

TP Conception des amorces

par Dr BRAHAMI Nabila


Search: All species for Go


e.g. BRCA2 or rat 5:62797383-63627669 or rs699 or coronary heart disease


Browse a Genome


The Ensembl project produces genome databases for vertebrates and other eukaryotic species, and makes this information freely available online.

Popular genomes

 **Human**
GRCh38.p5

 **Human**
GRCh37

 **Mouse**
GRCm38.p4

 **Zebrafish**
GRCz10

★ [Log in to customize this list](#)

All genomes

-- Select a species --

[View full list of all Ensembl species](#)

Other species are available in [Ensembl Pre!](#) and [Ensembl Genomes 2](#)

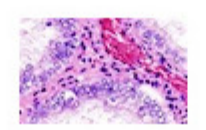
Still using Human GRCh37?



Variant Effect Predictor



Gene expression in different tissues



Find SNPs and other variants for my gene

```

GTRTATACATTCT
CRTRAAAGTCTT
CTTCTAAATTCT
GRAACATTTTCC

```

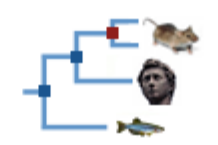
Retrieve gene sequence

```

GCCTGACTTCCGGTGG:
GGGCTTGTGGCGGAGC:
GCGCCTCTGCTGCGCCT:
AGGGGACAGATTTGTGA:
CACCTCTGGAGCGGTT:
CCCAGTCCAGCGTGGCG:

```

Compare genes across species



Use my own data in Ensembl

ENCODE data in Ensembl

What's New in Ensembl Release 84 (March 2016)


- 20 haematopoietic primary cell epigenomes from the BLUEPRINT project
- Mouse: update to Ensembl-Havana GENCODE gene set
- Track hub registry interface
- dbSNP 146 for Human, Cow and Dog
- Pairwise LD calculation on LD variant page

[Full details](#) | [All web updates, by release](#) | [More news on our blog](#)

- 25 Apr 2016: [DNA day and Malaria day: a story of scientific endeavour](#)
- 31 Mar 2016: [Ensembl 85 and Ensembl Genomes 32](#)
- 29 Mar 2016: [Ensembl Genomes 31 has been released!](#)

[Go to Ensembl](#)

Tweets by @ensembl

 **Ensembl** @ensembl
The ESR1 gene is expressed in the female human reproductive system: [buff.ly/26Owolh](#) #Geneoftheweek

Search: All species for INS

- All species
- Help and Documentation
- Favourite species
 - Human
 - Mouse
 - Zebrafish
 - Alpaca
 - Amazon molly
 - Anole lizard
 - Armadillo
 - Bushbaby
 - C.intestinalis
 - C.savignyi
 - Caenorhabditis elegans
 - Cat
 - Cave fish
 - Chicken
 - Chimpanzee

53627669 or rs699 or coronary heart disease

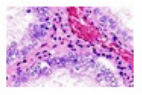
Still using Human GRCh37?



Variant Effect Predictor



Gene expression in different tissues



Find SNPs and other variants for my gene

GTATATACATTC
CCTRAAAGTCTT
CTTCTAAATTCT
GAAACATTTTCC

Retrieve gene sequence

```
GCTGACTTCGGGTGG:
GGGCTTGTGGCGGAGC:
GGGCTCTGCTGGCCCT:
AGGGACAGATTTGTGA:
CACCTCTGGAGCGGTT:
CCAGTCCAGCGTGGCG:
```

Compare genes across species



Use my own data in Ensembl

ENCODE data in Ensembl

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Go to Ensembl blog

Tweets by @ensembl

Ensembl @ensembl
The ESR1 gene is expressed in the female human reproductive system: buff.ly/26Owoh
#Geneoftheweek

Human (GRCh38.p5)

Current selection:

< all Species

Only searching Human

Only searching Human INS

668976 results match INS when restricted to species: Human

Restrict category to:

Gene	100
Transcript	276
Somatic Mutation	323
GeneTree	2
GenomicAlignment	122
Clones & Regions	37
ProbeFeature	74
Protein Domain	2
Protein Family	6
Variant	668034

INS (Human Gene)

ENSG00000254647 11:2159779-2161341.-1
Insulin [Source:HGNC Symbol;Acc:HGNC:6081]

INS (Vega gene) is associated with Gene ENSG00000254647

Variant table | Phenotypes | Location | External Refs. | Regulation | Orthologues | Gene tree

INS-IGF2 (Human Gene)

ENSG00000129965 11:2132538-2161209.-1
INS-IGF2 readthrough [Source:HGNC Symbol;Acc:HGNC:33527]

INS-IGF2 (Vega gene) is associated with Gene ENSG00000129965

Variant table | Phenotypes | Location | External Refs. | Regulation | Orthologues | Gene tree

INS-001 (Human Transcript)

ENST00000381330 11:2159779-2161341.-1
Insulin [Source:HGNC Symbol;Acc:HGNC:6081]

INS-001 (Vega transcript) is associated with Transcript ENST00000381330

Location | External Refs. | cDNA seq. | Exons | Variant table | Protein seq. | Population | Protein summary

INS-003 (Human Transcript)

ENST00000397262 11:2159779-2161204.-1
Insulin [Source:HGNC Symbol;Acc:HGNC:6081]

INS-003 (Vega transcript) is associated with Transcript ENST00000397262

Location | External Refs. | cDNA seq. | Exons | Variant table | Protein seq. | Population | Protein summary

INS-005 (Human Transcript)

ENST00000421783 11:2159783-2161158.-1

Per page:

10 25 50 100

Layout:

Standard Table

cours bioinfo2.pptx

Cour1 BioInfo.pptx

Afficher tous les téléchargements...

- Gene-based displays
 - Summary
 - Splice variants
 - Transcript comparison
 - Supporting evidence
 - Gene alleles
 - Sequence
 - Secondary Structure
 - External references
 - Regulation
 - Ontologies
 - GO: Biological process
 - GO: Molecular function
 - GO: Cellular component
 - Comparative Genomics
 - Genomic alignments
 - Gene tree
 - Gene gain/loss tree
 - Orthologues
 - Paralogues
 - Ensembl protein families
 - Phenotype
 - Genetic Variation
 - Variant table
 - Variant image
 - Structural variants
 - External data
 - Gene expression
 - ID History
 - Gene history

Gene: INS ENSG00000254647

Description insulin [Source:HGNC Symbol;Acc:HGNC:6081]

Synonyms ILPR, IDDM, MODY10, IRDN, IDDM2, IDDM1

Location [Chromosome 11: 2,159,779-2,161,341](#) reverse strand.
GRCh38:CM000673.2

About this gene This gene has 5 transcripts ([splice variants](#)), [48 orthologues](#), [1 paralogue](#), is a member of [1 Ensembl protein family](#) and is associated with [16 phenotypes](#).

Transcripts [Hide transcript table](#)

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	RefSeq	Flags
INS-003	ENST00000397262	639	110aa	Protein coding	CCDS7729	I3WAC9 P01308	NM_001185098 NM_001291897 NP_001172027 NP_001278826	TSL:1 GENCODE basic APPRIS P1
INS-001	ENST00000381330	597	110aa	Protein coding	CCDS7729	I3WAC9 P01308	-	TSL:1 GENCODE basic APPRIS P1
INS-002	ENST00000250971	503	110aa	Protein coding	CCDS7729	I3WAC9 P01308	NM_000207 NM_001185097 NP_000198 NP_001172026	TSL:1 GENCODE basic APPRIS P1
INS-005	ENST00000421783	464	92aa	Protein coding	-	C9JNR5	-	CDS 3' incomplete TSL:2
INS-006	ENST00000512523	297	98aa	Protein coding	-	A6XGL2	-	TSL:1 GENCODE basic

Summary

- Configure this page
- Add your data
- Export data
- Share this page
- Bookmark this page

Marked-up sequence ?

- Download sequence
- BLAST this sequence

Exons **INS exons** All exons in this region
Markup loaded

```
>chromosome: GRCh38:11:2159179:2161941:-1  
CAGGGGTCTGGGGACAGGGGTCTGGGGACAGGGGTCTGGGGACAGGGGTGTGGGGACA  
GGGGTGTGGGGACAGGGGTGTGGGGACAGGGGTCTGGGGACAGGGGTCTGGGGACAGGG  
GTCTGAGGACAGGGGTGTGGGGACAGGGGTGTGGGGACAGGGGTGTGGGGACAGGGGTGT  
GGGGACAGGGGTCTGGGGACAGGGGTCTGGGGACAGGGGTGTGGGGACAGGGGTGTGGGG  
GACAGGGGTGTGGGGACAGGGGTCTGGGGACAGGGGTGTGGGGACAGGGGTCTGGGGAC  
AGGGGTGTGGGGATAGGGGTGTGGGGACAGGGGTGTGGGGACAGGGGTGTGGGGACAGGG  
GTCTGGGGACAGCAGCGCAAGAGGCCCGCCCTGCAGCCTCCAGCTCTCCTGGTCTAATG  
TGGAAAGTGGCCAGGTGAGGGCTTTGCTCTCCTGGAGACATTTGCCCCAGCTGTGAGC  
AGGGACAGGTCTGGCCACCGGGCCCTGGTTAAGACTCTAATGACCCGCTGGTCTCTGAGG  
AAGAGGTGCTGACGACCAAGGAGATCTTCCACAGACCCAGCACCAGGGAAATGGTCCGG  
AAATTGCAGCCTCAGCCCCAGCCATCTGCCGACCCCCACCCAGGCCCTAATGGGCC  
AGGCGGCAGGGGTGAGAGGTAGGGGAGATGGGCTCTGAGACTATAAAGCCAGCGGGGC  
CCAGCAGCCCTCAGCCCTCCAGGACAGGCTGCATCAGAAGAGGCCATCAAGCAGGTCTGT  
TCCAAGGGCTTTGCGTCAGGTGGGCTCAGGATTCAGGGTGGCTGGACCCAGGCCCA  
GCTCTGCAGCAGGGAGGACGTGGCTGGGCTCGTGAAGCATGTGGGGGTGAGCCAGGGGC  
CCAAAGGCAGGGCACCTGGCCCTCAGCCTGCCTCAGCCCTGCCTGTCTCCAGATCACTG  
TCCTTCTGCCATGGCCCTGTGGATGGCCTCCTGCCCTGCTGGCGCTGCTGGCCCTCTG  
GGGACCTGACCCAGCCGACGCTTTGTGAACCAACACCTGTGGGCTCACACCTGGTGGGA  
AGCTCTCTACCTAGTGTGGGGGAACGAGGCTTCTTCTACACACCCAAAGACCCGCGGGGA  
GGCAGAGGACCTGCAGG GTGAGCCAACTGCCAATGCTGCCCTGGCCGCCCCAGCCAC  
CCCCTGCTCCTGGCGCTCCCAACCCAGCATGGCAGAAAGGGGGCAGGAGGCTGCCACCCAG  
CAGGGGTGAGGTGCACTTTTTTAAAAAGAAAGTTCTCTTGGTCACTCCTAAAAAGTGACC  
AGCTCCCTGTGGCCAGTCAGAATCTCAGCCTGAGGACGGTGTGGCTTCGGCAGCCCCG  
AGATACATCAGAGGGTGGGCACGCTCCTCCCTCCACTCGCCCTCAAAACAAATGCCCGC  
AGCCCAATTTCCACCCTCATTTGATGACCCGAGATTCAAGTGTTTTGTTAAGTAAAGTC
```

|CAGGGGTCTGGGGACAGGGGTCTGGGGACAGGGGTCTGGGGACAGGGGTGTGGGGACA
GGGGTGTGGGGACAGGGGTGTGGGGACAGGGGTCTGGGGACAGGGGTCTGGGGACAGGG
GTCTGAGGACAGGGGTGTGGGGACAGGGGTGTGGGGACAGGGGTGTGGGGACAGGGGTGT
GGGGACAGGGGTCTGGGGACAGGGGTCCGGGGACAGGGGTGTGGGGACAGGGGTGTGGG
GACAGGGGTGTGGGGACAGGGGTCTGGGGACAGGGGTGTGGGGACAGGGGTCTGGGGAC
AGGGGTGTGGGGATAGGGGTGTGGGGACAGGGGTGTGGGGACAGGGGTGTGGGGACAGGG
GTCTGGGGACAGCAGCGCAAAGAGCCCGCCCTGCAGCCTCCAGCTCTCCTGGTCTAATG
TGGAAAGTGGCCAGGTGAGGGCTTGTCTCCTGGAGACATTTGCCCCAGCTGTGAGC
AGGGACAGGTCTGGCCACCGGGCCCTGGTTAAGACTCTAATGACCCGCTGGTCTGAGG
AAGAGGTGCTGACACCAAGGAGATCTTCCACAGACCCAGCACCAGGGAAATGGTCCGG
AAATTGCAGCCTCAGCCCCAGCCATCTGCCGACCCCCCACCCAGGCCCTAATGGGCC
AGGCGGCAGGGGTTGAGAGGTAGGGGAGATGGGCTCTGAGACTATAAAGCCAGCGGGGC
CCAGCAGCCCTCAGCCCTCCAGGACAGGCTGCATCAGAAGAGCCATCAAGCAGGTCTGT
TCCAAGGGCCTTTGCGTCAGGTGGGCTCAGGATTCAGGTTGGCTGGACCCAGGCCCA
GCTCTGCAGCAGGGAGGACGTGGCTGGCTCGTGAAGCATGTGGGGGTGAGCCAGGGG

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- 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.

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Identify an NCBI tool for your data analysis task



Research

Explore NCBI research and collaborative projects



Popular Resources

- PubMed
- Bookshelf
- PubMed Central
- PubMed Health
- BLAST
- Nucleotide
- Genome
- SNP
- Gene
- Protein
- PubChem

NCBI Announcements

- New NCBI video on YouTube: Submitting BioSample Data to NCBI
03 May 2016
- The newest video on the NCBI YouTube channel: Submitting BioSample Data to
GenBank release 213.0 is now available via FTP
02 May 2016
- GenBank release 213.0 (04/14/2016) has



All Databases [Search]

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

All Resources

- All
- Databases
- Downloads
- Submissions
- Tools
- How To

Databases

- [Assembly](#)
A database providing information on the structure of assembled genomes, assembly names and other meta-data, statistical reports, and links to genomic sequence data.
- [BioProject \(formerly Genome Project\)](#)
A collection of genomics, functional genomics, and genetics studies and links to their resulting datasets. This resource describes project scope, material, and objectives and provides a mechanism to retrieve datasets that are often difficult to find due to inconsistent annotation, multiple independent submissions, and the varied nature of diverse data types which are often stored in different databases.
- [BioSample](#)
The BioSample database contains descriptions of biological source materials used in experimental assays.
- [BioSystems](#)
Database that groups biomedical literature, small molecules, and sequence data in terms of biological relationships.
- [Bookshelf](#)
A collection of biomedical books that can be searched directly or from linked data in other NCBI databases. The collection includes biomedical textbooks, other scientific titles, genetic resources such as *GeneReviews*, and NCBI help manuals.
- [ClinVar](#)
A resource to provide a public, tracked record of reported relationships between human variation and observed health status with supporting evidence. Related information in the [NIH Genetic Testing Registry \(GTR\)](#), [MedGen](#), [Gene](#), [OMIM](#), [PubMed](#) and other sources is accessible through hyperlinks on the records.
- [ClinicalTrials.gov](#)

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

All Resources

- All
- Databases
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- Tools
- How To

Tools

- [1000 Genomes Browser](#)
An interactive graphical viewer that allows users to explore variant calls, genotype calls and supporting evidence (such as aligned sequence reads) that have been produced by the [1000 Genomes Project](#).
- [Amino Acid Explorer](#)
This tool allows users to explore the characteristics of amino acids by comparing their structural and chemical properties, predicting protein sequence changes caused by mutations, viewing common substitutions, and browsing the functions of given residues in conserved domains.
- [Assembly Archive](#)
Links the raw sequence information found in the Trace Archive with assembly information found in publicly available sequence repositories (GenBank/EMBL/DBJ). The Assembly Viewer allows a user to see the multiple sequence alignments as well as the actual sequence chromatogram.
- [BLAST Link \(BLink\)](#)
A link option on protein records that displays the results of a pre-computed BLAST search of that protein against all other protein sequences at NCBI.
- [BLAST Microbial Genomes](#)
Performs a BLAST search for similar sequences from selected complete eukaryotic and prokaryotic genomes.
- [BLAST RefSeqGene](#)
Performs a BLAST search of the genomic sequences in the [RefSeqGene](#)/LRG set. The default display provides ready navigation to review alignments in the Graphics display.
- [BLAST Tutorials and Guides](#)
This page links to a number of BLAST-related tutorials and guides, including a selection guide for BLAST algorithms, descriptions of BLAST output and the various options of the parameters for stand-alone BLAST, directions for setting up stand-alone BLAST on local machines, and using the BLAST

Gene: INS (ENSG0000025) x All Resources - Site Guide x

www.ncbi.nlm.nih.gov/guide/all/#tools_

Toolbox is primarily designed to read records in Abstract Syntax Notation 1 (ASN.1) format, an International Standards Organization (ISO) data representation format.

[OSIRIS](#)
A public domain quality assurance software package that facilitates the assessment of multiplex short tandem repeat (STR) DNA profiles based on laboratory-specific protocols. OSIRIS evaluates the raw electrophoresis data using an independently derived mathematically-based sizing algorithm. It offers two new peak quality measures - fit level and sizing residual. It can be customized to accommodate laboratory-specific signatures such as background noise settings, customized naming conventions and additional internal laboratory controls.

[Open Reading Frame Finder \(ORF Finder\)](#)
A graphical analysis tool that finds all open reading frames in a user's sequence or in a sequence already in the database. Sixteen different genetic codes can be used. The deduced amino acid sequence can be saved in various formats and searched against protein databases using BLAST.

[PSSM Viewer](#)
Allows users to display, sort, subset and download position-specific score matrices (PSSMs) either from CDD records or from Position Specific Iterated (PSI)-BLAST protein searches. The tool also can align a query protein to the PSSM and highlight positions of high conservation.

[Phenotype-Genotype Integrator \(PheGenI\)](#)
Supports finding human phenotype/genotype relationships with queries by phenotype, chromosome location, gene, and SNP identifiers. Currently includes information from dbGaP, the NHGRI GWAS Catalog, and GTeX. Displays results on the genome, on sequence, or in tables for download.

[Primer-BLAST](#)
The Primer-BLAST tool uses Primer3 to design PCR primers to a sequence template. The potential products are then automatically analyzed with a BLAST search against user specified databases, to check the specificity to the target intended.

[ProSplign](#)
A utility for computing alignment of proteins to genomic nucleotide sequence. It is based on a variation of the Needleman Wunsch global alignment algorithm and specifically accounts for introns and splice signals. Due to this algorithm, ProSplign is accurate in determining splice sites and tolerant to sequencing errors.

[PubChem Power User Gateway \(PUG\)](#)
PUG provides access to PubChem services via a programmatic interface. PUG allows users to download data, initiate chemical structure searches, standardize chemical structures and interact with the E-utilities. PUG can be accessed using either standard URLs or via SOAP.

[PubChem Standardization Service](#)
Standardization, in PubChem terminology, is the processing of chemical structures in the same way used to create PubChem Compound records from al structures. This service lets users see how PubChem would handle any structure they would like to submit.

www.ncbi.nlm.nih.gov/guide/all/#tools

cours bioinfo2.pptx Cour1 BioInfo.pptx

Afficher tous les téléchargements...

Rechercher sur le web et dans Windows

23:43 08/05/2016

Primer-BLAST A tool for finding specific primers

► NCBI/Primer-BLAST: Finding primers specific to your PCR template (using Primer3 and BLAST).

PCR Template [Reset page](#) [Save search parameters](#) [Retrieve recent results](#) [Publication](#) [Tips for finding specific primers](#)

Enter accession, gi, or FASTA sequence (A refseq record is preferred) [Clear](#)

Range

Forward primer	<input type="text"/>	From	<input type="text"/>	To	<input type="text"/>	Clear
Reverse primer	<input type="text"/>		<input type="text"/>		<input type="text"/>	

Or, upload FASTA file Aucun fichier choisi

Primer Parameters

Use my own forward primer (5'→3' on plus strand) [Clear](#)

Use my own reverse primer (5'→3' on minus strand) [Clear](#)

PCR product size

Min	<input type="text" value="70"/>	Max	<input type="text" value="1000"/>
-----	---------------------------------	-----	-----------------------------------

of primers to return

Primer melting temperatures (T_m)

Min	<input type="text" value="57.0"/>	Opt	<input type="text" value="60.0"/>	Max	<input type="text" value="63.0"/>	Max T _m difference	<input type="text" value="3"/> Clear
-----	-----------------------------------	-----	-----------------------------------	-----	-----------------------------------	-------------------------------	--

Exon/intron selection

A refseq mRNA sequence as PCR template input is required for options in the section [Clear](#)

Exon junction span [Clear](#)

Exon junction match

Exon at 5' side	<input type="text" value="7"/>	Exon at 3' side	<input type="text" value="4"/>
-----------------	--------------------------------	-----------------	--------------------------------

Minimal number of bases that must anneal to exons at the 5' or 3' side of the junction [Clear](#)

Intron inclusion Primer pair must be separated by at least one intron on the corresponding genomic DNA [Clear](#)

Courier New 9,5 A A Aa A

Police

Paragraphe

Style

1 Normal 1 Sans int... Titre 1 Titre 2 Titre Sous-titre

Rechercher Remplacer Sélectionner

Modification

AGGGGTGTGGGGATAGGGGTGTGGGGACAGGGGTGTGGGGACAGGGGTGTGGGGACAGGG

GCTGTGGGGACAGCAGCGCAAAGAGCCCCGCCCTGCAGCCTCCAGCTCTCCTGGTCTAATG

TGGAAAGTGGCCAGGTGAGGGCTTTGCTCTCCTGGAGACATTTGCCCCAGCTGTGAGC

AGGGACAGGTCTGGCCACCGGGCCCTGGTTAAGACTCTAATGACCCGCTGGTCTGAGG

AAGAGGTGCTGACGACCAAGGAGATCTTCCACAGACCAGCACCAGGGAAATGGTCCGG

AAATTGCAGCCTCAGCCCCAGCCATCTGCCGACCCCCACCCAGGCCCTAATGGGCC

AGGCGGCAGGGTTGAGAGGTAGGGGAGATGGCTCTGAGACTATAAAGCCAGCGGGGC

CCAGCAGCCCTCAGCCCTCCAGGACAGGCTGCATCAGAAGGCCATCAAGCAGGTCTGT

TCCAAGGGCCTTTGCGTCAGGTGGGCTCAGGATTCAGGGTGGCTGGACCCAGGCCCA

GCTCTGCAGCAGGGAGGACGTGGCTGGGCTCGTGAAGCATGTGGGGTGGCCAGGGC

CCCAAGGCAGGGCACCTGGCCTTCAGCCTGCCTCAGCCCTGCCTGTCTCCAGATCACTG

TCCTTCTGCCATGGCCCTGTGGATGGCCTCCTGCCCTGCTGGCGTGTGGCCCTCTG

GGGACCTGACCCAGCCGAGCCTTTGTGAACCAACACCTGTGCGGCTCACACCTGGTGGA

AGCTCTTACCTAGTGTGCGGGGAACGAGGCTTCTTCTACACACCCAAGACCCGCGGGA

GGCAGAGGACCTGCAGGTGAGCCAACTGCCATTGCTGCCCTGGCCGCCCCAGCCAC

CCCCTGCTCCTGGCGCTCCACCCAGCATGGGCAGAAGGGGGCAGGAGGTGCCACCCAG

CAGGGGTGAGGTGCACTTTTTTAAAAAGAAGTTCTCTTGGTCACGTCTAAAAGTGACC

AGCTCCCTGTGGCCAGTCAGAATCTCAGCCTGAGGACGGTGTGGCTTCGGCAGCCCCG

AGATAGTGTGAGGGTGGGGACCGCTCTCCTCCCTCGCCCTCAAGCAATGCCCCG

Il faut éliminer les espaces

The screenshot shows the NCBI Primer-BLAST web interface. The browser address bar displays <https://www.ncbi.nlm.nih.gov/tools/primer-blast/>. The page title is "Primer-BLAST: Finding primers specific to your PCR template (using Primer3 and BLAST)".

PCR Template

Enter accession, gi, or FASTA sequence (A refseq record is preferred) [Clear](#)

```
TTGCAGCCTCAGCCCCAGCCATCTGCCGACCCCCACCCAGGCCCTAATGGGCCAGGCGGCGAGGGTTGAGAGGTAGG
GGAGATGGGCTCTGAGACTATAAAGCCAGCGGGGGCCAGCAGCCCTCAGCCCTCCAGGACAGGCTGCATCAGAAGAGGCC
ATCAAGCAGGTCTGT
|TCCAAGGCCCTTTTGCCTCAGGTGGGCTCAGGATTCAGGGTGGCTGGACCCAGGCCCA
GCTCTGCAGCAGGGAGGACGTGGCTGGGCTCGTGAAGCATGTGGGGGTGAGCCAGGGGC
```

Range

Forward primer From To [Clear](#)

Reverse primer [Clear](#)

Or, upload FASTA file

Primer Parameters

Use my own forward primer (5'->3' on plus strand) [Clear](#)

Use my own reverse primer (5'->3' on minus strand) [Clear](#)

PCR product size

Min Max

of primers to return

Primer melting temperatures (T_m)

Min Opt Max Max T_m difference [Clear](#)

Exon/intron selection

A refseq mRNA sequence as PCR template input is required for options in the section [?](#)

Exon junction span [?](#)

Exon junction match

Exon at 5' side Exon at 3' side

Minimal number of bases that must anneal to exons at the 5' or 3' side of the junction [?](#)

Intron inclusion Primer pair must be separated by at least one intron on the corresponding genomic DNA [?](#)

Windows taskbar: Recherche sur le web et dans Windows, Cour1 BioInfo.pptx, 23:48 08/05/2016

AGGGGTGTGGGATAGGGGTGTGGGACAGGGG
GTCTGGGACAGCAGCGCAAAGAGCCCCGCCCT
TGAAAGTGGCCAGGTGAGGGCTTTGCTCTCC
AGGGACAGGTCTGGCCACCGGGCCCCCTGGTTAA
AAGAGGTGCTGACGACCAAGGAGATCTTCCAC
AAATTGCAGCCTCAGCCCCAGCCATCTGCCGA
AGGCGGCAGGGTTGAGAGGTAGGGGAGATGGG
CCAGCAGCCCTCAGCCCTCCAGGACAGGCTGCA
TCCAAGGCCCTTTCGCTCAGGTGGGCTCAGGAT
GCTCTGCAGCAGGGAGGACGTGGCTGGGCTCGT
CCCAAGGCAGGGCACCTGGCCCTTCAGCCTGCCT
TCCTTCTGCCATGGCCCTGTGGATGCGCCTCCT
GGGACCTGACCCAGCCGAGCCTTTGTGAACCAACACCTGTGCGGCTCACACCTGGTGGA
AGCTCTCTACCTAGTGTGCGGGGAACGAGGCTTCTTCTACACACCAAGACCCGCGGGGA
GGCAGAGGACCTGCAGGTTGAGCCAACTGCCCATGCTGCCCTGGCCGCCCCAGCCAC
CCCCTGCTCCTGGCGCTCCCACCCAGCATGGGCAGAAGGGGGCAGGAGGCTGCCACCCAG
CAGGGGGTCAGGTGCACCTTTTTTAAAAAGAAGTTCTTGGTCAGGTCTTAAAAAGTGACC
AGCTCCCTGIGGCCAGTCAGAATCTCAGCCTGAGGACGGTGTGGCTTCGGCAGCCCCG

- Bordure inférieure
- Bordure supérieure
- Bordure gauche
- Bordure droite
- Aucune bordure
- Toutes les bordures
- Bordures extérieures
- Bordures intérieures
- Bordure intérieure horizontale
- Bordure intérieure verticale
- Bordure diagonale bas
- Bordure diagonale haut
- Ligne horizontale
- Dessiner un tableau
- Afficher le quadrillage
- Bordure et trame...

AGGGGTGTGGGATAGGGGTGTGGGACAGGGGTGTGGGACAGGGGTGTGGGACAGGG

GTCTGGGACAGCAGCGCAAGAGCCCCGCCCTGCAGCCTCCAGCTCTCCTGGTCTAATG

TGGAAAGTGGCCAGGTGAGGGCTTTGCTCTCCTGGAGACATTGCCCCAGCTGTGAGC

AGGGACAGGTGTGCCACCGGGCCCTGGTTAAGACTCTAATGACCCGCTGGTCTGAGG

AAGAGGTGCTGACGACCAAGGAGATCTCCACAGACCAGCACAGGGAATGGTCCGG

AAATTGCAGCCTCAGCCCCAGCCATGCGGACCCCCCAGGCCCTAATGGGCC

AGGCGCAGGGTTGAGAGTAGGGAGATGGGCTCTGAGACTATAAAGCCAGCGGGGC

CCAGCAGCCTCAGCCCTCAGGACAGGCTGCATCAGAAGAGCCATCAAGCAGGTCTGT

TCCAAGGGCTTTGCGTCAGGTGGCTCAGGATCCAGGGTGGCTGGACCCAGGCCCA

GCTGTGACGAGGAGGACGTGGCTGGCTCGTGAAGCATGTGGGGTGAGCCAGGGGC

CCCAAGGACAGGCACTGGCCTTTCAGCCTGCCTCAGCCCTGCCTGTCTCCAGATCACTG

TCCTTCTGCCATGGCCTGTGGATGCGCCTCTGCCCTGCTGGCGCTGCTGGCCCTCTG

GGGACTGACCCAGCCGAGCCTTTGTGAACCAACACTGTGCGGCTCACACTGGTGGGA

AGCTCTTACCTAGTGTGCGGGAAACGAGGCTTCTTCTACACACCAAGACCCCGGGGA

GGCAGAGGACCTGCAGGGTGAGCCAACTGCCATTGCTGCCCTGGCCGCCCCAGCCAC

CCCCTGCTCCTGGCGCTCCCACCCAGCATGGGAGAGGGGGCAGGAGGCTGCCACCCAG

CAGGGGTGAGGTGCACTTTTTTAAAAAGAGTTCTCTGGTACGTCCTAAAAGTGACC

AGCTCCCTGTGGCCAGTCAGAACTCAGCCTGAGGACGGTGTGGCTTCGGCAGCCCCG

Statistiques
Les mots, les caractères, les lignes...
Nous les comptons, pour que vous n'ayez pas à le faire.
Pour connaître immédiatement le nombre total de mots, consultez la barre d'état.

AGGGGTGTGGGGATAGGGGTGTGGGGACAGGGGTGTGGGGACAGGGGTGTGGGGACAGGG
GTCTGGGGACAGCAGCGCAAAGAGCCCCGCCCTGCAGCCTCCAGCTCTCCTGGTCTAATG
TGGAAAGTGGCCAGGTGAGGGCTTTGCTCTCCTGGAGACATTTGCCCCAGCTGTGAGC
AGGGACAGGTCTGGCCACCGGGCCCCCTGGTTAAGACTCTAATGACCCGCTGGTCTGAGG
AAGAGGTGCTGACGACCAAGGAGATCTCCACAGACCCAGCACCAGGGAAATGGTCCGG
AAATTGCAGCCTCAGCCCCAGCCATCTGCCGACCCCCCACCCAGGCCCTAATGGGCC
AGGCGGCAGGGGTTGAGAGGTAGGGGAGATGGGCTCTGAGACTATAAAGCCAGCGGGGC
CCAGCAGCCCTCAGCCCTCCAGGACAGGCTGCATCAGAAGAGGCCATCAAGCAGGTCTGT
TCCAAGGGCCTTTGCGTCAGGTGGGCTCAGGATCCAGGGTGGCTGGACCCAGGCCCA
GCTCTGCAGCAGGAGGACGTGGCTGGGCTCGTGAAGCATGTGGGGGTGAGCCAGGGC
CCCAAGGCAGGGCACCTGGCCTTCAGCCTGCCTCAGCCCTGCCTGTCTCCAGATCACTG
TCCTTCTGCCATGGCCCTGTGGATGCGCCTCCTGCCCTGCTGGCGCTGCTGGCCCTCTG
GGGACCTGACCCAGCCGACGCTTTGTGAACCAACACCTGTGGGGCTCACACCTGGTGA
AGCTCTTACCTAGTGTGCGGGGAACGAGGCTTCTTACACACCCAAGACCCGCGGGA
GGCAGAGGACCTGCAGGGTGAGCCAACTGCCATTGCTGCCCTGGCCGCCCCAGCCAC
CCCCTGCTCCTGGCGCTCCCACCCAGCATGGGCAGAAGGGGGCAGGAGGCTGCCACCCAG
CAGGGGTCAGGTGCACTTTTTTAAAAAGAAGTCTCTTGGTCACGTCCTAAAAGTGACC
AGCTCCCTGTGGCCAGTCAGAATCTCAGCCTGAGGACGGTGTGGCTTCGGCAGCCCCG

AGGGGTGTGGGATAGGGGTGTGGGGACAGGGGTGTGGGGACAGGGGTGTGGGGACAGGG

GTCTGGGGACAGCAGCGCAAAGAGCCCCGCCCTGCAGCCTCCAGCTCTCCTGGTCTAATG

TGGAAAGTGGCCAGGTGAGGGCTTTGCTCTCCTGGAGACAITTGCCCCAGCTGTGAGC

AGGGACAG

AAGAGGTG

AAATTGCA

AGGGGCA

CCAGCAGC

TCCAAGGG

GCTCTGCA

CCCAAGGCAGGGCACCTGGCCTTCAGCCTGCCCTCAGCCCTGCCTGTCTCCAGATCACTG

TCCTTCTGCCATGGCCCTGTGGATGCGCCTCCGCCCCTGCTGGCGCTGTGGCCCTCTG

GGGACCTGACCCAGCCGAGCCTTTGTGAACCAACACCTGTGCGGCTCACACCTGGTGGA

AGCTCTTACCTAGTGTGCGGGGAACGAGGCTTCTTCTACACACCCAAGACCCGCGGGA

GGCAGAGGACCTGCAGG

GTGAGCCAACTGCCATTGCTGCCCTGGCGCCCCCAGCCAC

CCCCTGCTCCTGGCGCTCCACCCAGCATGGGCAGAAGGGGGCAGGAGGTGCCACCCAG

CAGGGGGTCAGGTGCACTTTTTTAAAAAGAAGTTCTCTTGGTCACGTCTAAAAGTGACC

AGTCCCTGTGGCCAGTCAGAATCTCAGCCTGAGGACGGTGTGGCTTCGGCAGCCCCG

Statistiques ? X

Statistiques :

Pages	1
Mots	4
Caractères (espaces non compris)	223
Caractères (espaces compris)	265
Paragraphes	3
Lignes	4

Inclure les zones de texte, les notes de bas de page et les notes de fin

Fermer

Primer-BLAST A tool for finding specific primers

NCBI/Primer-BLAST: Finding primers specific to your PCR template (using Primer3 and BLAST).

PCR Template [Reset page](#) [Save search parameters](#) [Retrieve recent results](#) [Publication](#) [Tips for finding specific primers](#)

Enter accession, gi, or FASTA sequence (A refseq record is preferred) [Clear](#)

```
CCTAGTGTGCGGGAAACGAGGCTTCTTCTACACACCCCAAGACCCCGGGAGGCGAGGACCTGCAGGGTGAGCCAACTGC  
CCATTGCTGCCCTGGCCGCCCCAGCCACCCCTGCTCTGGCGCTCCACCCAGCATGGGCGAAGGGGAGGAGGCT  
GCCACCCAGCAGGGGGTCAAGTGCACCTTTTAAAAAAGAGTTCTTTGGTCACGTCCTAAAAGTGACCAGCTCCCTGTGG  
CCCAAGTCAGAATCTCAGCCTGAGGACGGTGTGGCTTCGGCAGCCCGG
```

Range

	From	To	
Forward primer	1	223	Clear
Reverse primer			

Or, upload FASTA file Aucun fichier choisi

Primer Parameters

Use my own forward primer (5'->3' on plus strand) [Clear](#)

Use my own reverse primer (5'->3' on minus strand) [Clear](#)

PCR product size

Min	Max
70	1000

of primers to return

Primer melting temperatures (T_m)

Min	Opt	Max	Max T _m difference
57.0	60.0	63.0	3

Exon/intron selection

A refseq mRNA sequence as PCR template input is required for options in the section

Exon junction span

Exon junction match

Exon at 5' side	Exon at 3' side
7	4

Minimal number of bases that must anneal to exons at the 5' or 3' side of the junction

Intron inclusion Primer pair must be separated by at least one intron on the corresponding genomic DNA

Statistiques
Les mots, les caractères, les lignes...
Nous les comptons, pour que vous n'ayez pas à le faire.

Pour connaître immédiatement le nombre total de mots, consultez la barre d'état.

AGGGGTGTGGGATAGGGGTGTGGGACAGGGGTGTGGGACAGGGGTGTGGGACAGGG
GTCTGGGGACAGCAGCGCAAAGAGCCCCGCCCTGCAGCCTCCAGCTCTCCTGGTCTAATG
TGGAAAGTGGCCAGGTGAGGGCTTTGCTCTCCTGGAGACATTTGCCCCAGCTGTGAGC
AGGGACAGGTCTGGCCACCGGGCCCTGGTTAAGACTCTAATGACCCGCTGGTCTGAGG
AAGAGGTGCTGACGACCAAGGAGATCTTCCACAGACCAGCACCAGGAAATGGTCCGG
AAATTGCAGCCTCAGCCCCAGCCATCTGCCGACCCCCACCCAGGCCCTAATGGGCC
AGCGGCAGGGTTGAGAGGTAGGGGAGATGGGCTCTGAGACTATAAAGCCAGCGGGGGC
CCAGCAGCCCTCAGCCCTCCAGGACAGGCTGCATCAGAAGAGCCATCAAGCAGGTCGT
TCCAAGGGCCTTTGCGTCAGGTGGGCTCAGGATTCAGGGTGGCTGGACCCAGGCCCA
GCTCTGCAGCAGGGAGGACGTGGCTGGGCTCGTGAACATGTGGGGTGAGCCAGGGGC
CCCAAGGCAGGGCACCTGGCCCTCAGCCTGCCTCAGCCCTGCCTGTCTCCAGATCACTG
TCCTTCTGCCATGGCCCTGTGGATGCGCCTCCTGCCCTGCTGGCGCTGCTGGCCCTCTG
GGGACTGACCCAGCCGACGCTTTGTGAACCAACCTGTGGGCTCACACCTGGTGGGA
AGCTCTTACCTAGTGTGCGGGAACGAGGCTTCTTCTACACACCAAGACCCGCGGGA
GGCAGAGGACCTGCAGGGTGAGCCAACTGCCATTGCTGCCCTGGCCGCCCCAGCCAC
CCCCTGCTCCTGGGCTCCCACCCAGCATGGGAGAAGGGGGCAGGAGGCTGCCACCCAG
CAGGGGTGAGTGCACITTTTTAAAAAGAAGTTCTCTTGGTCACGTCTAAAAGTGACC
AGCTCCCTGTGGCCAGTCAGAACTCAGCCTGAGGACGGTGTGGCTTCGGCAGCCCCG

Primer-BLAST A tool for finding specific primers

NCBI/ Primer-BLAST: Finding primers specific to your PCR template (using Primer3 and BLAST).

PCR Template [Reset page](#) [Save search parameters](#) [Retrieve recent results](#) [Publication](#) [Tips for finding specific primers](#)

Enter accession, gi, or FASTA sequence (A refseq record is preferred) [Clear](#)

```
CCTAGTGTGCGGGGAACGAGGCTTCTTACACACCCAAGACCCGCCGGGAGGCAGAGGACCTGCAGGGTGAAGCAACTGC
CCATTGCTGCCCTGGCCGCCCCAGCCACCCCTGCTCTGGCGCTCCACCCAGCATGGGCAGAAAGGGGGCAGGAGGCT
GCCACCCAGCAGGGGGTCAAGTGCACTTTTTAAAAAGAAAGTTCTCTGGTCACGTCCTAAAAGTGACCAGCTCCCTGTGG
CCCAAGTCAGAATCTCAGCCTGAGGACGGTGTGGCTTCGGCAGCCCG
```

Or, upload FASTA file Aucun fichier choisi

Range

Forward primer From To [Clear](#)

Reverse primer

Primer Parameters

Use my own forward primer (5'->3' on plus strand) [Clear](#)

Use my own reverse primer (5'->3' on minus strand) [Clear](#)

PCR product size Min Max

of primers to return

Primer melting temperatures (T_m) Min Opt Max Max T_m difference [Clear](#)

Exon/intron selection

A refseq mRNA sequence as PCR template input is required for options in the section [Clear](#)

Exon junction span [Clear](#)

Exon junction match Exon at 5' side Exon at 3' side
Minimal number of bases that must anneal to exons at the 5' or 3' side of the junction [Clear](#)

Intron inclusion Primer pair must be separated by at least one intron on the corresponding genomic DNA [Clear](#)

Primer melting temperatures (T_m)
Min: 57.0, Opt: 60.0, Max: 63.0, Max T_m difference: 3

Exon/intron selection
A refseq mRNA sequence as PCR template input is required for options in the section

Exon junction span: No preference

Exon junction match: Exon at 5' side: 7, Exon at 3' side: 4
Minimal number of bases that must anneal to exons at the 5' or 3' side of the junction

Intron inclusion: Primer pair must be separated by at least one intron on the corresponding genomic DNA

Intron length range: Min: 1000, Max: 1000000

Primer Pair Specificity Checking Parameters

Specificity check: Enable search for primer pairs specific to the intended PCR template

Search mode: Automatic

Database:

- Refseq mRNA
- Refseq mRNA
- Refseq representative genomes
- nr
- Refseq RNA (refseq_ma)
- Genome (reference assembly from selected organisms)**
- Custom
- Genome (chromosomes from all organisms)

XR prefix) Exclude uncultured/environmental sample sequences

Organism: (bacteriacea, rodents), taxonomy id or select from the suggestion list as you type.

Entrez query (optional):

Primer specificity stringency: Primer must have at least 2 total mismatches to unintended targets, including at least 2 mismatches within the last 5 bps at the 3' end. Ignore targets that have 6 or more mismatches to the primer.

Max target size: 4000

Primer melting temperatures (T _m)	Min	Opt	Max	Max T _m difference
	57.0	60.0	63.0	3

Exon/intron selection

A refseq mRNA sequence as PCR template input is required for options in the section

Exon junction span
No preference

Exon junction match
Exon at 5' side: 7
Exon at 3' side: 4
Minimal number of bases that must anneal to exons at the 5' or 3' side of the junction

Intron inclusion
 Primer pair must be separated by at least one intron on the corresponding genomic DNA

Intron length range
Min: 1000
Max: 1000000

Note: Parameter values that differ from the default are highlighted in yellow

Primer Pair Specificity Checking Parameters

Specificity check
 Enable search for primer pairs specific to the intended PCR template

Search mode
Automatic

Database
Genome (reference assembly from selected organisms)

Exclusion
 Exclude predicted Refseq transcripts (accession with XM, XR prefix) Exclude uncultured/environmental sample sequences

Organism
Homo sapiens
Enter an organism name (or organism group name such as enterobacteriaceae, rodents), taxonomy id or select from the suggestion list as you type.
[Add more organisms](#)

Entrez query (optional)
[Empty field]

Primer specificity stringency
Primer must have at least 2 total mismatches to unintended targets, including at least 2 mismatches within the last 5 bps at the 3' end.
Ignore targets that have 6 or more mismatches to the primer.

Intron length range
Min: 1000
Max: 1000000

Note: Parameter values that differ from the default are highlighted in yellow

Primer Pair Specificity Checking Parameters

Specificity check
 Enable search for primer pairs specific to the intended PCR template

Search mode
Automatic

Database
Genome (reference assembly from selected organisms)

Exclusion
 Exclude predicted Refseq transcripts (accession with XM, XR prefix) Exclude uncultured/environmental sample sequences

Organism
Homo sapiens
Enter an organism name (or organism group name such as enterobacteriaceae, rodents), taxonomy id or select from the suggestion list as you type.
[Add more organisms](#)

Entrez query (optional)
[Empty field]

Primer specificity stringency
Primer must have at least 2 total mismatches to unintended targets, including at least 2 mismatches within the last 5 bps at the 3' end.
Ignore targets that have 6 or more mismatches to the primer.

Max target size
1000

Splice variant handling
 Allow primer to amplify mRNA splice variants (requires refseq mRNA sequence as PCR template input)

Get Primers

Show results in a new window Use new graphic view

Note: Parameter values that differ from the default are highlighted in yellow

► NCBI/Primer-BLAST: Finding primers specific to your PCR template (using Primer3 and BLAST).

Input PCR template
Range 1 - 1020

Your PCR template is highly similar to the following sequence(s) from the search database. To increase the chance of finding specific primers, please review the list below and select all sequences (within the given sequence ranges) that are intended or allowed targets.

Select: All None Selected: 0

Accession	Title	Identity	Alignment length	Seq. start	Seq. stop	Gene
<input type="checkbox"/> NC_000011.10	Homo sapiens chromosome 11, GRCh38.p2 Primary Assembly	100%	1020	2160562	2161581	INS-IGF2

Show results in a new window

Primer-BLAST *Primer designing tool*

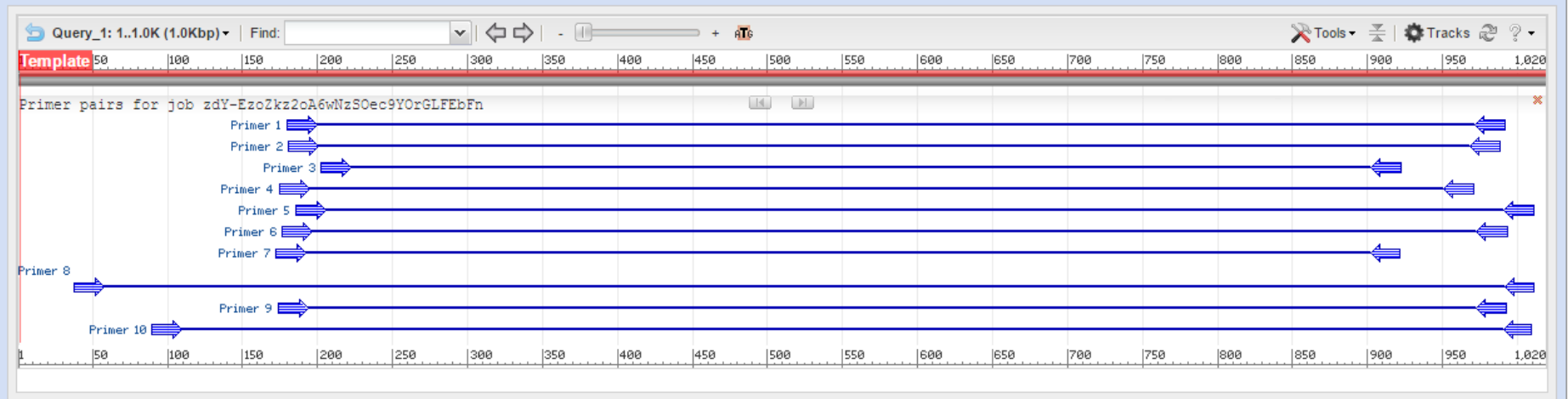
► NCBI/ Primer-BLAST: Making primers specific to your PCR template. [more...](#)

Status	Running	Check	Cancel
Current time	08 May 2016, 19:08:08		
Time since submission	32 sec		
Progress Message			

NCBI/Primer-BLAST : results: Job id=zdY-EzoZkz2oA6wNzSOec9YOrGLFEbFn [more...](#)

Input PCR template
Range 1 - 1020
Specificity of primers primers may **not** be specific to the input PCR template as targets were found in selected database:Genome database (reference assembly only) for selected species (Organism limited to Homo sapiens)...[help on specific primers](#)
Other reports [Search Summary](#)

Graphical view of primer pairs



Detailed primer reports

Primer pair 1



Detailed primer reports

Primer pair 1

	Sequence (5'->3')	Template strand	Length	Start	Stop	Tm	GC%	Self complementarity	Self 3' complementarity
Forward primer	GAAGAGGTGCTGACGACCAA	Plus	20	180	199	59.97	55.00	3.00	0.00
Reverse primer	GGCTGAGATTCTGACTGGGC	Minus	20	991	972	60.46	60.00	5.00	2.00
Product length	812								

Products on potentially unintended templates

>[NC_000011.10](#) Homo sapiens chromosome 11, GRCh38.p2 Primary Assembly

product length = 812
 Features associated with this product:
[insulin, isoform 2 precursor](#)
[insulin preproprotein](#)

```
Forward primer 1 GAAGAGGTGCTGACGACCAA 20
Template 2161402 ..... 2161383

Reverse primer 1 GGCTGAGATTCTGACTGGGC 20
Template 2160591 ..... 2160610
```

>[NC_000001.11](#) Homo sapiens chromosome 1, GRCh38.p2 Primary Assembly

product length = 3490
 Features associated with this product:
[late cornified envelope-like proline-rich protein 1](#)

```
Forward primer 1 GAAGAGGTGCTGACGACCAA 20
Template 153203131 .....A....GA....T 153203150
```

>[NC_000001.11](#) Homo sapiens chromosome 1, GRCh38.p2 Primary Assembly

product length = 3490
Features associated with this product:
[late cornified envelope-like proline-rich protein 1](#)

Forward primer 1 GAAGAGGTGCTGACGACCAA 20
Template 153203131A....GA....T 153203150
Reverse primer 1 GGCTGAGATTCTGACTGGGC 20
Template 153206620GG...G....T 153206601

product length = 3755
Features flanking this product:
[440491 bp at 5' side: DEP domain-containing protein 1A isoform a](#)
[627572 bp at 3' side: leucine-rich repeat-containing protein 7 isoform X1](#)

Reverse primer 1 GGCTGAGATTCTGACTGGGC 20
Template 68941243 AT...A.G.....A 68941224
Reverse primer 1 GGCTGAGATTCTGACTGGGC 20
Template 68937489A.GG..G....A 68937508

>[NC_000024.10](#) Homo sapiens chromosome Y, GRCh38.p2 Primary Assembly

product length = 555
Features flanking this product:
[326182 bp at 5' side: testis-specific Y-encoded protein 10 isoform X1](#)
[2852971 bp at 3' side: probable ubiquitin carboxyl-terminal hydrolase FAF-Y](#)

Reverse primer 1 GGCTGAGATTCTGACTGGGC 20
Template 9856476 .TT...A.....A.. 9856457
Reverse primer 1 GGCTGAGATTCTGACTGGGC 20
Template 9855922AA...CA..... 9855941

product length = 555
Features flanking this product:
[70196 bp at 5' side: testis-specific Y-encoded protein 2 isoform X1](#)