Mini Courses NCBI Resources one course at a time

NCBI's GenBank Quick Start
An NCBI Mini-Course

GenBank® is the NIH nucleotide sequence database. It is part of the International Nucleotide Sequence Database Collaboration, with the DNA DataBank of Japan (DDBJ) and the European Molecular Biology Laboratory (EMBL). These three organizations exchange data on a daily basis that now includes sequences from about 160,000 organisms.

The mini-course covers following topics:

* History and growth of GenBank
* Different types of entries and how to identify them from the accession numbers
* The format of a typical GenBank entry and understanding the features annotated on it
* The submission tools, BankIt and Sequin, and choosing which one to use
* Overview of the processing of GenBank entries
* Overview of the GenBank FTP directory: how to download sequences in batch
* BLAST searching GenBank on the web
* Some tips on searching GenBank efficiently

The following handout includes the screen shots of the exercise demonstrated in the workshop**.**

URL: http://www.ncbi.nlm.nih.gov/Class/minicourses/quickgenbank.html

Instructor: **Steve Pechous (pechous@ncbi.nlm.nih.gov)**

Problems:

1. Retrieve entries containing the word "pannexin" from Entrez-Nucleotide. The Entrez Nucleotides database is a collection of sequences from several sources, including GenBank, RefSeq, and the Protein Data Bank. The summary of the top 20 entries is displayed by default. Currently, how many entries are there in the Entrez-nucleotides CoreNucleotide, EST and GSS databases associated with pannexin?

Change the pull down menu "Show" to a number large enough to view the summaries of all entries. Determine the source databases and types of entries such as mRNA or genomic. Consult the Accession Number Prefixes page, if necessary.

Access entries from the CoreNucleotide database. Keep the genomic entries from GenBank by using the Preview/Index page (biomol genomic [properties] AND srcdb genbank [properties]). Is GenBank a redundant database? Note multiple pannexin 1 segmented sets and individual exon sequences.

Let us use the entry AY048509 as a sample GenBank entry with feature annotations. When the entry was last updated? Was its sequence updated after release? Does it contain a complete coding region? What are the locations of the 5'UTR? What is the accession number for the protein entry?

Go back to the Entrez report. Change the source database to RefSeq, molecule type to mRNA and human as organism by using the Preview/index page. Now, RefSeq entries for human pannexin 1, pannexin 2 and pannexin 3 mRNAs are displayed. Save the sequences to a file by changing the "Display" to FASTA and "Send to" file.

Check the sequence revision history of NM_015368. What is the most recent change? How many times has the sequence of the entry been updated? When did these updates occur?

2. Retrieve entries containing the word "FOXP2" from Entrez-Nucleotide. The Entrez Nucleotides database is a collection of sequences from several sources, including GenBank, RefSeq, and PDB. The summary of top 20 entries is displayed by default. Currently, how many entries are there in the Entrez-nucleotides CoreNucleotide, EST and GSS databases associated with FOXP2?

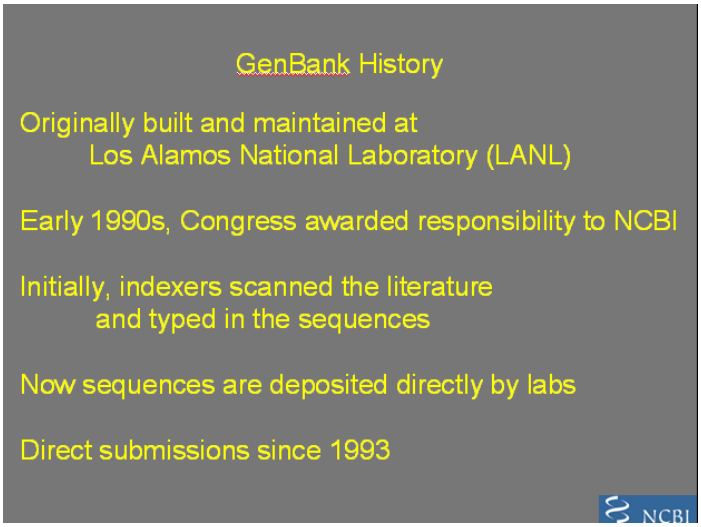
Change the pull down menu "Show" to a number large enough to view the summaries of all entries. Determine the source databases and types of entries such as mRNA or genomic. Consult the Accession Number Prefixes page, if necessary.

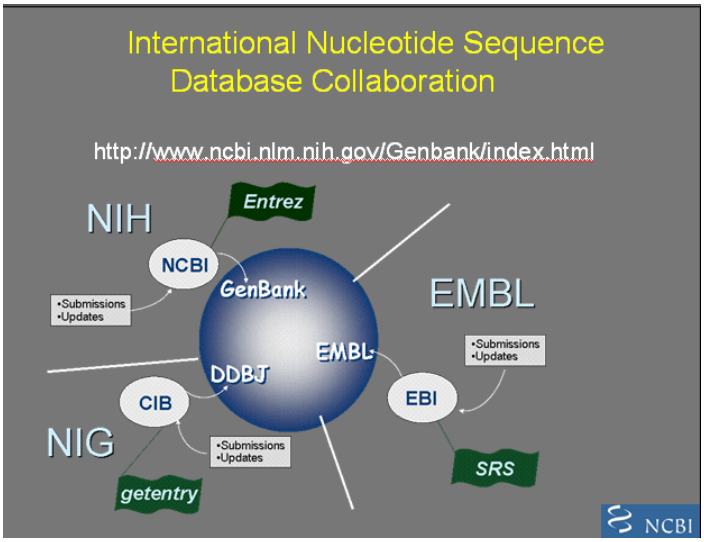
Access entries from the CoreNucleotide database. Keep the genomic entries from GenBank by using the Preview/Index page (biomol genomic [properties] AND srcdb genbank [properties]). Is GenBank a redundant database? Note the multiple FOXP2 exon sequence entries. Are they duplicate entries?

Let us use the entry AF515032 as a sample GenBank entry with feature annotations. When the entry was last updated? Was its sequence updated after release? Does it contain a complete coding region? What is the accession number for the protein entry?

Go back to the Entrez report. Change the source database to RefSeq, molecule type to mRNA and human as organism by using the Preview/index page. Note that some of the entries are not for the FOXP2 gene. Restrict to the FOXP2 gene using the Preview/index page and the gene name field from the "All Fields" pull down menu. How many human FOXP2 transcript variants have been annotated? Save the sequences to a file by changing the "Display" to FASTA and "Send to" file.

Check the sequence revision history of NM_148900. What is the most recent change? How many times has the sequence of the entry been updated? When did these updates occur?





GenBank	RefSeq
Archival/repository	Curated
Redundant	Non-redundant
Submitter owner	NCBI owner
Sequenced	Combined/edited

NCBI

Types of Entries

1. Individual mRNA/Genomic
2. Sets such as Pop, Phy, Mut and environmental
3. Segmented sets
4. Expressed Sequence Tags (EST)
5. Genome Survey Sequence (GSS)
6. Sequence Tagged Site (STS)
7. Whole Genome Shotgun (WGS)
8. High Throughput Genomic (HTG)
9. High Throughput cDNA (HTC)
10. Full-Length Insert cDNA (FLIC)
11. Complete genomes
12. Third Party Annotation (TPA)

NCBI

NCBI Nucleotide

All Databases | PubMed | Nucleotide | Protein | Genome

Search Nucleotide for pannexin Go Clear

Limits | Preview/Index | History | Clipboard | Details

About Entrez

Entrez Nucleotide
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Entrez Tools

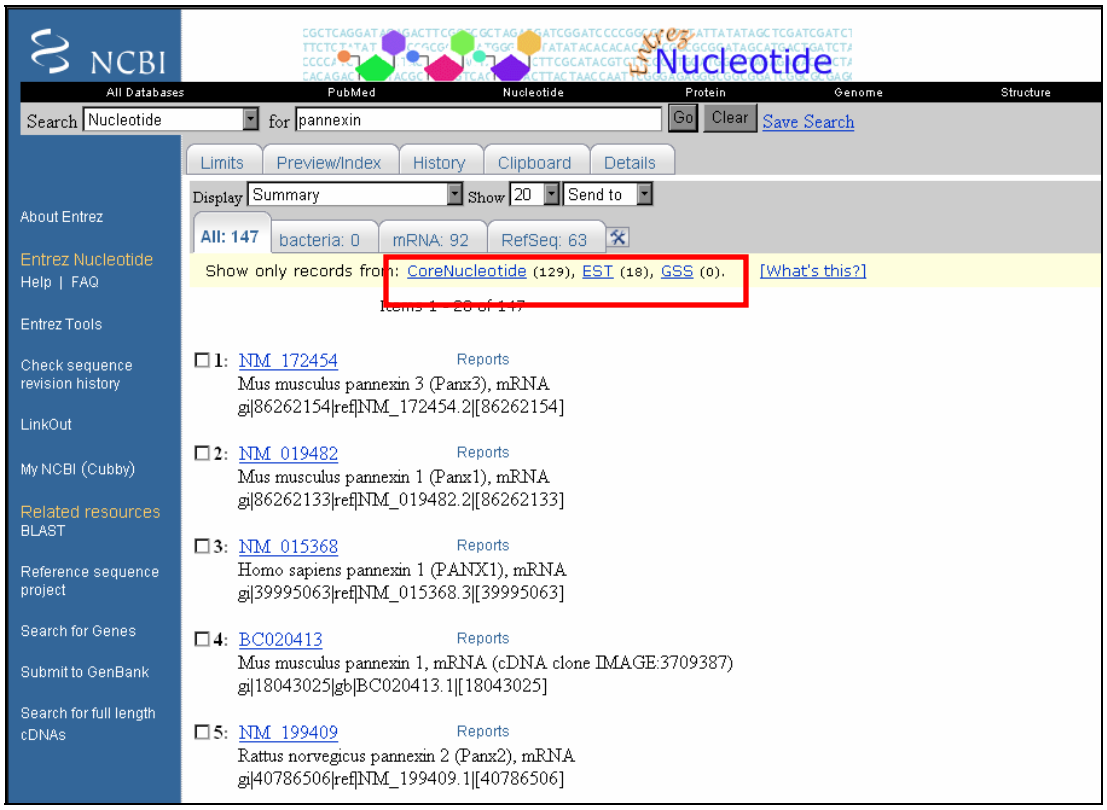
Check sequence revision history

LinkOut

The Entrez Nucleotides database is a collection of sequences from several sources, including GenBank, RefSeq, and PDB. The number of bases in these databases continues to grow at an exponential rate. As of April 2006, there are over 130 billion bases in GenBank and RefSeq alone.

Human Genome

Explore human genome resources or browse the human genome sequence using the Map Viewer.


NCBI
Entrez Nucleotide
All Databases
PubMed
Nucleotide
Protein
Genome
Structure
Search Nucleotide for pannexin Go Clear Save Search
Limits
Preview/Index
History
Clipboard
Details
Display Summary Show 20 Send to
All: 147
bacteria: 0
mRNA: 92
RefSeq: 63
Show only records from: CoreNucleotide (129), EST (18), GSS (0). [What's this?]
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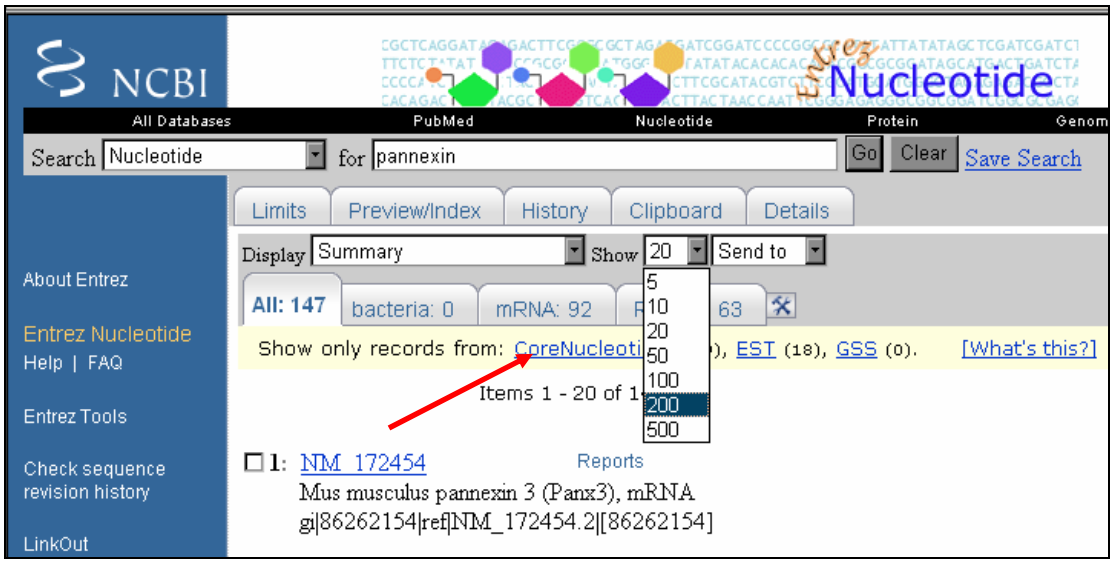
My NCBI (Cubby)
Related resources
BLAST
Reference sequence project
Search for Genes
Submit to GenBank
Search for full length cDNAs
1: NM_172454 Reports
Mus musculus pannexin 3 (Panx3), mRNA
gi|86262154|ref|NM_172454.2|[86262154]
2: NM_019482 Reports
Mus musculus pannexin 1 (Panx1), mRNA
gi|86262133|ref|NM_019482.2|[86262133]
3: NM_015368 Reports
Homo sapiens pannexin 1 (PANX1), mRNA
gi|39995063|ref|NM_015368.3|[39995063]
4: BC020413 Reports
Mus musculus pannexin 1, mRNA (cDNA clone IMAGE:3709387)
gi|18043025|gb|BC020413.1|[18043025]
5: NM_199409 Reports
Rattus norvegicus pannexin 2 (Panx2), mRNA
gi|40786506|ref|NM_199409.1|[40786506]


NCBI
Entrez Nucleotide
All Databases
PubMed
Nucleotide
Protein
Search Nucleotide for pannexin Go Clear Save Search
Limits
Preview/Index
History
Clipboard
Details
Display Summary Show 20 Send to
5
10
20
50
100
200
500
All: 147
bacteria: 0
mRNA: 92
Show only records from: CoreNucleoti
EST (18), GSS (0).
[What's this?]
Items 1 - 20 of 1
About Entrez
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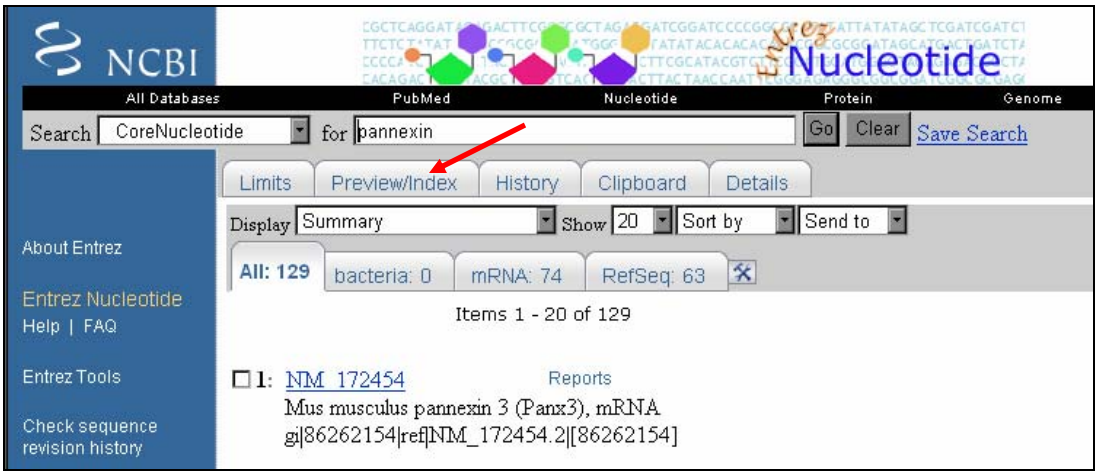
LinkOut
1: NM_172454 Reports
Mus musculus pannexin 3 (Panx3), mRNA
gi|86262154|ref|NM_172454.2|[86262154]


NCBI
Nucleotide
All Databases
PubMed
Nucleotide
Protein
Genome
Search CoreNucleotide for pannexin
Go
Clear
Save Search
Limits
Preview/Index
History
Clipboard
Details
Display Summary
Show 20
Sort by
Send to
All: 129
bacteria: 0
mRNA: 74
RefSeq: 63
Items 1 - 20 of 129
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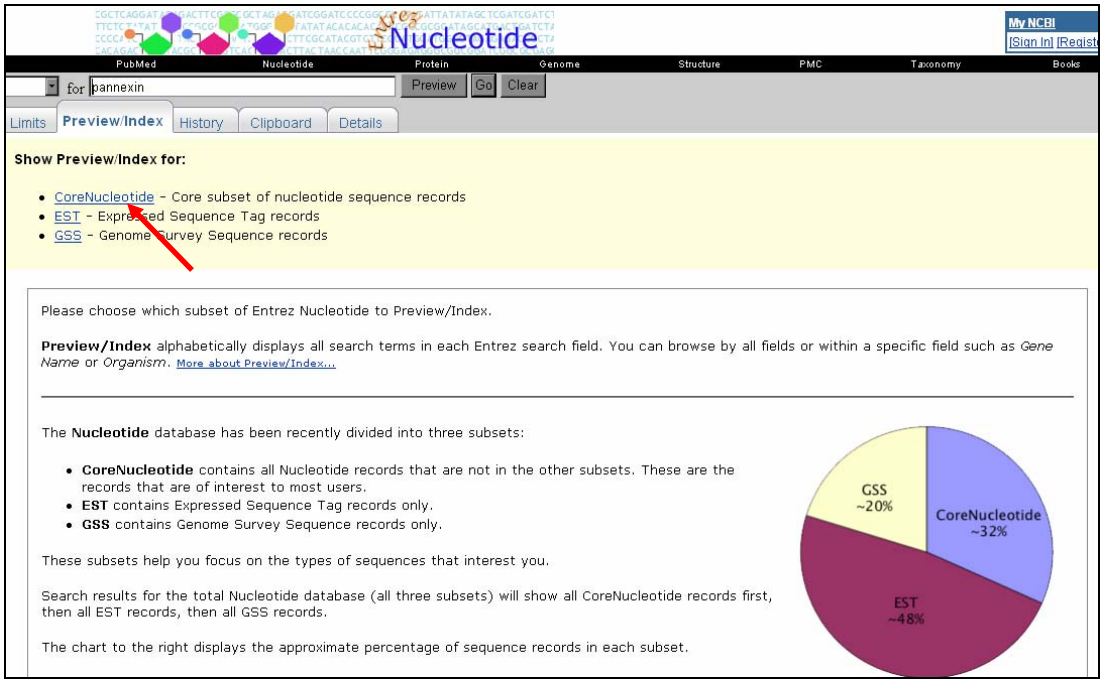
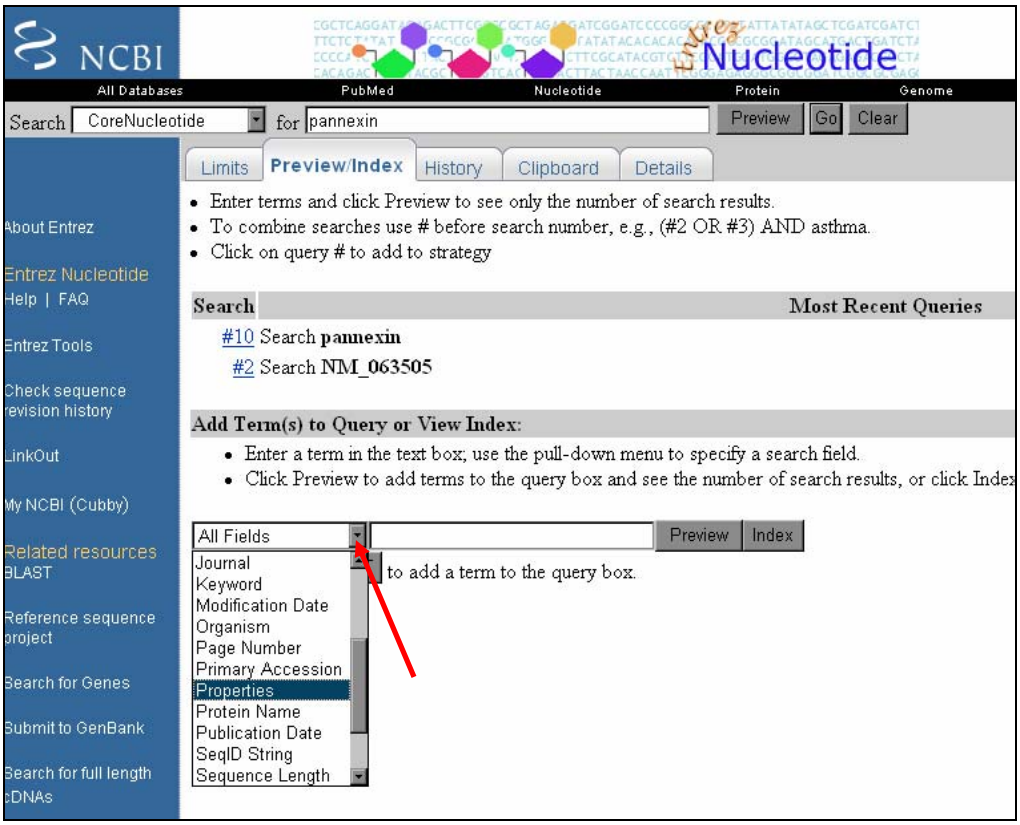
Check sequence revision history
1: NM_172454
Reports
Mus musculus pannexin 3 (Panx3), mRNA
gi|86262154|ref|NM_172454.2|[86262154]


Nucleotide
My NCBI
[Sign In] [Regist
PubMed
Nucleotide
Protein
Genome
Structure
PMC
Taxonomy
Books
for pannexin
Preview
Go
Clear
Limits
Preview/Index
History
Clipboard
Details
Show Preview/Index for:
CoreNucleotide - Core subset of nucleotide sequence records
EST - Expressed Sequence Tag records
GSS - Genome Survey Sequence records
Please choose which subset of Entrez Nucleotide to Preview/Index.
Preview/Index alphabetically displays all search terms in each Entrez search field. You can browse by all fields or within a specific field such as Gene Name or Organism. More about Preview/Index...
The Nucleotide database has been recently divided into three subsets:
CoreNucleotide contains all Nucleotide records that are not in the other subsets. These are the records that are of interest to most users.
EST contains Expressed Sequence Tag records only.
GSS contains Genome Survey Sequence records only.
These subsets help you focus on the types of sequences that interest you.
Search results for the total Nucleotide database (all three subsets) will show all CoreNucleotide records first, then all EST records, then all GSS records.
The chart to the right displays the approximate percentage of sequence records in each subset.
GSS ~20%
CoreNucleotide ~32%
EST ~48%


NCBI
Entrez Nucleotide
All Databases
PubMed
Nucleotide
Protein
Genome
Search CoreNucleotide for pannexin
Preview
Go
Clear
Limits
Preview/Index
History
Clipboard
Details
Enter terms and click Preview to see only the number of search results.
To combine searches use # before search number, e.g., (#2 OR #3) AND asthma.
Click on query # to add to strategy
Search
Most Recent Queries
#10 Search pannexin
#2 Search NM_063505
Add Term(s) to Query or View Index:
Enter a term in the text box; use the pull-down menu to specify a search field.
Click Preview to add terms to the query box and see the number of search results, or click Index
All Fields
Preview
Index
to add a term to the query box.
Journal
Keyword
Modification Date
Organism
Page Number
Primary Accession
Properties
Protein Name
Publication Date
SeqID String
Sequence Length
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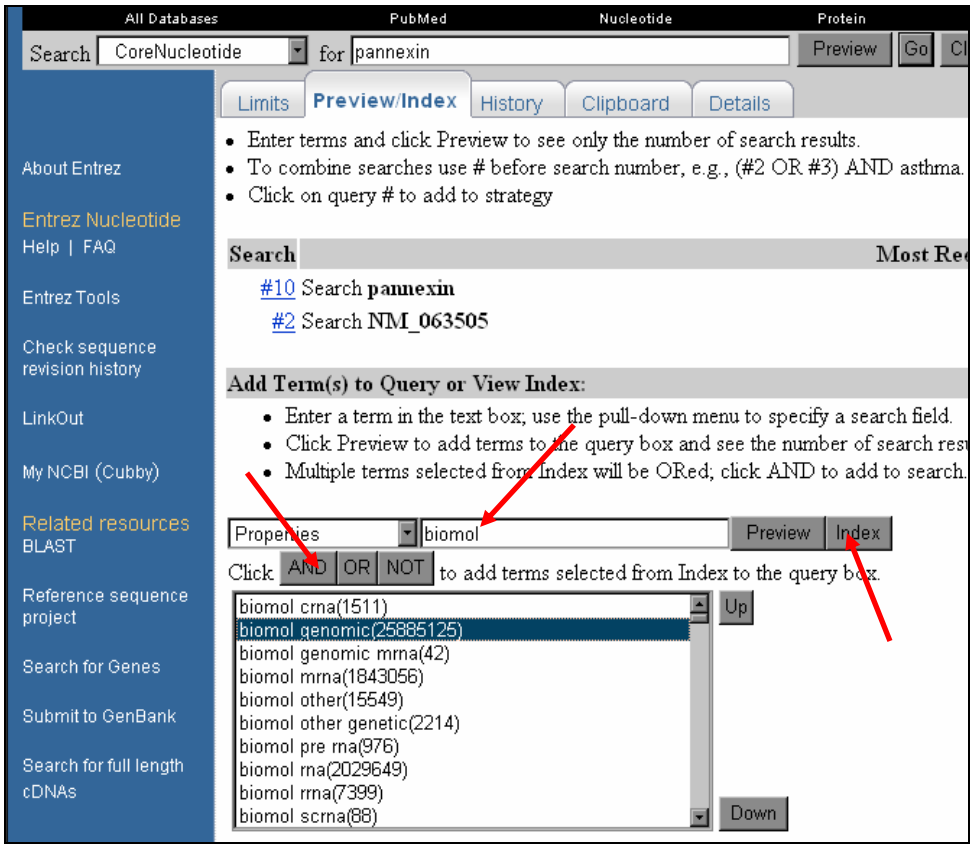
Submit to GenBank
Search for full length cDNAs


All Databases
PubMed
Nucleotide
Protein
Search CoreNucleotide for pannexin
Preview
Go
Limits
Preview/Index
History
Clipboard
Details
Enter terms and click Preview to see only the number of search results.
To combine searches use # before search number, e.g., (#2 OR #3) AND asthma.
Click on query # to add to strategy
Search
#10 Search pannexin
#2 Search NM_063505
Add Term(s) to Query or View Index:
Enter a term in the text box; use the pull-down menu to specify a search field.
Click Preview to add terms to the query box and see the number of search res
Multiple terms selected from Index will be ORed; click AND to add to search.
Properties
biomol
Preview
Index
Click AND OR NOT to add terms selected from Index to the query box.
biomol crna(1511)
biomol genomic(25885125)
biomol genomic mrna(42)
biomol mrna(1843056)
biomol other(15549)
biomol other genetic(2214)
biomol pre rna(976)
biomol rna(2029649)
biomol rrna(7399)
biomol scrna(88)
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Submit to GenBank
Search for full length cDNAs

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Search CoreNucleotide for pannexin AND "biomol genomic"[Properties] Preview Go Clear

Limits | Preview/Index | History | Clipboard | Details

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My NCBI (Cubby)

Related resources
BLAST

Reference sequence project

Search for Genes

Submit to GenBank

Search for full length cDNAs

- Enter terms and click Preview to see only the number of search results.
- To combine searches use # before search number, e.g., (#2 OR #3) AND asthma.
- Click on query # to add to strategy

Search **Most Recent Queries**

#10 Search **pannexin**

#2 Search **NM_063505**

Add Term(s) to Query or View Index:

- Enter a term in the text box; use the pull-down menu to specify a search field.
- Click Preview to add terms to the query box and see the number of search results, or click Index
- Multiple terms selected from Index will be ORed; click AND to add to search.

Properties srcdb Preview Index

Click AND OR NOT to add terms selected from Index to the query box.

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srcdb ddbj/embl/genbank(26565711)
srcdb embl(2703718)
srcdb genbank(22119417)
srcdb pdb(6845)
srcdb refseq(1440162)
srcdb refseq inferred(52)
srcdb refseq known(500945)
srcdb refseq model(329471)
srcdb refseq predicted(11566)

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Search for full length cDNAs
Display Summary
Show 20
Sort by
Send to
All: 9
bacteria: 0
mRNA: 0
RefSeq: 0
Items 1 - 9 of 9
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2: AF398507 Reports
Homo sapiens pannexin 1 (PANX1) gene, exon 2
gi|15193201|gb|AF398507.1|AF398506S2[15193201]
3: AF398506 Reports
Homo sapiens pannexin 1 (PANX1) gene, exon 1
gi|15193200|gb|AF398506.1|AF398506S1[15193200]
4: AH010983 Reports
Homo sapiens pannexin 1 (PANX1) gene, complete cds
gi|15193199|gb|AH010983.1|SEG_AF398506S[15193199]
5: AY048509 Reports
Homo sapiens pannexin 1 (PANX1) gene, partial cds
gi|15808666|gb|AY048509.1|[15808666]
6: AF283663 Reports
Homo sapiens pannexin 1 (PANX1) gene, exons, partial cds
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7: AF283662 Reports
Homo sapiens pannexin 1 (PANX1) gene, exon
gi|14794509|gb|AF283662.1|AF283661S2[14794509]
8: AF283661 Reports
Homo sapiens pannexin 1 (PANX1) gene, exon
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9: AH010945 Reports
Homo sapiens pannexin 1 (PANX1) gene, partial cds
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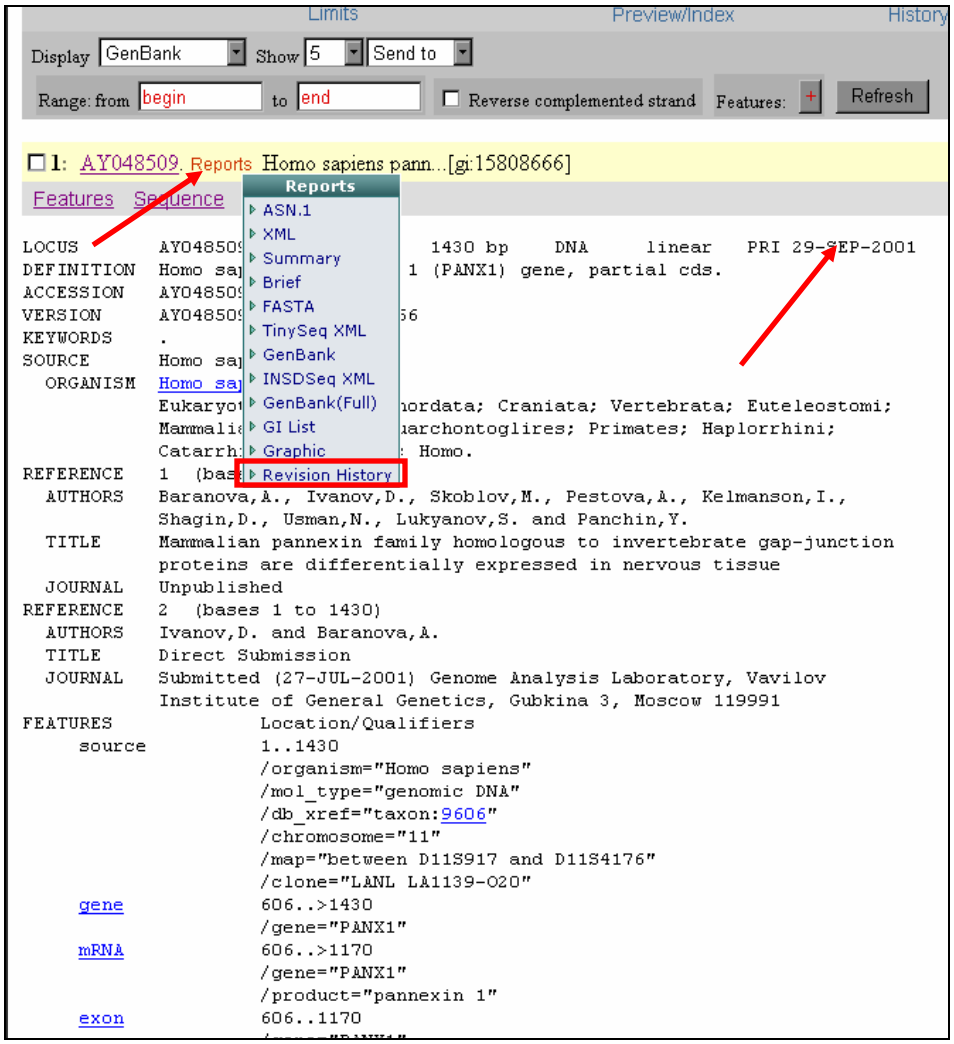
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Range: from begin to end
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1: AY048509. Reports Homo sapiens pann...[gi:15808666]
Features Sequence
Reports
ASN.1
XML
Summary
Brief
FASTA
TinySeq XML
GenBank
INSDSeq XML
GenBank(Full)
GI List
Graphic
Revision History
LOCUS AY048509 1430 bp DNA linear PRI 29-SEP-2001
DEFINITION Homo sapiens pannexin 1 (PANX1) gene, partial cds.
ACCESSION AY048509
VERSION AY048509.1
KEYWORDS .
SOURCE Homo sapiens
ORGANISM Homo sapiens
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Euarchontoglires; Primates; Haplorrhini;
Catarrhini; Hominidae; Homo.
REFERENCE 1 (bases 1 to 1430)
AUTHORS Baranova,A., Ivanov,D., Skoblov,M., Pestova,A., Kelmanson,I., Shagin,D., Usman,N., Lukyanov,S. and Panchin,Y.
TITLE Mammalian pannexin family homologous to invertebrate gap-junction proteins are differentially expressed in nervous tissue
JOURNAL Unpublished
REFERENCE 2 (bases 1 to 1430)
AUTHORS Ivanov,D. and Baranova,A.
TITLE Direct Submission
JOURNAL Submitted (27-JUL-2001) Genome Analysis Laboratory, Vavilov Institute of General Genetics, Gubkina 3, Moscow 119991
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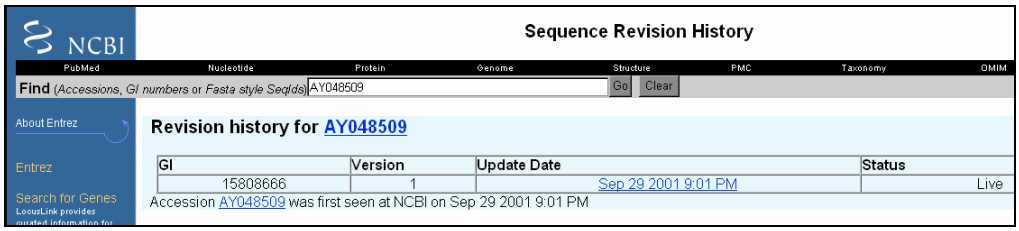
exon 606..1170


NCBI
Sequence Revision History
PubMed Nucleotide Protein Genome Structure PMC Taxonomy OMIM
Find (Accessions, GI numbers or Fasta style SeqIds) AY048509 Go Clear
About Entrez
Entrez
Search for Genes
Revision history for AY048509
GI Version Update Date Status
15808666 1 Sep 29 2001 9:01 PM Live
Accession AY048509 was first seen at NCBI on Sep 29 2001 9:01 PM

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  TITLE     Direct Submission
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            Institute of General Genetics, Gubkina 3, Moscow 119991
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ORIGIN
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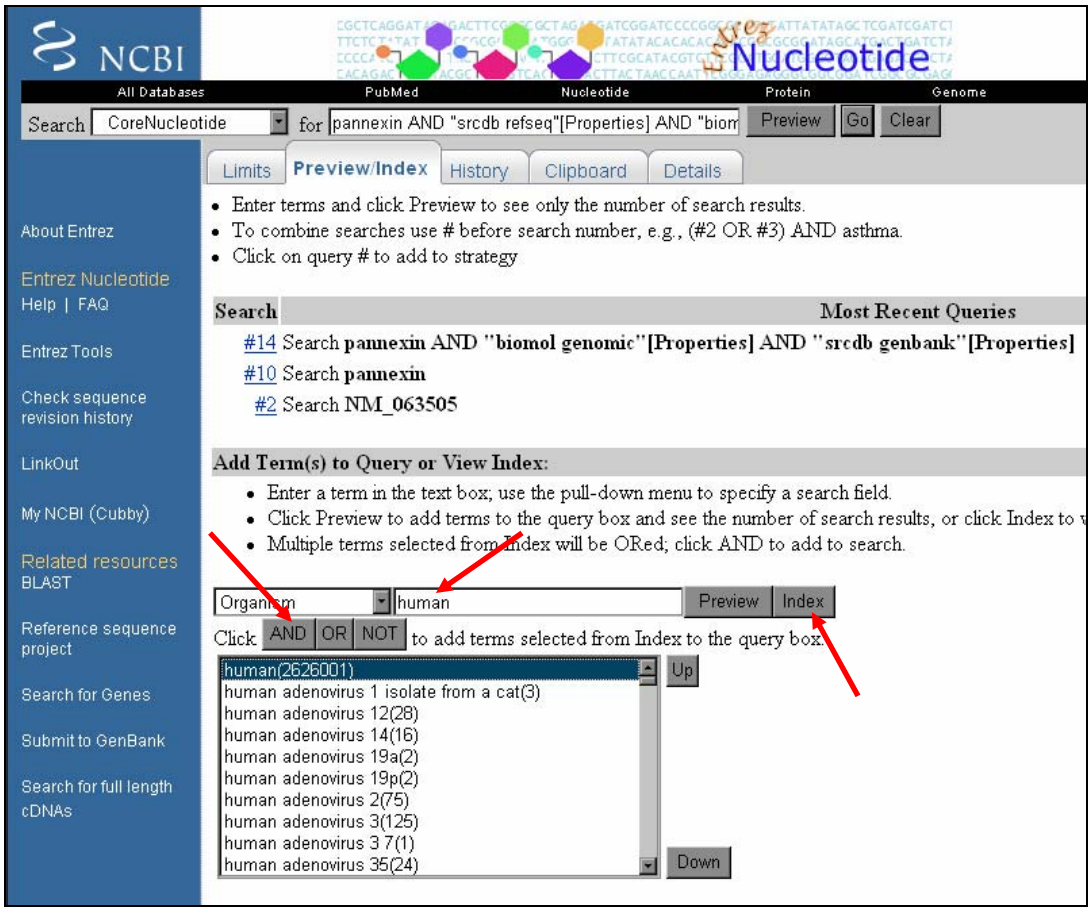
NCBI
Nucleotide
All Databases
PubMed
Nucleotide
Protein
Genome
Search CoreNucleotide for pannexin AND "srcdb refseq"[Properties] AND "biom
Preview
Go
Clear
Limits
Preview/Index
History
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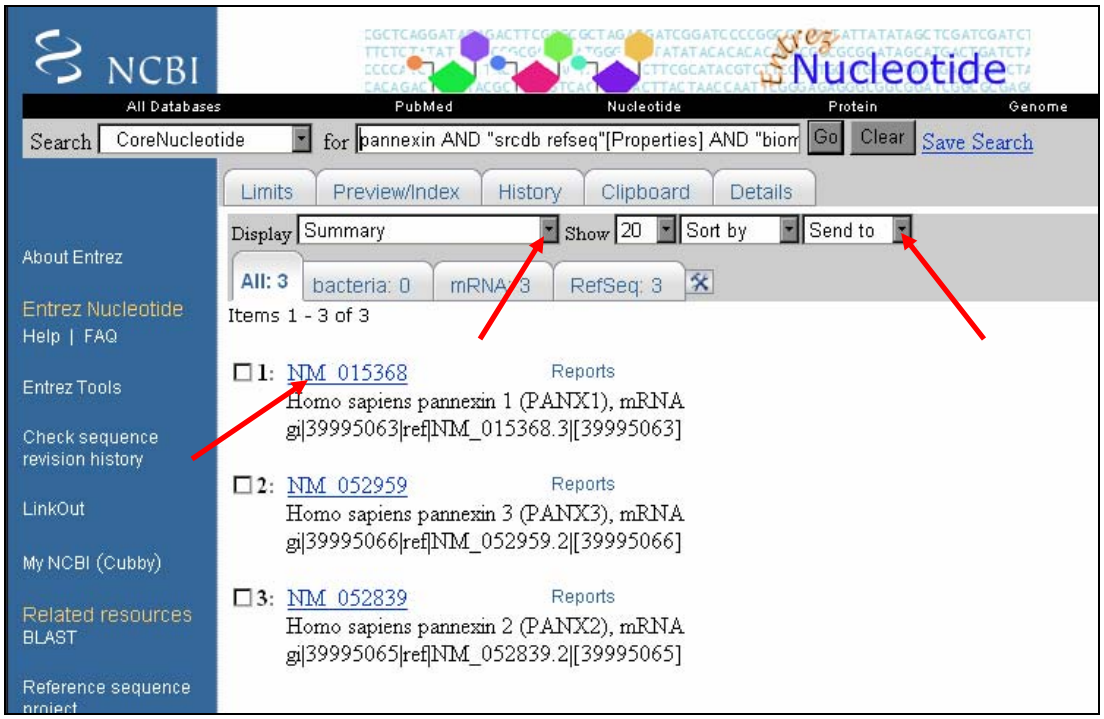
Click on query # to add to strategy
Search
Most Recent Queries
#14 Search pannexin AND "biomol genomic"[Properties] AND "srcdb genbank"[Properties]
#10 Search pannexin
#2 Search NM_063505
Add Term(s) to Query or View Index:
Enter a term in the text box; use the pull-down menu to specify a search field.
Click Preview to add terms to the query box and see the number of search results, or click Index to
Multiple terms selected from Index will be ORed; click AND to add to search.
Organism
human
Preview
Index
Click AND OR NOT to add terms selected from Index to the query box.
human(2626001)
human adenovirus 1 isolate from a cat(3)
human adenovirus 12(28)
human adenovirus 14(16)
human adenovirus 19a(2)
human adenovirus 19p(2)
human adenovirus 2(75)
human adenovirus 3(125)
human adenovirus 3 7(1)
human adenovirus 35(24)
Up
Down


NCBI
Nucleotide
All Databases
PubMed
Nucleotide
Protein
Genome
Search CoreNucleotide for pannexin AND "srcdb refseq"[Properties] AND "biom
Go
Clear
Save Search
Limits
Preview/Index
History
Clipboard
Details
Display Summary
Show 20
Sort by
Send to
All: 3
bacteria: 0
mRNA: 3
RefSeq: 3
Items 1 - 3 of 3
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Related resources
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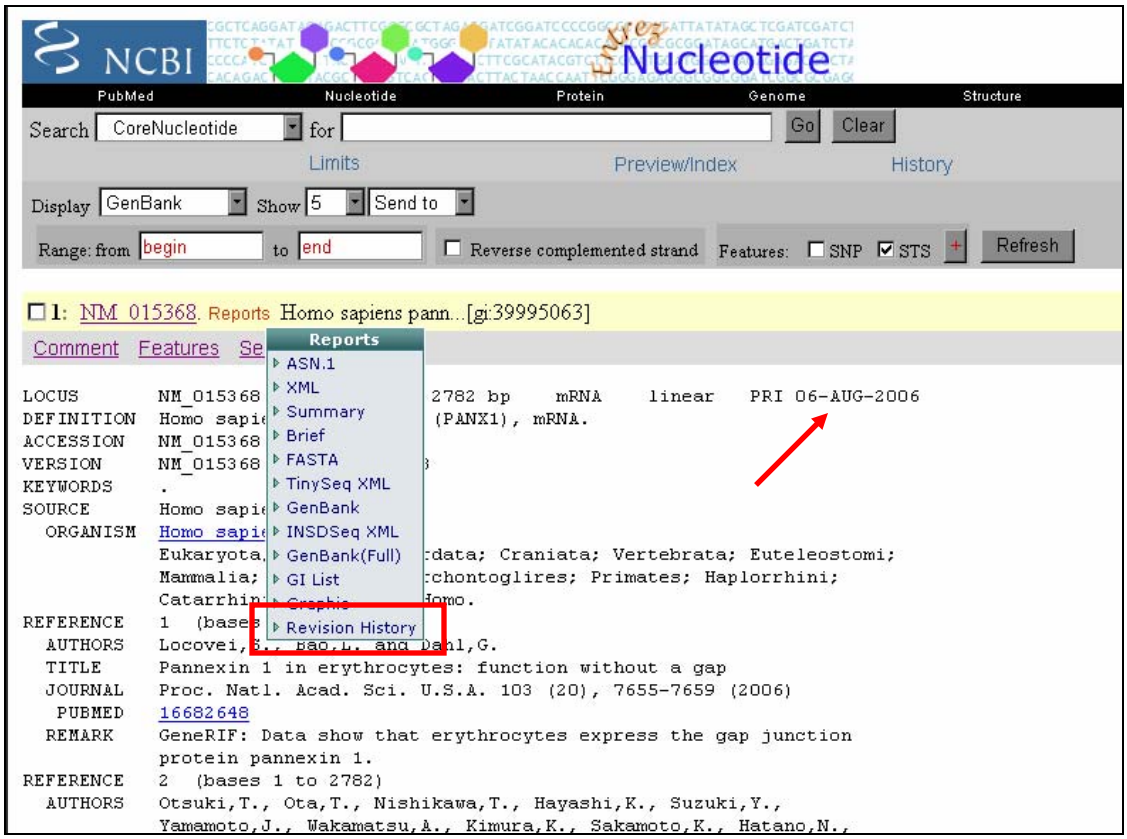
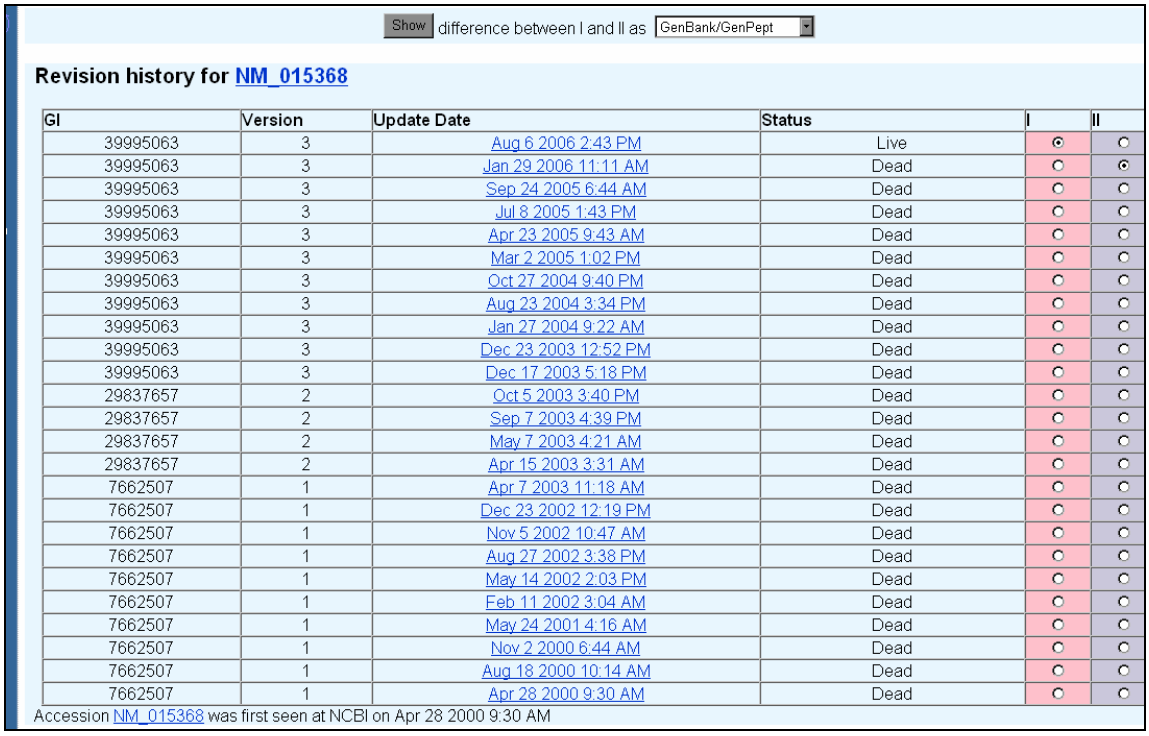
Reference sequence project
1: NM_015368
Reports
Homo sapiens pannexin 1 (PANX1), mRNA
gi|39995063|ref|NM_015368.3|[39995063]
2: NM_052959
Reports
Homo sapiens pannexin 3 (PANX3), mRNA
gi|39995066|ref|NM_052959.2|[39995066]
3: NM_052839
Reports
Homo sapiens pannexin 2 (PANX2), mRNA
gi|39995065|ref|NM_052839.2|[39995065]





GI	Version	Update Date	Status	I	II
39995063	3	Aug 6 2006 2:43 PM	Live	◉	○
39995063	3	Jan 29 2006 11:11 AM	Dead	○	◉
39995063	3	Sep 24 2005 6:44 AM	Dead	○	○
39995063	3	Jul 8 2005 1:43 PM	Dead	○	○
39995063	3	Apr 23 2005 9:43 AM	Dead	○	○
39995063	3	Mar 2 2005 1:02 PM	Dead	○	○
39995063	3	Oct 27 2004 9:40 PM	Dead	○	○
39995063	3	Aug 23 2004 3:34 PM	Dead	○	○
39995063	3	Jan 27 2004 9:22 AM	Dead	○	○
39995063	3	Dec 23 2003 12:52 PM	Dead	○	○
39995063	3	Dec 17 2003 5:18 PM	Dead	○	○
29837657	2	Oct 5 2003 3:40 PM	Dead	○	○
29837657	2	Sep 7 2003 4:39 PM	Dead	○	○
29837657	2	May 7 2003 4:21 AM	Dead	○	○
29837657	2	Apr 15 2003 3:31 AM	Dead	○	○
7662507	1	Apr 7 2003 11:18 AM	Dead	○	○
7662507	1	Dec 23 2002 12:19 PM	Dead	○	○
7662507	1	Nov 5 2002 10:47 AM	Dead	○	○
7662507	1	Aug 27 2002 3:38 PM	Dead	○	○
7662507	1	May 14 2002 2:03 PM	Dead	○	○
7662507	1	Feb 11 2002 3:04 AM	Dead	○	○
7662507	1	May 24 2001 4:16 AM	Dead	○	○
7662507	1	Nov 2 2000 6:44 AM	Dead	○	○
7662507	1	Aug 18 2000 10:14 AM	Dead	○	○
7662507	1	Apr 28 2000 9:30 AM	Dead	○	○

About Entrez

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Related

Show difference between I and II as GenBank/GenPept

Revision history for NM_015368

GI	Version	Update Date	Status	I	II
39995063	3	Oct 27 2004 9:40 PM	Live	●	○
39995063	3	Aug 23 2004 3:34 PM	Dead	○	●
39995063	3	Jan 27 2004 9:22 AM	Dead	○	○
39995063	3	Dec 23 2003 12:52 PM	Dead	○	○
39995063	3	Dec 17 2003 5:18 PM	Dead	○	○
29837657	2	Oct 5 2003 3:40 PM	Dead	○	○
29837657	2	Sep 7 2003 4:39 PM	Dead	○	○
29837657	2	May 7 2003 4:21 AM	Dead	○	○
29837657	2	Apr 15 2003 3:31 AM	Dead	○	○
7662507	1	Apr 7 2003 11:18 AM	Dead	○	○
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7662507	1	Nov 5 2002 10:47 AM	Dead	○	○
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7662507	1	May 14 2002 2:03 PM	Dead	○	○
7662507	1	Feb 11 2002 3:04 AM	Dead	○	○
7662507	1	May 24 2001 4:16 AM	Dead	○	○
7662507	1	Nov 2 2000 6:44 AM	Dead	○	○
7662507	1	Aug 18 2000 10:14 AM	Dead	○	○
7662507	1	Apr 28 2000 9:30 AM	Dead	○	○

Accession NM_015368.3 was first seen at NCBI on Apr 28 2000 9:30 AM

PubMed | Nucleotide | Protein | Genome | Structure | PMC

Find (*Accessions, GI numbers or Fasta style SeqIds*) NM_015368 Go Clear

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BLAST

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LocusLink

Clusters of orthologous groups

Protein reviews on the web

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Gi	Version	Update Date
39995063	3	Aug 6 2006 2:43 PM
39995063	3	Jan 29 2006 11:11 AM

```
LOCUS       NM_015368               2782 bp    mRNA    linear   PRI 06-AUG-2006
LOCUS       NM_015368               2782 bp    mRNA    linear   PRI 29-JAN-2006
DEFINITION  Homo sapiens pannexin 1 (PANX1), mRNA.
ACCESSION   NM_015368
VERSION     NM_015368.3  GI:39995063
KEYWORDS    .
SOURCE      Homo sapiens (human)
  ORGANISM  Homo sapiens
            Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
            Mammalia; Eutheria; Euarchontoglires; Primates; Haplorrhini;
            Catarrhini; Hominidae; Homo.
REFERENCE   1  (bases 1 to 2782)
  AUTHORS   Locovei,S., Bao,L. and Dahl,G.
  TITLE     Pannexin 1 in erythrocytes: function without a gap
  JOURNAL   Proc. Natl. Acad. Sci. U.S.A. 103 (20), 7655-7659 (2006)
   PUBMED   16682648
  REMARK    GeneRIF: Data show that erythrocytes express the gap junction
            protein pannexin 1.
REFERENCE   2  (bases 1 to 2782)
  AUTHORS   Otsuki,T., Ota,T., Nishikawa,T., Hayashi,K., Suzuki,Y.,
            Yamamoto,J., Wakamatsu,A., Kimura,K., Sakamoto,K., Hatano,N.,
            Kawai,Y., Ishii,S., Saito,K., Kojima,S., Sugiyama,T., Ono,T.,
            Okano,K., Yoshikawa,Y., Aotsuka,S., Sasaki,N., Hattori,A.,
            Okumura,K., Nagai,K., Sugano,S. and Isogai,T.
  TITLE     Signal Sequence and Keyword Trap in silico for Selection of
            Full-Length Human cDNAs Encoding Secretion or Membrane Proteins
            from Oligo-Capped cDNA Libraries
  JOURNAL   DNA Res. 12 (2), 117-126 (2005)
   PUBMED   16303743
REFERENCE   3  (bases 1 to 2782)
REFERENCE   2  (bases 1 to 2782)
  AUTHORS   Baranova,A., Ivanov,D., Petrash,N., Pestova,A., Skoblov,M.,
            Kelmanson,I., Shagin,D., Nazarenko,S., Geraymovych,E., Litvin,O.,
            Tiunova,A., Born,T.L., Usman,N., Staroverov,D., Lukyanov,S. and
```

NCBI

Submit to GenBank

PubMed Entrez BLAST OMIM Books TaxBrowser Structure

NCBI

SITE MAP
Guide to NCBI resources

Accession numbers
For manuscript citation

BankIt

Sequin

SequinMacroSend
Upload .sqn files directly

TBL2ASN
Command-line

Submitting Sequence Data to GenBank

The most important source of new data for GenBank® is direct submissions from scientists. GenBank depends on its contributors to help keep the database as comprehensive, current, and accurate as possible. NCBI provides timely and accurate processing and biological review of new entries and updates to existing entries, and is ready to assist authors who have new data to submit.

Receiving an Accession Number for your Manuscript

Most journals now expect that DNA and amino acid sequences that appear in articles

Submit now!!

Sequin
Stand-alone sequence submission tool

BankIt
For quick and simple submissions

tbl2asn
Command-line sequence submission tool

dbEST
dbGSS
dbSTS
Submit to GenBank divisions

Submission Procedure

Individual mRNA/Genomic	BankIt
Sets	Sequin
EST	batch-sub
GSS	batch-sub
STS	batch-sub
WGS	tbl2asn/ftp
HTG	fa2htgs/ftp
HTC	tbl2asn
FLIC	tbl2asn/ftp
Complete genomes	tbl2asn
TPA	BankIt/Sequin

Accession Numbers

GenBank/DDBJ/EMBL

Nucleotide:1 letter + 5 numbers
OR 2 letters + 6 numbers (AF123456)
Protein:3 letters + 5 numerals
WGS:4 letters + 2 numbers

RefSeq

2 letters + underscore + 6 numbers (NM_123456)

Processing of Direct Submissions

Entries are checked for:
- Biological validity
- Vector contamination
- Publication Status
- Formatting/spelling

Completed sequences sent to submitters for review
5 days to review/update
Can hold until published
Released records available for searching in Entrez and BLAST within few days
Release to ftp every 2 months and daily updates

NCBI **GenBank Overview**

PubMed Entrez BLAST OMIM Books Taxonomy Structure

Search Entrez for Go

NCBI

SITE MAP

Submit to GenBank

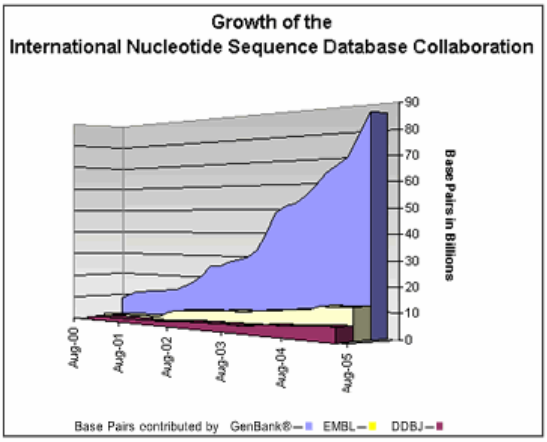
Updates

Search GenBank
Entrez Nucleotide

BLAST

International sequence databases exceed 100 gigabases

In August 2005, the INSDC announced the DNA sequence database exceeded 100 gigabases. GenBank is proud of its contributions toward this milestone. We thank all the scientists who have worked through the submission process at GenBank and made their sequence data available to the world. See the related press release.



What is GenBank?

GenBank® is the NIH genetic sequence database, an annotated collection of all publicly available DNA sequences (*Nucleic Acids Research* 2005 January 13;33 (Database Issue):D34-D36). There are approximately 59,750,386,305 bases in 54,584,635 sequence records in the traditional GenBank divisions and 63,183,065,091 bases in 12,465,546 sequence records in the WGS division as of February 2006.

The complete release notes for the current version of GenBank are available on the NCBI ftp site. A new release is made every two months. GenBank is part of the International Nucleotide Sequence Database Collaboration, which comprises the DNA DataBank of Japan (DDBJ), the European Molecular Biology Laboratory (EMBL), and GenBank at NCBI. These three organizations exchange data on a daily basis.

An example of a GenBank record may be viewed for a *Saccharomyces cerevisiae* gene.

```
GBREL.TXT          Genetic Sequence Data Bank
                         June 15 2006

               NCBI-GenBank Flat File Release 154.0

                     Distribution Release Notes

 58890345 loci, 63412609711 bases, from 58890345 reported sequences

 This document describes the format and content of the flat files that
comprise releases of the GenBank nucleotide sequence database. If you
have any questions or comments about GenBank or this document, please
contact NCBI via email at info@ncbi.nlm.nih.gov or:

   GenBank
   National Center for Biotechnology Information
   National Library of Medicine, 38A, 8N805
   8600 Rockville Pike
   Bethesda, MD  20894
   USA
   Phone:  (301) 496-2475
   Fax:    (301) 480-9241

 GenBank releases do not include sequence records that originate from
third-parties (TPA) or from NCBI's Reference Sequence (RefSeq) project.
Rather, GenBank is the archival/primary resource which those other
efforts draw upon. For information about TPA and RefSeq, please visit:

        http://www.ncbi.nih.gov/Genbank/TPA.html
        http://www.ncbi.nlm.nih.gov/RefSeq

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1.4 Upcoming Changes
1.5 Request for Direct Submission of Sequence Data
1.6 Organization of This Document
```

NCBI-GenBank Flat File Release 154.0
June 15, 2006

Excluding WGS

58890345 sequences
63412609711 bases

WGS

17733973 sequences
78858635822 bases

GenBank Database Divisions

BCT	Bacterial sequences
PRI	Primate sequences
ROD	Rodent sequences
MAM	Other mammalian sequences
VRT	Other vertebrate sequences
INV	Invertebrate sequences
PLN	Plant and Fungal sequences
VRL	Viral sequences
PHG	Phage sequences
SYN	Synthetic sequences
UNA	Unannotated sequences

BLAST database: nr, month except for environmental samples

GenBank Database Divisions

Division		BLAST database
EST	Expressed Sequence Tags	dbest, month
STS	Sequence Tagged Sites	dbsts, month
GSS	Genome Survey Sequences	dbgss, month
HTG	High Throughput Genomic sequences Phase 0, 1 and 2	htgs, month
PAT	Patent sequences	patent, month
HTC	High Throughput cDNA	nr, month