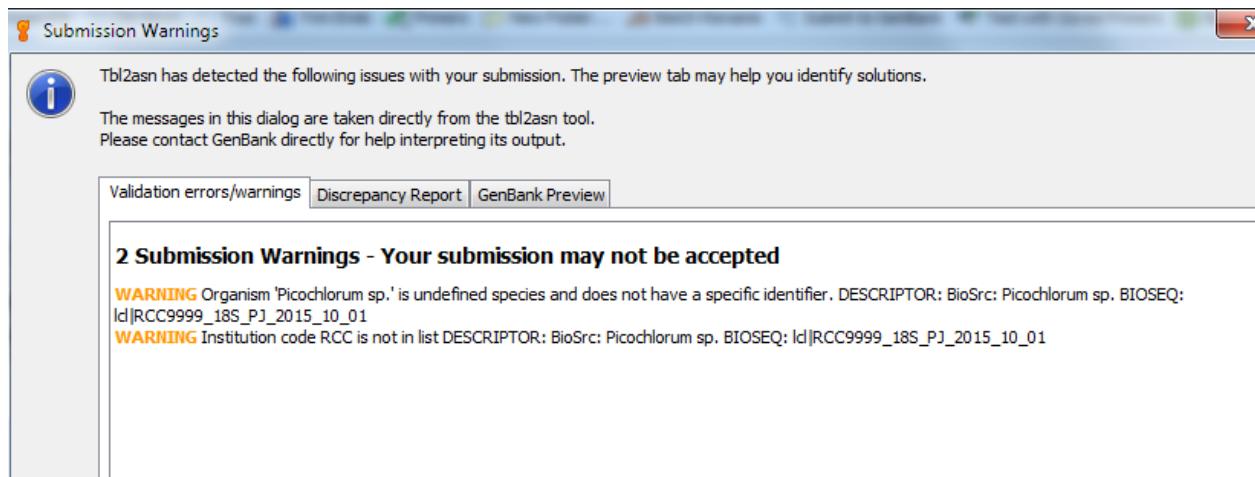


Figure 25: Warnings - Ignore

Submission Warnings

Tbl2asn has detected the following issues with your submission. The preview tab may help you identify solutions.

The messages in this dialog are taken directly from the tbl2asn tool.
Please contact GenBank directly for help interpreting its output.

	Validation errors/warnings	Discrepancy Report	GenBank Preview	
LOCUS	RCC9999_18S_PJ_2015_10_011614 bp	DNA	linear	02-OCT-2015
DEFINITION	Picochlorum sp. strain RCC9999.			
ACCESSION				
VERSION				
KEYWORDS	.			
SOURCE	Picochlorum sp.			
ORGANISM	Picochlorum sp.			
	Unclassified.			
REFERENCE	1 (bases 1 to 1614)			
AUTHORS	Gourvil, P. and Vaulot, D.			
TITLE	Roscoff Culture Collection			
JOURNAL	Unpublished			
REFERENCE	2 (bases 1 to 1614)			
AUTHORS	Gourvil, P. and Vaulot, D.			
TITLE	Direct Submission			
JOURNAL	Submitted (02-OCT-2015) Station Biologique de Roscoff, Plage G. Tessier, Roscoff, France			
FEATURES	Location/Qualifiers			
source	1..1614 /organism="Picochlorum sp." /mol_type="genomic DNA" /strain="RCC9999" /isolate="RCC9999" /culture_collection="RCC:9999" /PCR_primers="fwd_name: 18S 63F, fwd_seq: acgcttgtctcaaagatta, rev_name: 18S 1818R, rev_seq: acggaaaccttgttacga"			
rRNA	<1..>1614 /product="18S ribosomal RNA"			
ORIGIN	1 agccatgcat gtctaagtat aagttgcattt atactgtgaa actgcgaatg gtcattaaaa 61 tcagtttag tttatttgat ggtacctact tactcgata cccgtatcaa ttcttagagyt 121 aatacgtgcg tacatcccga cttctgaaag ggacgtatTTT attagataaa aggccgaccg 181 ggcttgcggcg actcgcgggtg actcatgata acttcmcgaa tcgcattggmc tcgcgcgggc 241 gatgtttcat tcaaatttct gccttatcaa cttttatgg taggatagag gcctaccatg 301 gtggtaacgg gtgacggaga attagggttc gattccggag agggagcctg agaaacggct 361 accacatcca aggaaggcag caggcgcga aattacccaa tcctgacaca gggaggttagr 421 gacaataaat aacaataccg ggcctttgtt ctggtaatkgaatgagttac aacctaaaca 481 ccttaacgg gatcaattgg agggcaagtc tggtgccagc agccgcggta attccagctc 541 caatagcgtt tatttaagtt gctgcgttaaaatgcgtt acttggattt cgggtggggc 601 ctggccgtcc ggcgttccgg tggacttgg ccggccccac ctttgtccgg gggacggact 661 cctgggtttt attgtccggg actcggagtc kgcgaggta ctttgatgg attagagtgt 721 tcaaaggcagg ccaccgctctt gaatacattt scatgaaata acacgatag actctggcct 781 atctntgttg gtctgttagga ccggatgtat gattaaggagg gacagtccgg ggcattcgta 841			

Figure 26: Genbank record preview

- Save as tar file.
 - The submission has to be done before processing a new one starts because Geneious keep at the memory the info from the last .tar file you saved.

- The tar file can be uncompressed to an .asn file which can be opened with Sequin which can be downloaded from NCBI.
- Finally submit using the Geneious BankIt account and record the BankIt number

The screenshot shows a web-based submission interface for GenBank. At the top, there's a blue header bar with the text "Submit to GenBank". Below it is a light blue information box containing an info icon and the text "You are about to create a submission". The main form area has several sections:

- Submission Name:** RCC 2015 10 01
- Submission Type:** Batch Submission
- File Options:** Radio buttons for "Save a local file (.tar)" (unchecked), "Upload New Submission" (checked), and "Update Existing Submission" (unchecked). A "BankIt ID" input field is next to the update option.
- Account Selection:** Radio buttons for "Submit using the Geneious BankIt FTP account" (checked) and "Submit with your own BankIt FTP Account". A "Configure" button with a wrench icon is positioned next to the second option.
- Fields:** A section labeled "Fields" is at the bottom.

Figure 27: Submit to GenBank

5 GenBank submission - 16S, 18S or ITS

Submission must now be done at <https://submit.ncbi.nlm.nih.gov/subs/genbank/>. If you do not have a login you must create one.

Information about the NCBI submission portal is here. We recommend to read these instructions very carefully before submitting the sequences.

The main steps are :

1. Create fasta file with unique **Name** for each sequence.
 - Sequence **Name** (**Sequence_ID**) cannot contain spaces. The **Sequence_ID** identifies the same specimen in all the steps of a submission. We use a convention of the following type **RCC9999_18S_PG_2015_10_01** (see above)
 - Sequence **Name** must be unique within the set and may not contain spaces.
 - Sequence **Name** may contain only the following characters - letters, digits, hyphens (-), underscores (_), periods (.), colons (:), asterisks, and number signs(#).
2. Create a tabulated file as Text (tsv - tab-delimited) containing all the information about the sequence. See this link for the description of all the modifiers. This file can be easily exported from Geneious and finalized with Excel. For the RCC, the following columns are necessary (fields in bold are **mandatory**):
 - **Name** - This field will be used as the **Sequence_ID** for submission
 - **Organism** - **Picochlorum** sp. or **Trebouxiophyceae** sp.
 - **Genbank Submission : Strain** - e.g. **RCC1236**.
 - **Genbank Submission : Culture_collection** - e.g. **RCC:1236**.
 - **Fwd_primer_name** - name of forward PCR primer
 - **Fwd_primer_seq** - nucleotide sequence of forward PCR primer
 - **Rev_primer_name** - name of reverse PCR primer
 - **Rev_primer_seq** - nucleotide sequence of reverse PCR primer
3. The columns of the tabulated file must be edited, not forgetting the underscores. This is best done with an editor such as Notepad++ or with Excel. In the latter case the file must be saved as a text tabulated file.
 - Name -> **Sequence_ID**
 - Genbank Submission : Strain -> **Strain**
 - Genbank Submission : Culture_collection -> **Culture_collection**
 - name of forward PCR primer -> **Fwd_primer_name**
 - nucleotide sequence of forward PCR primer -> **Fwd_primer_seq**
 - name of reverse PCR primer -> **Rev_primer_name**
 - nucleotide sequence of reverse PCR primer -> **Rev_primer_seq**

Example of header for the tsv file : **Sequence_ID Culture Collection Strain Organism**
Fwd_primer_name Fwd_primer_seq Rev_primer_name Rev_primer_seq

5.1 Prepare files

We will do a simple case but you can add more columns (see list of modifiers.

- Fasta file
 - Select sequences
 - Export as fasta

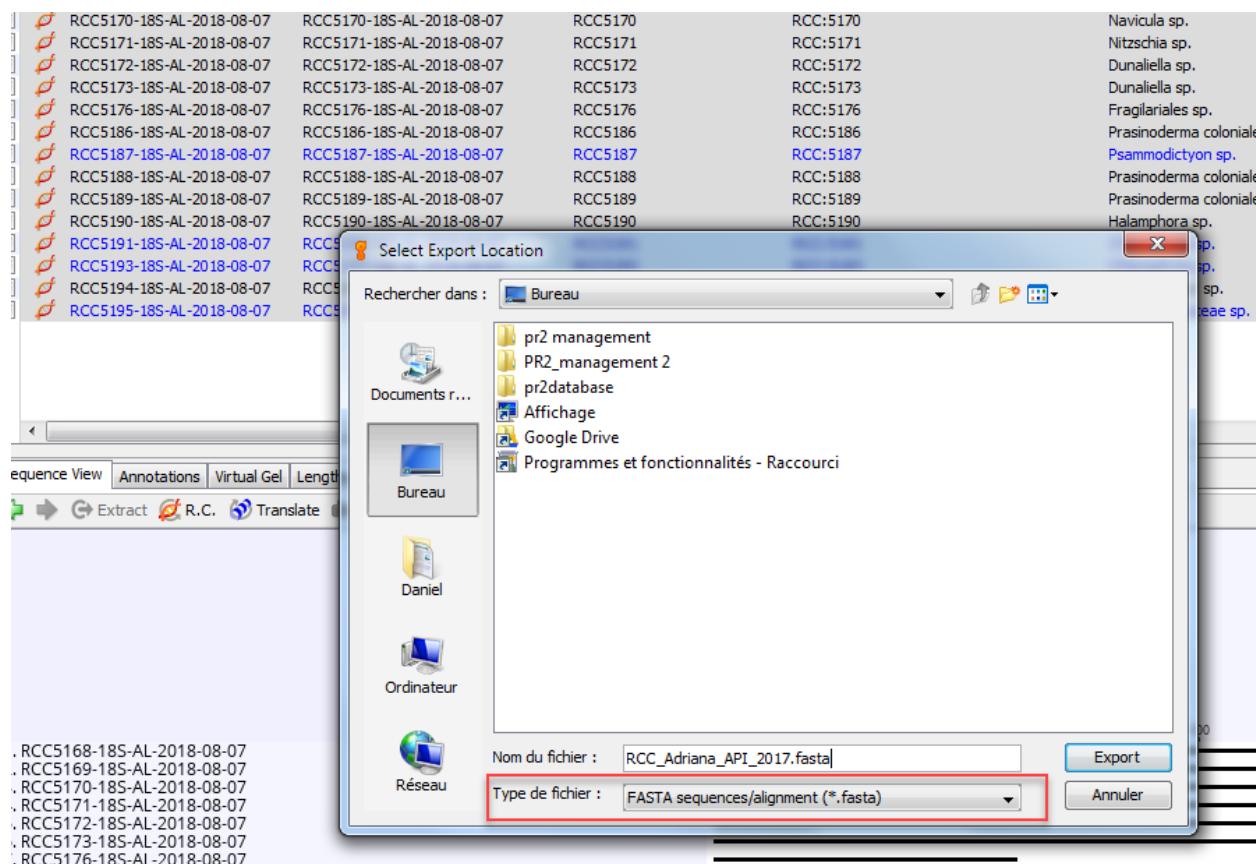


Figure 28: Export to Fasta

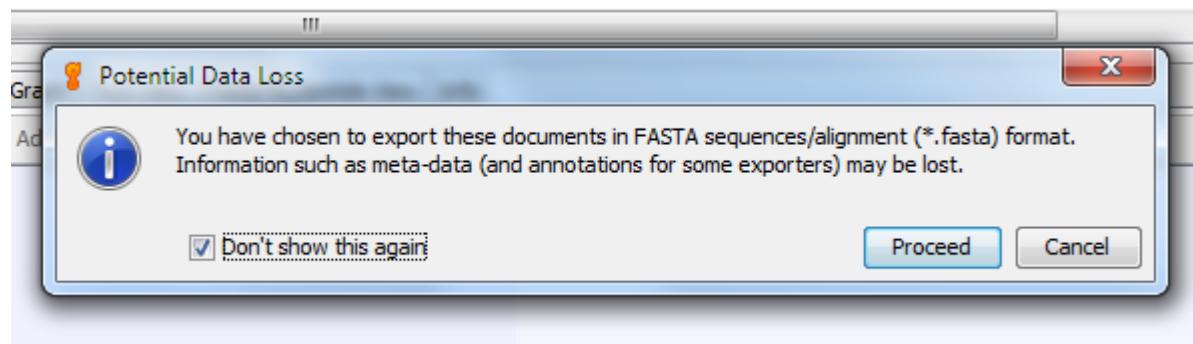


Figure 29: Ignore this warning

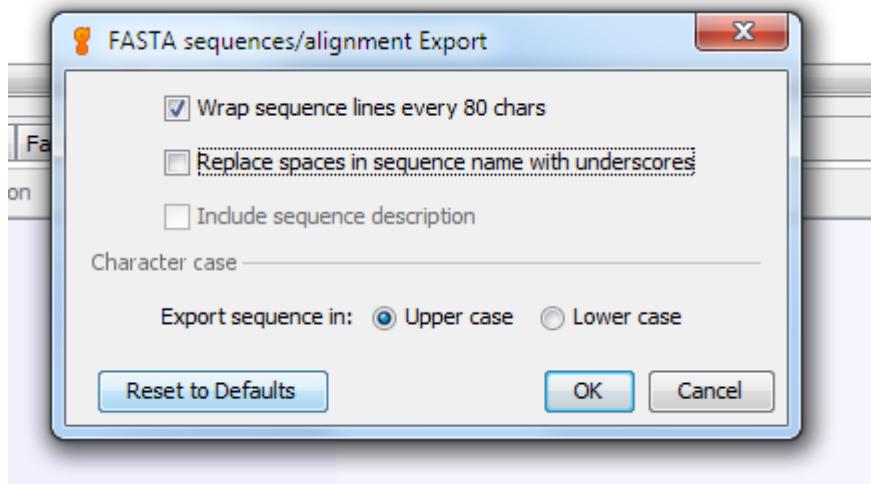


Figure 30: Wrap sequences to 80 characters

```

1 >RCC5168-18S-AL-2018-08-07
2 CTCATTATATCAGTTATAGTTCTTGATAGTCCCTCACTACTTGATAACCGTAGTAATTCTAGAGCTAATACATGCGT
3 CGATACCCCTTGGGTAGTATTATTAGATGGAAACCAACCCCTCGGGGTGATGTGGTAATCATAATAAGCTTGCAGGA
4 TCGCCGGTGGCGATGGATCATCAAGTTCTGCCCTATCAGTTGGACGTTGGTATTGGCAAACGTGGCTTAACG
5 GGTAAACGGGAATTAGGGTCTGATTCCGGAGAGGGAGGCTGAGAGACGGCTACACATCCAAGGAAGGCAGCAGGGCGGT
6 AAATTACCCAATCTTGACACAAGGAGGTAGTGCACAAATAAAATAACAAIGCCGGCCTTGTAGGTCTGGCAATTGGAATGA
7 GAACAATTAAACCCCTATCAGGGATCAATTGGAGGGCAAGTCTGGTGCAGCAGCCGCGTAATTCCAGCTCCAATAG
8 CGTATATTAAAGTGTGCAAGTTAAAAGCTCGTAGTTGGACTTGTGGTGGTCTGAGGTCTGTTGGTACTTTGG
9 GGACTGCCATCCTGGGTGGATCCTGTGTCGATTAGTTGTGTCGTCAGGGATGCCATCGTTACTGTGAAAAAATTA
10 GAGTGTCAAAGCAGGCTTATGCCGTGAATATATTAGCATGAAATAATGAGATAGGACCTGGTACTATTTGGTT
11 TGCACCGAGGTAATGATTAATAGGGACAGTTGTGGTATTGTAITCCATTGTCAGAGGTGAAATTCTGGATTCTG
12 GAAGACGAACGAATGCGAAAGCATTACCAAGGGATTTCTTACAAAGGGATTGCGGGGTTCTGTTACGTCCTCGTCAGCACCTTATG
13 GATACCACCGTAGTCTAACCATAAAATATGCCGACAAGGGATTGGCGGGGTTCTGTTACGTCCTCGTCAGCACCTTATG
14 AGAAATCACAAGTTGGTCCGGGGGAGTATGGTCGCAAGGCTGAAACTAAAGAAATTGACGGAAGGGCACCACC
15 AGGAGTGGAGCCTGGGCTTAATTGACTCAACACGGAAAACCTACCGGTCAGACATAGTGAGGATTGACAGATTG
16 GAGCTCTTCTTGATTCTATGGGTGGTGCATGGCGTTCTAGTTGGTGGAGTGATTGTCCTGGTTAATTCCGTTAA
17 CGAACGAGACCCCTGCGCTGCTAAATAGTCTTGTGAGTATTGTCCTTACTGATTGGGCTTCTAGAGGGACGTGCATTCTAT
18 TAGATGCAGGAAGATAAGGGCAATAACAGGTCTGTGATGCCCTAGATGTTCTGGGCCGACGCCGCTACACTGATGCA
19 TTCAACGAGTTCTTGGCCGAGAGGCCTGGCAATCTTGGAACGTGCAICGTGATAGGGATAGATTATTGCAATTATT
20 AATCTGAACGAGGAATTCTAGTAAACGCAAGATCATCAATCTGATTACGTCCTGCCCTTGTACACACCGCCC
21 GTCGCACCTACCGATTGGATGGTCCGGTGAAGCCTCGGGATTGTGACCGGAGCCTTACGGG
22 >RCC5169-18S-AL-2018-08-07
23 ACTGCGAACGGCTCATTATATCAGTTATAGTTATTGATAGTCCCTACTATTGGATAACCGTAGTAATTCTAGAGCT
24 AATACATGCGTCAATACCCCTGGGTAGTATTATTAGATAGAAACCAACCCCTCGGGGTGATGTGGTAATCATAA
25 TAAGCTTGGGATCGATGGCTCGGCGACGGATCATTCAAGTTCTGCCCTATCAGTTGGATGGTAGGGTATT
26 GCCCTACCATGGCTTAACGGTAACGGGAAATTAGGGTTGATTCCGGAGAGGGGCTGAGAGATGGCACCCACATCC
27 AAGGAAGGCAGCAGGCGCGTAAATTACCAATCCTGACACAGGGAGGTAGTGCACAAATAAAACAATGCCGGCTTAT
28 AGGTCTGGCAATTGGATGAGAACAAATTAAATCCCTATCAGGGATCAATTGGAGGGCAAGTCTGGTGCAGCCGC
29 GGTAACTTCCAGCTCAAAGCGTATATTAAAGTTGTCAGTTAAAAGCTGTTAGTTGGATTGTCCTGGTTACGGCGTGT
30 ACCAGGCACTTGTGTCGAGTTCATGCCGTTGCCATCCTGGTGGAACCTGTGTCGATTAGGTGTCGTCAGGGG
31 ATGCCCATCGTTACTGTGAAAAAAATTAGAGTGTCAAAGCAGGCTTATGCCGTTGAATATATTAGCATGGAATAATAAG
32 ATAGGACTTTCTGCTATTGTTGGTTGCGCGAAGAGGTAAATGATTAATAGGGACAGTTGGGTTATTGTCATTCCAT
33 TGTCAAGGGTGAATTCTGGATTGGAAAGACGAACACTGCGAACAGCATTACCAAGGATGTTTCAATTCAAGA
34 ACGAAAGTTAGGGGATCGAAGATGATTAGATACCATCGTAGTCTAACCATAAACTATGCCGACAAGGGATTGGTGGGGT
35 CTCGTTACGTCTCCATCAGCACCTTATGAGAAATCACAAGTCTGGGTTCCGGGGGAGTATGGTCGAAGGCTGAAAC
36 TTAAAGAAATTGACGGAAGGGCACCACCGAGGAGTGGAGCCTGCGGCTTAATTGACTCAACACGGGAAACTTACCGAGT
37 CCAGACATAGTGAGGATTGACAGATTGAGAGCTTCTGATTCTATGGTGGTGGCATGGCCTTCTAGTTGGT
38 GAGTGTGATTGTCGGTTAATTGCTTAACGAACGAGACCAACTGCCGCTAAATAGCCAGTGAGTGAATCTTCACTGACT
39 GCTGGCTTCTAGAGGGACGTGCATTCTATCAGATGCAGGAGGTAGTGGCAATAACAGGTCTGTGATGCCCTTAGATGT
40 CCTGGGCGCACGCCGCTACACTGATGCATTCAACGAGTTTACCTGGCGAGAGGCCCTGGCAATCTTGAACGTG
41 CATCGTGAAGGGATAGATTATTGCAATTATTAAATCTGAAACGAGGAATTCTAGTAAACGCAATCATCAATTGCAATT
42 GATTACGTCCTGCCCTTGTACACACCAGGCGTCGACCTACCGATTGAAATGGTCCGGTGAAGCCTCGGGATTGTGATC
43 TGTTCTTATTGGAGATG
44 >RCC5170-18S-AL-2018-08-07
45 CGGCTCATTATATCAGTTATAGTTATTGATAGTCCCTACTATTGGATAACCGTAGTAATTCTAGAGCTAATACATG
46 CGTCAATACCCCTGGGTAGTATTATTAGATAGAAACCAACCCCTCGGGGTGATGTGGTAATCATAATAAGCTTGC
47 CGGATCGCATGGCTCGGCCGCGACGGATCATTCAAGTTCTGCCCTATCAGTTGGATGGTAGGGTATTGGCCTTAC
48 ATGGCTTAACGGTAACGGGAAATTAGGGTTGATTCCGGAGAGGGGCTGAGAGATGGCACCACATCCAAGGAAGG
49 CAGCAGGCGCGTAAATTACCAATCCTGACACAGGGAGGTAGTGCACAAATAAAACAATGCCGGCCTTATAGGTCTGG
50 CAATTGGAATGAGAACAAATTAAATCCCTATCAGGGATCAATTGGAGGGCAAGTCTGGTGCAGGCCGCGTAATTC
51 CAGCTCCAATAGCGTATATTAAAGTTGTCAGTTAAAAGCTCGTAGTTGGATTGTCGTTACGGCGTGTACCGAGGCA

```

Figure 31: Final fasta file

- Source information file tab-delimited (tsv file)

Name	Sequence_ID (Genbank Submission)	Strain (Genbank Submission)	Culture_collection (Genbank Submission)	Organism
RCC5168-18S-AL-2018-08-07	RCC5168-18S-AL-2018-08-07	RCC5168	RCC:5168	Halimphora sp.
RCC5169-18S-AL-2018-08-07	RCC5169-18S-AL-2018-08-07	RCC5169	RCC:5169	Navicula sp.
RCC5170-18S-AL-2018-08-07	RCC5170-18S-AL-2018-08-07	RCC5170	RCC:5170	Navicula sp.
RCC5171-18S-AL-2018-08-07	RCC5171-18S-AL-2018-08-07	RCC5171	RCC:5171	Nitzschia sp.
RCC5172-18S-AL-2018-08-07	RCC5172-18S-AL-2018-08-07	RCC5172	RCC:5172	Dunaliella sp.
RCC5173-18S-AL-2018-08-07	RCC5173-18S-AL-2018-08-07	RCC5173	RCC:5173	Dunaliella sp.
RCC5176-18S-AL-2018-08-07	RCC5176-18S-AL-2018-08-07	RCC5176	RCC:5176	Fragilariales sp.
RCC5186-18S-AL-2018-08-07	RCC5186-18S-AL-2018-08-07	RCC5186	RCC:5186	Prasinoderma coloniale
RCC5187-18S-AL-2018-08-07	RCC5187-18S-AL-2018-08-07	RCC5187	RCC:5187	Psammodictyon sp.
RCC5188-18S-AL-2018-08-07	RCC5188-18S-AL-2018-08-07	RCC5188	RCC:5188	Prasinoderma coloniale
RCC5189-18S-AL-2018-08-07	RCC5189-18S-AL-2018-08-07	RCC5189	RCC:5189	Prasinoderma coloniale
RCC5190-18S-AL-2018-08-07	RCC5190-18S-AL-2018-08-07	RCC5190	RCC:5190	Halimphora sp.
RCC5191-18S-AL-2018-08-07	RCC5191-18S-AL-2018-08-07	RCC5191	RCC:5191	Chlorophyta sp.
RCC5193-18S-AL-2018-08-07	RCC5193-18S-AL-2018-08-07	RCC5193	RCC:5193	Chlorophyta sp.
RCC5194-18S-AL-2018-08-07	RCC5194-18S-AL-2018-08-07	RCC5194	RCC:5194	Prorocentrum sp.
RCC5195-18S-AL-2018-08-07	RCC5195-18S-AL-2018-08-07	RCC5195	RCC:5195	Heterocapsaceae sp.

Figure 32: Select sequences. Check the 4 fields (Sequence_ID, Strain, Culture_collection and Organism) are correct.

Name	Sequence_ID (Genbank Submission)	Strain (Genbank Submission)	Culture_collection (Genbank Submission)	Organism
RCC5168-18S-AL-2018-08-07	RCC5168-18S-AL-2018-08-07	RCC5168	RCC:5168	Halimphora sp.
RCC5169-18S-AL-2018-08-07	RCC5169-18S-AL-2018-08-07	RCC5169	RCC:5169	Navicula sp.
RCC5170-18S-AL-2018-08-07	RCC5170-18S-AL-2018-08-07	RCC5170	RCC:5170	Navicula sp.
RCC5171-18S-AL-2018-08-07	RCC5171-18S-AL-2018-08-07	RCC5171	RCC:5171	Nitzschia sp.
RCC5172-18S-AL-2018-08-07	RCC5172-18S-AL-2018-08-07	RCC5172	RCC:5172	Dunaliella sp.
RCC5173-18S-AL-2018-08-07	RCC5173-18S-AL-2018-08-07	RCC5173	RCC:5173	Dunaliella sp.
RCC5176-18S-AL-2018-08-07	RCC5176-18S-AL-2018-08-07	RCC5176	RCC:5176	Fragilariales sp.
RCC5186-18S-AL-2018-08-07	RCC5186-18S-AL-2018-08-07	RCC5186	RCC:5186	Prasinoderma coloniale
RCC5187-18S-AL-2018-08-07	RCC5187-18S-AL-2018-08-07	RCC5187	RCC:5187	Psammodictyon sp.
RCC5188-18S-AL-2018-08-07	RCC5188-18S-AL-2018-08-07	RCC5188	RCC:5188	Prasinoderma coloniale
RCC5189-18S-AL-2018-08-07	RCC5189-18S-AL-2018-08-07	RCC5189	RCC:5189	Prasinoderma coloniale
RCC5190-18S-AL-2018-08-07	RCC5190-18S-AL-2018-08-07	RCC5190	RCC:5190	Halimphora sp.
RCC5191-18S-AL-2018-08-07	RCC5191-18S-AL-2018-08-07	RCC5191	RCC:5191	Chlorophyta sp.
RCC5193-18S-AL-2018-08-07	RCC5193-18S-AL-2018-08-07	RCC5193	RCC:5193	Chlorophyta sp.
RCC5194-18S-AL-2018-08-07	RCC5194-18S-AL-2018-08-07	RCC5194	RCC:5194	Prorocentrum sp.
RCC5195-18S-AL-2018-08-07	RCC5195-18S-AL-2018-08-07	RCC5195	RCC:5195	Heterocapsaceae sp.

Figure 33: Export selected documents

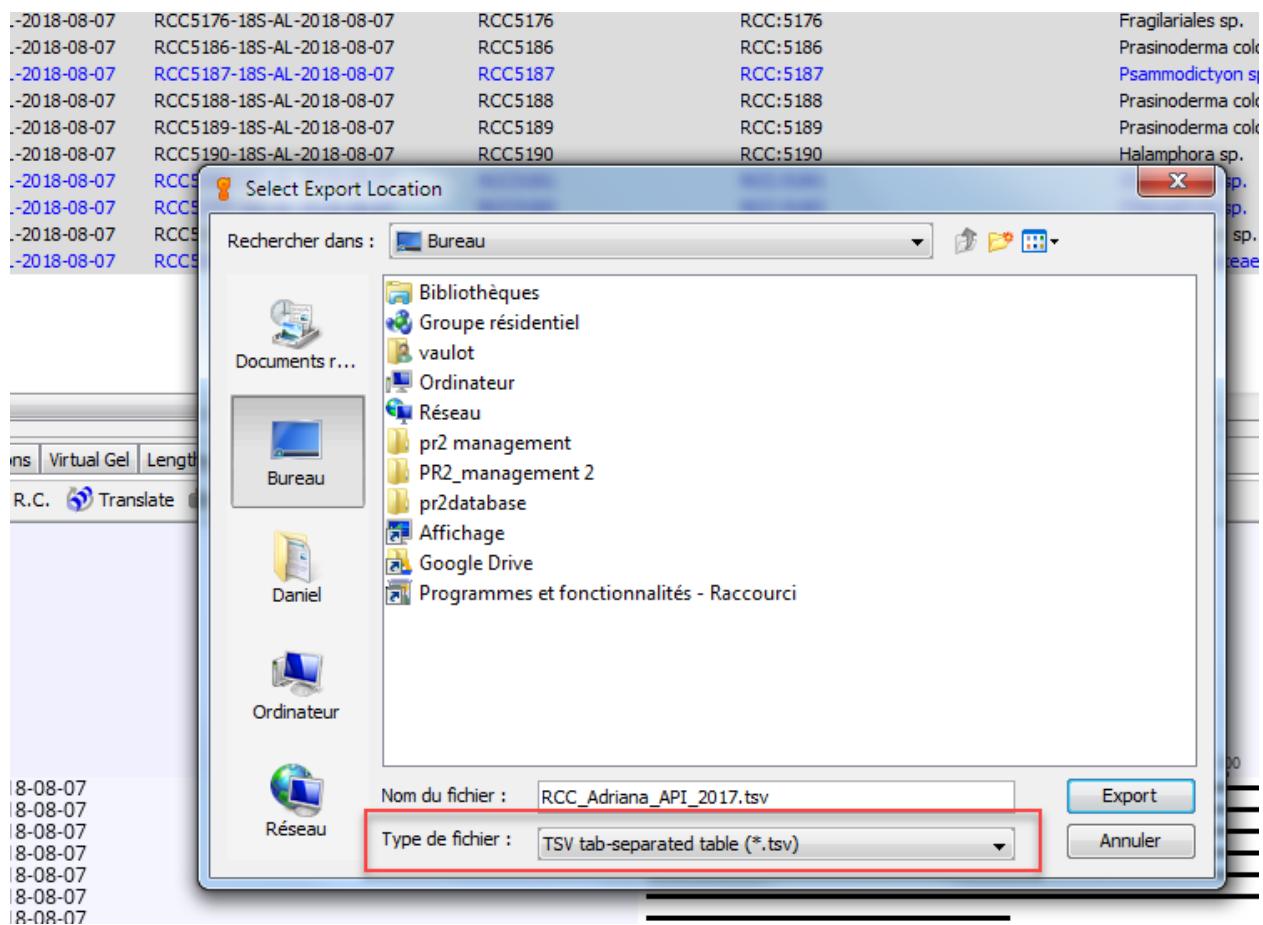


Figure 34: Export as tsv

Name	Organism	Sequence Length
RCC4457-18S-AL-2014	Picochlorum sp.	794
RCC4458-18S-AL-2014	Picochlorum sp.	916
RCC4459-18S-AL-2014	Picochlorum sp.	699
RCC4460-18S-AL-2014	Picochlorum sp.	446
RCC4461-18S-AL-2014	Picochlorum sp.	545
RCC4462-18S-AL-2014	Picochlorum sp.	1,005
RCC4463-18S-AL-2014	Picochlorum sp.	1,004
RCC4464-18S-AL-2014	Picochlorum sp.	1,004
RCC4465-18S-AL-2014	Picochlorum sp.	646
RCC4466-18S-AL-2014	Picochlorum sp.	
RCC4467-18S-AL-2014	Picochlorum sp.	
RCC4479-18S-AL-2014	Picochlorum sp.	
RCC4492-18S-PG-2015	Picochlorum sp.	
RCC4493-18S-PG-2015	Picochlorum sp.	
RCC4494-18S-PG-2015	Picochlorum sp.	
RCC4495-18S-PG-2015	Picochlorum sp.	
RCC4496-18S-PG-2015	Picochlorum sp.	
RCC4497-18S-PG-2015	Picochlorum sp.	
RCC4498-18S-PG-2015	Picochlorum sp.	
RCC4499-18S-PG-2015	Picochlorum sp.	
RCC4743-18S-NG-2016	Picochlorum sp.	

Sequence View Annotations Virtual Gel Lengths Graph T
Add Meta-Data Edit Meta-Data Types Save

TSV tab-separated table Export

Select fields to export:

- Name
- # Disagreements
- # Indel Disagreements
- # Nucleotide Sequences With Quality
- # Source Sequences
- % Identical Sites
- % Pairwise Identity
- %GC
- Ambiguities
- Approx. Consensus Length
- Bin
- Color
- Created Date
- Description
- Failed Binning Fields
- Free end gaps
- Genbank Submission: Culture_collection
- Genbank Submission: Strain
- HQ%
- Imported From: Filename
- Imported From: Path
- LQ%
- MQ%
- Mean Coverage
- Modified
- Molecule Type
- Organism
- Post-Trim

Reset to Defaults OK Cancel

Figure 35: Select the columns to be exported ; Name, Culture_collection, Strain, Organism

Name → Genbank Submission: Culture collection → Genbank Submission: Strain → Organism
RCC521-18S-AL-2014 → RCC:521>RCC521 → *Pycnococcus* sp. CR LF
RCC853-18S-JD-2013 → RCC:853>RCC853 → *Stramenopile* sp. → RCC853 CR LF
RCC862-18S-JD-2013 → RCC:862>RCC862 → *Stramenopile* sp. → RCC853 CR LF
RCC3632-18S-IP-2015>RCC:3632 → RCC3632>*Chloropicon roscoffensis* CR LF
RCC3633-18S-IP-2015>RCC:3633 → RCC3633>*Chloropicon roscoffensis* CR LF
RCC4207_SC2_528F-18S-RE-2014 → RCC:4207 → RCC4207>*Isochrysis* sp. CR LF
RCC4208_SC3_528F-18S-RE-2014 → RCC:4208 → RCC4208>*Chaetoceros* sp. CR LF
RCC4209_SC6_528F-18S-RE-2014 → RCC:4209 → RCC4209>*Pyramimonas* sp. CR LF
RCC4210_SC11_528F-18S-RE-2014 → RCC:4210 → RCC4210>*Chrysotrichomonadina* sp. CR LF
RCC4212_SC16_528F-18S-RE-2014 → RCC:4212 → RCC4212>*Pyramimonas* sp. CR LF
RCC4213_SC18_528F-18S-RE-2014 → RCC:4213 → RCC4213>*Minidiscus* sp. CR LF
RCC4214_SC27_528F-18S-RE-2014 → RCC:4214 → RCC4214>*Dicrateria* sp. CR LF
RCC4216_30SC_1818R_RC-18S-RE-2014 → RCC:4216 → RCC4216>*Hemiselmis* sp. CR LF
RCC4217_31SC_1818R_RC-18S-RE-2014 → RCC:4217 → RCC4217>*Pyramimonas* sp. CR LF
RCC4218_PG-2014>RCC:4218 → RCC4218>*Pyramimonas* sp. CR LF
RCC4219_PG-2014>RCC:4219 → RCC4219>*Thalassiosira* sp. CR LF
RCC4220_PG-2014>RCC:4220 → RCC4220>*Thalassiosira* sp. CR LF
RCC4444-18S-AL-2014>RCC:4444 → RCC4444>*Rhodomonas* sp. CR LF
RCC4445-18S-AL-2014>RCC:4445 → RCC4445>*Picochlorum* sp. CR LF
RCC4447-18S-AL-2014>RCC:4447 → RCC4447>*Picochlorum* sp. CR LF

Figure 36: Edit the tsv fil to remove ‘GenBank Submission:’ in the titles of the columns and change ‘Name’ to ‘Sequence_ID’. This is best done with an editor such as [Notepad++](<https://notepad-plus-plus.org/fr/>) or with Excel. In the latter case the file must be saved as a text tabulated file.

Sequence ID>Culture Collection → Strain → Organism CR LF
RCC521-18S-AL-2014 → RCC:521>RCC521 → *Pycnococcus* sp. CR LF
RCC853-18S-JD-2013 → RCC:853>RCC853 → *Stramenopile* sp. → RCC853 CR LF
RCC862-18S-JD-2013 → RCC:862>RCC862 → *Stramenopile* sp. → RCC853 CR LF
RCC3632-18S-IP-2015>RCC:3632 → RCC3632>*Chloropicon roscoffensis* CR LF
RCC3633-18S-IP-2015>RCC:3633 → RCC3633>*Chloropicon roscoffensis* CR LF
RCC4207_SC2_528F-18S-RE-2014 → RCC:4207 → RCC4207>*Isochrysis* sp. CR LF
RCC4208_SC3_528F-18S-RE-2014 → RCC:4208 → RCC4208>*Chaetoceros* sp. CR LF
RCC4209_SC6_528F-18S-RE-2014 → RCC:4209 → RCC4209>*Pyramimonas* sp. CR LF
RCC4210_SC11_528F-18S-RE-2014 → RCC:4210 → RCC4210>*Chrysotrichomonadina* sp. CR LF
RCC4212_SC16_528F-18S-RE-2014 → RCC:4212 → RCC4212>*Pyramimonas* sp. CR LF
RCC4213_SC18_528F-18S-RE-2014 → RCC:4213 → RCC4213>*Minidiscus* sp. CR LF
RCC4214_SC27_528F-18S-RE-2014 → RCC:4214 → RCC4214>*Dicrateria* sp. CR LF
RCC4216_30SC_1818R_RC-18S-RE-2014 → RCC:4216 → RCC4216>*Hemiselmis* sp. CR LF
RCC4217_31SC_1818R_RC-18S-RE-2014 → RCC:4217 → RCC4217>*Pyramimonas* sp. CR LF
RCC4218_PG-2014>RCC:4218 → RCC4218>*Pyramimonas* sp. CR LF
RCC4219_PG-2014>RCC:4219 → RCC4219>*Thalassiosira* sp. CR LF
RCC4220_PG-2014>RCC:4220 → RCC4220>*Thalassiosira* sp. CR LF
RCC4444-18S-AL-2014>RCC:4444 → RCC4444>*Rhodomonas* sp. CR LF
RCC4445-18S-AL-2014>RCC:4445 → RCC4445>*Picochlorum* sp. CR LF
RCC4447-18S-AL-2014>RCC:4447 → RCC4447>*Picochlorum* sp. CR LF
RCC4448-18S-AL-2014>RCC:4448 → RCC4448>*Picochlorum* sp. CR LF

Figure 37: After editing and removing GenBank Submission:

The screenshot shows a Microsoft Excel spreadsheet with the ribbon menu at the top. The active tab is "Accueil". The toolbar includes standard functions like "Coller" (Paste), "Police" (Font), and "Alignement" (Text Alignment). The formula bar shows "A4" and "RCC:5170". The main area displays a table with the following data:

	A	B	C	D	E
1	Culture_collection	Sequence_ID	Strain	Organism	
2	RCC:5168	RCC5168-18S-AL-2018-08-07	RCC5168	Halaphora sp.	
3	RCC:5169	RCC5169-18S-AL-2018-08-07	RCC5169	Navicula sp.	
4	RCC:5170	RCC5170-18S-AL-2018-08-07	RCC5170	Navicula sp.	
5	RCC:5171	RCC5171-18S-AL-2018-08-07	RCC5171	Nitzschia sp.	
6	RCC:5172	RCC5172-18S-AL-2018-08-07	RCC5172	Dunaliella sp.	
7	RCC:5173	RCC5173-18S-AL-2018-08-07	RCC5173	Dunaliella sp.	
8	RCC:5176	RCC5176-18S-AL-2018-08-07	RCC5176	Fragilariales sp.	
9	RCC:5186	RCC5186-18S-AL-2018-08-07	RCC5186	Prasinoderma coloniale	
10	RCC:5187	RCC5187-18S-AL-2018-08-07	RCC5187	Psammodictyon sp.	
11	RCC:5188	RCC5188-18S-AL-2018-08-07	RCC5188	Prasinoderma coloniale	
12	RCC:5189	RCC5189-18S-AL-2018-08-07	RCC5189	Prasinoderma coloniale	
13	RCC:5190	RCC5190-18S-AL-2018-08-07	RCC5190	Halaphora sp.	
14	RCC:5191	RCC5191-18S-AL-2018-08-07	RCC5191	Chlorophyta sp.	
15	RCC:5193	RCC5193-18S-AL-2018-08-07	RCC5193	Chlorophyta sp.	
16	RCC:5194	RCC5194-18S-AL-2018-08-07	RCC5194	Prorocentrum sp.	
17	RCC:5195	RCC5195-18S-AL-2018-08-07	RCC5195	Heterocapsaceae sp.	
18					
19					

Figure 38: Editing with Excel (save file as tab-delimited tsv)

5.2 Submit to NCBI web portal

- Go to web portal : <https://submit.ncbi.nlm.nih.gov/subs/genbank/>

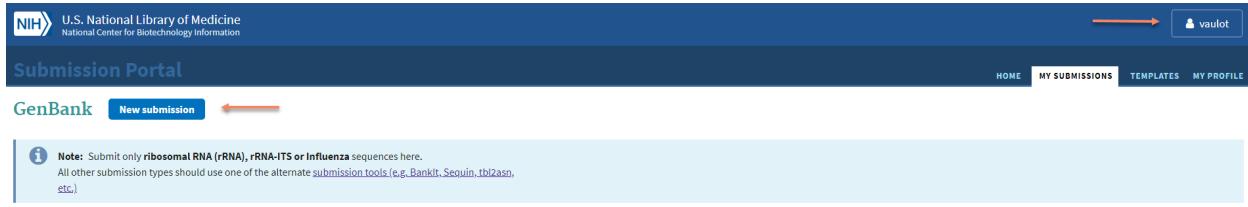


Figure 39: Web portal. Register or login if you have already an ID

GenBank submission: SUB4388090

New

1 SUBMISSION TYPE 2 SUBMITTER 3 SEQUENCING TECHNOLOGY 4 SEQUENCING

Submission Type

Submission type

* What do your sequences contain?

- Prokaryotic rRNA/IGS
- Eukaryotic Nuclear rRNA/ITS
- Eukaryotic Organelle rRNA
- Influenza virus



* What do these Prokaryotic rRNA/IGS sequences contain?

- small subunit rRNA only (16S rRNA)
- large subunit rRNA only (23S rRNA)
- intergenic spacer (16S-23S rRNA IGS)



- i** If none of the options above describe your sequence

Optional. You can provide a title for your submission in the Submission Portal. This title will not be displayed in the final records. Limit your title to 60 characters.

Submission title (Optional, not displayed in final records) [?](#)

RCC Adriana 2018 Prokaryotes



Continue

Figure 40: Enter the type of sequence



Submitter

Affiliation

i The information you give here will be displayed in the final sequence records.
For address details, provide the primary address where work was done to generate the data in this submission.

*** Submitting organization**

Sorbonne Université, CNRS, Station Bi

*** Department**

UMR7144

*** Street**

Place Georges Teissier

*** City**

Roscoff

State/Province

*** Postal code**

29680

*** Country**

France



Contact information

i GenBank may use this information to contact you about your submission, it will not be displayed in the final sequence records.

*** E-mail (primary)**

vaulot@sb-roscff.fr

*** E-mail (secondary)**

vaulot@gmail.com

i Please provide an alternate email address to ensure that messages are received

*** First (given) name** **Middle name**

Daniel

*** Last (family) name**

Vaulot

Phone **?**

Fax **?**

Continue

Update my contact information in profile

Figure 41: Enter submitter information

Submission Portal

GenBank submission: SUB4388090

Prokaryotic 16S rRNA / RCC Adriana 2018 Prokaryotes

1 SUBMISSION TYPE 2 SUBMITTER 3 SEQUENCING TECHNOLOGY 4 SEQUENCES 5 SEQUENCE PROCE

Sequencing Technology

Method

* What methods were used to obtain these sequences? 

- Sanger dideoxy sequencing
- 454
- Helicos
- Illumina
- IonTorrent
- Pacific Biosciences
- SOLiD
- Other



Assembly State

These sequences are:

- Unassembled sequence reads
- Assembled sequences (each sequence was assembled from two or more overlapping sequence reads)



Continue

Figure 42: Enter the sequence technology. In almost all cases choose Sanger and Assembly

Sequences

Release date

Note: Release of BioProject or BioSample is also triggered by the release of linked data.

* When should this submission be released to the public?

Release immediately following processing

Release on specified date or upon publication, whichever is first

Chimera check

* Did you check and remove low-quality and chimeric sequences from your FASTA file prior to preparing this submission?

Yes

No

Only for prokaryotes

Please provide the name and version of the chimera checking program. BLAST alone is not sufficient as a chimera checking program.

Program Name Version

Geneious 10

Cultured or Uncultured

Select whether your sequences were obtained from cultured or uncultured samples.

* Bacterial/archaeal Sequences: How were they obtained? [?](#)

Pure-cultured strains (axenic cultures containing only one microbial species each)

Uncultured, bulk environmental DNA (PCR-amplified directly from environmental sample or host; samples were not grown in culture)

Only for prokaryotes

Sequences

* Upload a nucleotide [FASTA](#) formatted file.

Choisir un fichier Aucun fichier choisi

If you have multiple sequences, all of your sequences need to be in one file. [Help on FASTA file.](#)

Example FASTA nucleotide format:

```
>Seq1
aaccgatatacgatgtgatccgatatacgagagagga
>Seq2
gtacgataaaagatgtgatccgatatacgagagagga
```

Use the latest version of the [Aspera Connect plugin](#) for faster file uploads. If a pop-up box about 'fasp protocol' is displayed, click 'Allow' or 'Open' to let [Aspera Connect](#) handle file uploads more efficiently.

Figure 43: Sequences. Release date: Choose immediate release in most cases, there is really no need to delay release.- The chimera question is only for Prokaryotes. - Chose pure cultures for cyanos. - Upload the fasta sequence file

- Source information. Since it will be loaded in the text file, choose “NONE of these”

GenBank submission: SUB4388090

cultured Prokaryotic 16S rRNA / RCC Adriana 2018 Prokaryotes

1 SUBMISSION TYPE 2 SUBMITTER 3 SEQUENCING TECHNOLOGY 4 SEQUENCES 5 SOURCE INFO 6 SOURCE MODIFIERS 7 REFERENCES 8 OVERVIEW

Source Information

ⓘ The first few sequence IDs that we found are:

RCC5180-18S-AL-2018-08-07
RCC5183-18S-AL-2018-08-07
RCC5185-18S-AL-2018-08-07

* Do your sequence IDs represent one of these?

Strain

NONE of these

ⓘ Values for these are typically alpha-numeric sample codes used in your laboratory to track individual samples. Select 'NONE of these' if it does not describe your sequence IDs or the sequence IDs contain more information than the [description/scope](#) of that field.

Continue

Figure 44: Source info

GenBank submission: SUB4388090

cultured Prokaryotic 16S rRNA / RCC Adriana 2018 Prokaryotes

1 SUBMISSION TYPE 2 SUBMITTER 3 SEQUENCING TECHNOLOGY 4 SEQUENCES 5 SOURCE INFO 6 SOURCE MODIFIERS 7 REFERENCES 8 OVERVIEW

Source Modifiers

ⓘ For each sequence, GenBank requires the following source information:

- scientific name of the **Organism** that was sequenced and
- **strain** (NOT from a top BLAST hit, NOT the species name).

If you have already provided all the required information, you can press Continue to proceed.

ⓘ More help: [how to provide source modifiers](#), [description of each modifier](#), [what is a source modifier?](#)

ⓘ * How do you want to apply source modifiers?

Use an editable table

Upload a tab-delimited file (use our provided template)

Continue

Figure 45: Upload tsv file saved from Geneious

GenBank submission: SUB4388090

cultured Prokaryotic 16S rRNA / RCC Adriana 2018 Prokaryotes

1 SUBMISSION TYPE > 2 SUBMITTER > 3 SEQUENCING TECHNOLOGY > 4 SEQUENCES > 5 SOURCE INFO > 6 SOURCE MODIFIERS > 7 REFERENCES > 8 OVERVIEW

Source Modifiers

▼ For each sequence, GenBank requires the following source information:

- scientific name of the **Organism** that was sequenced and
- **strain** (NOT from a top BLAST hit, NOT the species name).

If you have already provided all the required information, you can press Continue to proceed.

ⓘ More help: [how to provide source modifiers](#), [description of each modifier](#), [what is a source modifier?](#)

▶ Current Source Modifiers - what you have provided so far

▶ * How do you want to apply source modifiers?

1. [Download source modifier template](#) with any source information provided so far.

2. Edit the [downloaded table](#) in Microsoft Excel or any other editor.

↳ [See an example Source Modifiers table](#)

3. Save the table as a tab-delimited text file.

4. Upload Source Modifiers file.

RCC_Adriana_API_2017_Prok.tsv ✓



Choisir un fichier Aucun fichier choisi ⓘ

5. Click Continue to validate the information and follow the instructions.

Continue

Figure 46: After uploading tsv file

GenBank submission: SUB4388231

Eukaryotic Nuclear rRNA/ITS / RCC Adriana 2018 Eukaryotes



Source Modifiers

⚠ Warning: One or more of the organism names listed below are not in the NCBI Taxonomy database. Confirm that the spelling of the listed organism name(s) is correct. If any are not correct, provide corrected names. If they are correct, click the Continue button.

Organism Name

Trebouxiophyceae sp.
Chlorophyceae sp.
Fragilariales sp.
Chlorophyta sp.
Heterocapsaceae sp.

Figure 47: Taxonomy error - This error is due to the addition of sp. to taxa at the rank above the genus. You need to correct and remove sp. to the tsv file. If the error comes from a new taxon not yet described you can ignore and GenBank will contact you probably to add this taxon to their database.

GenBank submission: SUB4388090

cultured Prokaryotic 16S rRNA / RCC Adriana 2018 Prokaryotes

1 SUBMISSION TYPE 2 SUBMITTER 3 SEQUENCING TECHNOLOGY 4 SEQUENCES 5 SOURCE INFO 6 SOURCE MODIFIERS 7 REFERENCES 8 OVERVIEW

References

Sequence authors

Who should be publicly credited as the submitter of this sequence data?

* First (given) name MI * Last (family) name
Adriana Lopes dos Santo
Daniel Vaulot

Delete

Delete

Names will appear in your records as:

Lopes dos Santos,A. and Vaulot,D.



Add another sequence author

Reference

Please provide the title and relevant publication details of **your paper** that discusses **this submission**.

* Publication status

Unpublished In-press Published

Reference title

Roscoff Culture Collection



Select Reference Authors

Same as sequence authors Specify new authors

Continue

Figure 48: Add the reference. For the Roscoff Culture Collection just fill as indicated with the name of the person who produced the sequence first.

GenBank submission: SUB4388090
cultured Prokaryotic 16S rRNA / RCC Adriana 2018 Prokaryotes

[Delete submission](#)

1 SUBMISSION TYPE **2 SUBMITTER** **3 SEQUENCING TECHNOLOGY** **4 SEQUENCES** **5 SOURCE INFO** **6 SOURCE MODIFIERS** **7 REFERENCES** **8 OVERVIEW**

Overview

Submit

You have requested that your sequence data be released **immediately following processing**.

Submitter

Submitter Daniel Vaulot
vaulot@sub-moscov.fr
vaulot@gmail.com

Institution Sorbonne Université, CNRS, Station Biologique

Department UMR7144

Street Place Georges Teissier

City Roscoff

Postal code 29680

Country France

Sequence authors

- Adriana Lopes dos Santos
- Daniel Vaulot

References

Publication status unpublished

Reference title Rosecuff Culture Collection

Authors same as sequence authors

Sequencing Technology

Methods Sanger dideoxy sequencing

Assembly state assembled

Chimera tool used? Geneious 10

Uploaded files

Figure 49: Final check

Submission Portal

GenBank [New submission](#)

Note: Submit only ribosomal RNA (rRNA), rRNA-ITS or Influenza sequences here.
All other submission types should use one of the alternate [submission tools](#) (e.g. BankIt, Sequin, [tbl2asn](#), etc.).

Attention: If you have corrections to an existing submission with status:

- Processed-error: use the FIX button to correct a submission.
- Queued or Processing: email your request with the Submission ID.
- Processed: follow these directions and email your request with the Accession numbers.

Do not create a new submission to fix or update an existing submission whose status is Queued, Processed-error, Processing, or Processed!

Short description and brief instructions

1 submission		Group	Status	Updated
Submission	Title		<input checked="" type="checkbox"/> Submitted	01/51
SUB4388090	cultured Prokaryotic 16S rRNA / RCC Adriana 2018 Prokaryotes		Awaiting processing.	

Filter / Search

From date To date Status Sort by

Data archives [Show](#)

Query [Search](#) [Clear](#)

Figure 50: Submission status. When you press submit you should arrive at the final screen showing your submission.

GenBank MH732916-MH732918



De gb-admin@ncbi.nlm.nih.gov
à vaulot@gmail.com, vaulot@sb-roscoff.fr

Dear GenBank Submitter:

Thank you for your direct submission of sequence data to GenBank. We have provided GenBank accession number(s) for your nucleotide sequence(s):

SUB4388090 RCC5180-18S-AL-2018-08-07 MH732916
SUB4388090 RCC5183-18S-AL-2018-08-07 MH732917
SUB4388090 RCC5185-18S-AL-2018-08-07 MH732918

GenBank accession numbers should appear in any publication that reports or discusses the data, as it gives the community a unique label with which they may retrieve your data from our online servers.

Based on the data submitted to us, the scheduled release date for your submission is:

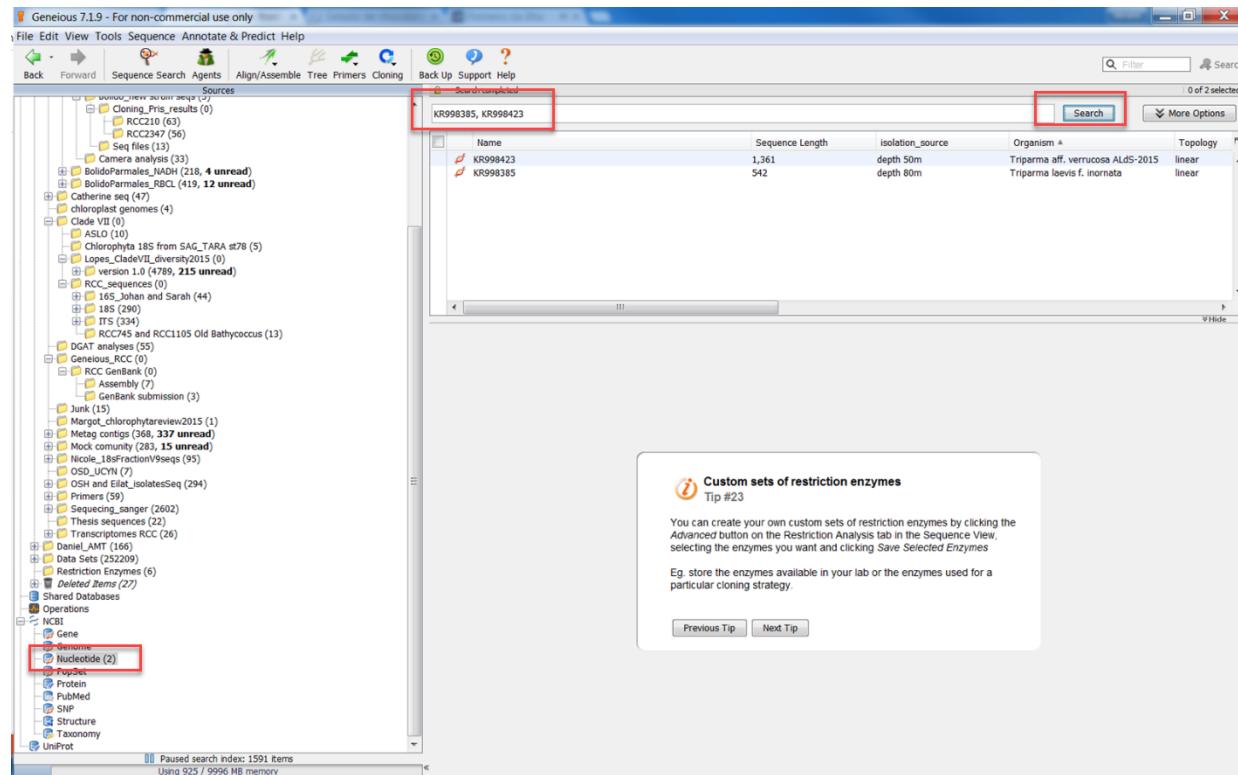
Aug 15, 2018

Figure 51: A few moments later, you should receive an email with the accession numbers. Please forward to rcc@sb-roscoff.fr.

6 Appendixes

6.1 Retrieve sequences from Genbank using Geneious

- **For a list:** Go to nucleotide, type the numbers separate by coma and click search. The results will appear in the bottom panel. You must drag the file into a folder in your local database if you wish to retain the file and/or modify it.



*

For consecutive accessions numbers: type the first and last numbers separated by :, click in more options, change All fields to Accession

The screenshot shows the Genious 7.1.9 software interface. The main window displays a search results table for nucleotide sequences. The search criteria in the top bar are set to "Match All" and "of the following:" with "Accession" selected and the value "KR998385:KR998423" entered. A red box highlights the "Search" button. Below the search bar, there is a "Truncate sequences to (residues):" input field and a "Create Agent..." button. The results table has columns for Name, Sequence Length, Isolation Source, Organism, and Topology. The results show various entries from Bolidomonas and Tripalma species, mostly linear topologies. A red box also highlights the "Topology" column header. At the bottom of the search results window, there is a tip about creating custom sets of restriction enzymes, with a "Tip #23" link.

Name	Sequence Length	Isolation Source	Organism	Topology
KR998394	531	depth 20m	Bolidomonas mediterranea	linear
KR998397	1,665	depth 20m	Bolidomonas mediterranea	linear
KR998419	1,234	depth 20m	Bolidomonas mediterranea	linear
KR998389	574	depth 15m	Bolidomonas pacifica	linear
KR998390	575	depth 15m	Bolidomonas pacifica	linear
KR998393	601	depth 5m	Bolidomonas pacifica	linear
KR998398	1,698	depth 15m	Bolidomonas pacifica	linear
KR998399	1,686	depth 5m	Bolidomonas pacifica	linear
KR998409	458	depth 15m	Bolidomonas pacifica	linear
KR998416	1,358	depth 15m	Bolidomonas pacifica	linear
KR998417	1,200	depth 15m	Bolidomonas pacifica	linear
KR998418	1,200	depth 5m	Bolidomonas pacifica	linear
KR998391	513	depth 5m	Bolidomonas pacifica var. eleuthera	linear
KR998392	746	depth 15m	Bolidomonas pacifica var. eleuthera	linear
KR998396	536	depth 5m	Bolidomonas pacifica var. eleuthera	linear
KR998400	1,640	depth 5m	Bolidomonas pacifica var. eleuthera	linear
KR998408	584	depth 5m	Bolidomonas pacifica var. eleuthera	linear
KR998410	462	depth 5m	Bolidomonas pacifica var. eleuthera	linear
KR998412	458	depth 5m	Bolidomonas pacifica var. eleuthera	linear
KR998413	607	depth 25m	Bolidomonas pacifica var. eleuthera	linear
KR998421	1,200	depth 5m	Bolidomonas pacifica var. eleuthera	linear
KR998422	1,015	depth 25m	Bolidomonas pacifica var. eleuthera	linear
KR998395	560	English Channel depth 10m	Bolidomonas sp. ALdS-2015	linear
KR998411	692	English Channel depth 10m	Bolidomonas sp. ALdS-2015	linear
KR998420	1,386	English Channel depth 10m	Bolidomonas sp. ALdS-2015	linear
KR998388	546	depth 50m	Tripalma aff. verrucosa ALdS-2015	linear
KR998403	1,739	depth 50m	Tripalma aff. verrucosa ALdS-2015	linear
KR998407	691	depth 50m	Tripalma aff. verrucosa ALdS-2015	linear
KR998423	1,361	depth 50m	Tripalma aff. verrucosa ALdS-2015	linear

Custom sets of restriction enzymes
Tip #23

You can create your own custom sets of restriction enzymes by clicking the Advanced button on the Restriction Analysis tab in the Sequence

Previous Tip Next Tip