

WORKSHOP ON BIOINFORMATICS APPLICATIONS IN GENOMICS SURVEILLANCE OF BACTERIAL ANTIMICROBIAL RESISTANCE

Biological Databases and Resources

Practical Sessions

22/02/2023

Stephane Fadanka, Diapa Nana Yanick,
Therese Minffih



Mboalab Biotech | Beneficial Bio

Database Searching Retrieval and Exporting

1. Define a target
2. Identify the right platform
3. Retrieve and store specific data
4. Import Data for downstream analysis

Phase A: Search, Export and Store a biological sequence data from NCBI.

Phase B: Introduction to Benchling, Account creation and exploration of the platform for Basic analysis.

Phase A: Search, Export and Store a biological sequence data from NCBI.

- Open NCBI Website:

<https://www.ncbi.nlm.nih.gov/>

- Identify Streptococcus agalactiae

DNA for 16S rRNA, strain ATCC 23956

- Retrieve (Download) the sequence

The screenshot shows the NCBI homepage with a dark blue header containing the NIH logo and the text 'National Library of Medicine National Center for Biotechnology Information'. A 'Log in' button is in the top right. Below the header is a search bar with 'All Databases' and a 'Search' button. The main content area is divided into several sections. On the left is a vertical 'NCBI Home' menu with links like 'Resource List (A-Z)', 'All Resources', 'Chemicals & Bioassays', 'Data & Software', 'DNA & RNA', 'Domains & Structures', 'Genes & Expression', 'Genetics & Medicine', 'Genomes & Maps', 'Homology', 'Literature', 'Proteins', 'Sequence Analysis', 'Taxonomy', 'Training & Tutorials', and 'Variation'. The central 'Welcome to NCBI' section features a paragraph about the center's mission and a row of six icons: 'Submit' (deposit data), 'Download' (transfer data), 'Learn' (find help), 'Develop' (use APIs), 'Analyze' (identify tools), and 'Research' (explore research). Below this is a 'COVID-19 Information' section with links to public health, research, and prevention information. On the right, 'Popular Resources' lists PubMed, Bookshelf, PubMed Central, BLAST, Nucleotide, Genome, SNP, Gene, Protein, and PubChem. Below that is the 'NCBI News & Blog' section with several news items dated from February 2023, including updates on virus classification, RefSeq annotations, and the eukaryotic genome annotation pipeline. At the bottom, a 'FOLLOW NCBI' section includes social media icons for Twitter, Facebook, YouTube, and RSS. The footer contains contact information for the National Library of Medicine, web policies, FOIA, and accessibility resources, along with the URL 'NIH | HHS | USA.gov'.

NIH National Library of Medicine
National Center for Biotechnology Information

Log in

All Databases Search

NCBI Home
Resource List (A-Z)
All Resources
Chemicals & Bioassays
Data & Software
DNA & RNA
Domains & Structures
Genes & Expression
Genetics & Medicine
Genomes & Maps
Homology
Literature
Proteins
Sequence Analysis
Taxonomy
Training & Tutorials
Variation

Welcome to NCBI
The National Center for Biotechnology Information advances science and health by providing access to biomedical and genomic information.
[About the NCBI](#) | [Mission](#) | [Organization](#) | [NCBI News & Blog](#)

Submit
Deposit data or manuscripts into NCBI databases

Download
Transfer NCBI data to your computer

Learn
Find help documents, attend a class or watch a tutorial

Develop
Use NCBI APIs and code libraries to build applications

Analyze
Identify an NCBI tool for your data analysis task

Research
Explore NCBI research and collaborative projects

COVID-19 Information
[Public health information \(CDC\)](#) | [Research information \(NIH\)](#) | [SARS-CoV-2 data \(NCBI\)](#) | [Prevention and treatment information \(HHS\)](#) | [Español](#)

Popular Resources
PubMed
Bookshelf
PubMed Central
BLAST
Nucleotide
Genome
SNP
Gene
Protein
PubChem

NCBI News & Blog
Upcoming changes to influenza virus names in NCBI Taxonomy 21 Feb 2023
In order to reflect changes to the International Code of Virus Classification 14 Feb 2023
New annotations in RefSeq! 14 Feb 2023
In December and January, the NCBI Eukaryotic Genome Annotation Pipeline released twenty-nine new 09 Feb 2023
Announcing New Names for Eukaryotic Genome Annotations in RefSeq! 09 Feb 2023
The RefSeq eukaryotic genome annotation pipeline (FGAP) is moving to 09 Feb 2023
[More...](#)

FOLLOW NCBI

Connect with NLM
National Library of Medicine
8600 Rockville Pike
Bethesda, MD 20894

Web Policies
FOIA
HHS Vulnerability Disclosure

Help
Accessibility
Careers

NIH | HHS | USA.gov

1. Search

Log in

Nucleotide

Nucleotide

Streptococcus agalactiae 16S rRNA

Search

Create alert Advanced

Help

Species

Animals (34)
Plants (6)
Bacteria (121,280)
Archaea (6)
Viruses (2)
Customize ...

Molecule types

genomic
DNA/RNA (121,292)
mRNA (30)
rRNA (4)
Customize ...

Source

databases
INSDC (GenBank)
(38,148)
RefSeq (83,178)
Customize ...

Sequence Type

Nucleotide (121,296)
EST (30)

Genetic compartments

Plasmid (6)

Sequence

length
Custom range...

Release date

Custom range...

Revision date

Custom range...

Clear all

Show additional filters

Summary 20 per page Sort by Default order

Send to:

Filters: [Manage Filters](#)

See Gene information for 16s 16s rRNA

16s in [Mus musculus](#) [Clenothidium vasava](#) [Asilbe chinensis](#) [All 59 Gene records](#)
16s rRNA in [Abisara chela](#) [Acorus calamus](#) (2) [All 231 Gene records](#)
rRNA in [Allotriaes orientalis](#) (2) [Nadezhdiella cantori](#) [All 10 Gene records](#)

Items: 1 to 20 of 121326

<< First < Prev Page 1 of 6067 Next > Last >>

☐ [Streptococcus agalactiae 16S rRNA gene, partial 3' end](#)

1. 509 bp linear DNA

Accession: AJ131579.1 GI: 4033579

[Taxonomy](#)

[GenBank](#) [FASTA](#) [Graphics](#)

☐ [Streptococcus agalactiae 16S rRNA gene, partial 5' end](#)

2. 509 bp linear DNA

Accession: AJ131578.1 GI: 4033578

[Taxonomy](#)

[GenBank](#) [FASTA](#) [Graphics](#)

☐ [Streptococcus agalactiae DNA for 16S rRNA, strain ATCC 23956](#)

3. 1,312 bp circular DNA

Accession: AB002480.1 GI: 1944073

[Taxonomy](#)

[GenBank](#) [FASTA](#) [Graphics](#)

☐ [Streptococcus agalactiae 1-KN-2020 gene for 16S rRNA, partial sequence](#)

4. 1,492 bp linear DNA

Accession: LC545464.1 GI: 192794392

[Taxonomy](#)

[GenBank](#) [FASTA](#) [Graphics](#)

☐ [Streptococcus agalactiae partial 16S rRNA gene](#)

5. 1,082 bp linear DNA

Accession: LR761340.1 GI: 1868669472

[BioProject](#) [Taxonomy](#)

[GenBank](#) [FASTA](#) [Graphics](#)

☐ [Streptococcus agalactiae partial 16S rRNA gene](#)

6. 1,082 bp linear DNA

Accession: LR761339.1 GI: 1868669471

[BioProject](#) [Taxonomy](#)

[GenBank](#) [FASTA](#) [Graphics](#)

☐ [Streptococcus agalactiae partial 16S rRNA gene](#)

7. 1,143 bp linear DNA

Results by taxon

Top Organisms [\[Tree\]](#)

[Streptococcus agalactiae](#) (120353)
[Streptococcus pyogenes](#) (627)
[Streptococcus dysgalactiae](#) (63)
[Oreochromis niloticus](#) (30)
[Streptococcus cristatus](#) (26)
[All other taxa](#) (227)
[More...](#)

Find related data

Database: [Select](#)

Find items

Search details

("Streptococcus agalactiae"
[Organism] OR Streptococcus
agalactiae[All Fields]) AND
16S[All Fields] AND rRNA[All
Fields]

Search

See more...

Recent activity

Turn Off Clear

[Streptococcus agalactiae 16S rRNA](#)
(121326) [Nucleotide](#)

[Streptococcus agalactiae 16S rRNA](#)
AND (alive[prop]) (22) [Gene](#)

[Homo sapiens dihydrolipoamide S-](#)
succinyltransferase (DLST), [Nucleotide](#)

[streptococcus agalactiae d1S AND](#)
(alive[prop]) (0) [Gene](#)

[streptococcus agalactiae AND](#)
(alive[prop]) (2282) [Gene](#)

See more...

2. Retrieve/ Store

Log in

Nucleotide

Nucleotide

Advanced

Search

Help

GenBank

Send to:

Streptococcus agalactiae DNA for 16S rRNA, strain ATCC 23956

GenBank: AB002480.1

[FASTA](#) [Graphics](#)

Go to:

LOCUS AB002480 1312 bp DNA circular BCT 13-FEB-1999
DEFINITION Streptococcus agalactiae DNA for 16S rRNA, strain ATCC 23956.

ACCESSION AB002480

VERSION AB002480.1

KEYWORDS 16S ribosomal RNA.

SOURCE Streptococcus agalactiae

ORGANISM [Streptococcus agalactiae](#)

Bacteria; Bacillota; Bacilli; Lactobacillales; Streptococcaceae; Streptococcus.

REFERENCE

AUTHORS Mori,Y., Takahashi,T., Katsumi,M., Katoh,K., Hiramune,T. and Kikuchi,N.

TITLE Phylogenetic analyses of swine isolates of Streptococcus dysgalactiae based on the 16S rDNA sequence

REFERENCE Unpublished

2 (bases 1 to 1312)

AUTHORS Mori,Y.

TITLE Direct Submission

JOURNAL Submitted (31-MAR-1997) Yukari Mori, School of Veterinary Medicine, Rakuno Gakuen University, Epizootiology; 582 Bunkyo-dai-Midorimachi, Ebetsu, Hokkaido 069, Japan (Tel:011-386-1112, Fax:011-387-5890)

FEATURES

source
1..1312
/organism="Streptococcus agalactiae"
/mol_type="genomic DNA"
/strain="ATCC 23956"
/db_xref="taxon:1311"
1..1312
/product="16S ribosomal RNA"

rRNA

ORIGIN

```
1 gcttcaccac gtctaagag ttgcgaacg gtgagtaac cytaggtaac ctacctata
61 gcgggggata actattgaa acatagcta ataccgcatg aaagtagaag accatagtca
121 tctactaaaa aggggcaact gtcccctat gagaggaacc tgcgtgtag tagctagttg
181 gtgagtaaga ggtccaccaa gcgcgcgac catagcgac ctgagaaggt gatcgccac
241 actgggagct agacagcgc cagactctca cgggaagcag cagtagggaa ttctgcgaa
301 tggggggaac cctgaccag caacgcccg tgaatgaaga agttttcgg atcgtaaacg
361 tctgtgttta gagaagaacg gtaatggag tggaaatcc attactgtac ggtaaactac
421 cagaaaggga cgcctaacta ctgcccaga ccgcgcggtta tacgtaggtt ccgagttgt
481 tccgatttta ttggcggtta agcagcgca gcgcggttga taagtctgaa gttaaagct
541 gtggcttaac catagtttgc ttggaaact gtcaaaact agtcgagaag gggagaagtg
601 aatttcattg gtacgggtga aatgcgtaga tatatgaag aaacacgggt gccaagaacg
661 ctctctgttc tgaactaac gtgaagctc gaaagctggt ggaacaaca cgattagata
721 cctgtgtagt cagccgctga aacgatagt gctaggtgtt aggcctttc ggggttgtag
781 tgcgcgtag aacgattata gactctcgc ttgggagtag gacgcgaag ttgaactata
841 aaggaattga cggggccccc cacaagcgt ggagcatgtg gtttaattcg aagcaacgcg
901 aagaacctta ccaggtcttg acatctctt gaccgcgcta gagatagctt ttctcttcgg
961 agcagaagtg acaggtgtgt ctggtgttc gtacagctgt gtcgtgagat gttgggttaa
1021 tcccgcaac gacgcgaacc cctattgtta gtgtccata ttaagttggg cactctagcg
1081 agactgcggt taataaacgc gagaaggtg ggaatgagct caaactcata tgcctcttat
```

See more...

Change region shown

Customize view

Analyze this sequence

Run BLAST

Pick Primers

Highlight Sequence Features

Find in this Sequence

Related information

Taxonomy

Full text in PMC

LinkOut to external resources

Streptomyces rochei

[BacDive]

Ribosomal Database Project II

[Ribosomal Database Project II]

SILVA SSU Database

[SILVA]

Recent activity

Turn Off Clear

[Streptococcus agalactiae DNA for](#)
16S rRNA, strain ATCC 235 [Nucleotide](#)

[Streptococcus agalactiae 16S rRNA](#)
gene, partial 5' end [Nucleotide](#)

[Streptococcus agalactiae 16S rRNA](#)
(121326) [Nucleotide](#)

[Streptococcus agalactiae 16S rRNA](#)
AND (alive[prop]) (22) [Gene](#)

[Homo sapiens dihydrolipoamide S-](#)
succinyltransferase (DLST), [Nucleotide](#)

See more...

Phase B: Introduction to Benchling:

Account creation and exploration of the platform for Basic analysis.

1. Open Benchling Platform: <https://benchling.com/signin/welcome>
2. Click on sign Up to create an account

Description on the platform.

Quick case study: Primer Design on Benchling

- Go to + sign
- Select DNA / RNA sequence
- Import retrieved sequence

11:17 Wed 22 Feb

LTE Wi PocketPCR - D 179 usd to XA Apple iF Open-access R +

← → ↺ benchling.com

Registries /

Open Bioeconomy Lab

Search

Type: Entity Filters

+

Project

Entry

Protocol

DNA / RNA Sequence

AA Sequence

Oligo

CRISPR

Entity from Schema

Mixture

More

human highGC IGF2R RV pr009 58

human highGC TGFB1 64 FW pr010 59

human highGC TGFB1 64 RV pr011 60

Open-access ...

Lab reagents (Us...

#0 F

ADD PROTOCOL NOTES RELEVANT ITEMS METADATA

Insert H

B

Open-access RT-LAMP enzyme production: HIV-1 RT and Bst-LF at MboaLab

FRIDAY, 16/04/2021

Recovery of Plasmids:

- Disks on whatman filter paper were carefully cut out and placed in sterile Eppendorf tubes
- Disks in Eppendorf tube were soaked in 40 ul of TE Buffer.
- Tubes were left at room temperature for 10 min and then stored at -20C.
- Concentration of Plasmid DNA solution obtained was determined using a Nano drop (simpli Nano).

Table1

	A	B	C
1	Plasmid	Concentration	A:
2	HIV-RT	0.088ug/ul	
3	BST-LF	0.062ug/ul	

SPLIT WORKSPACE