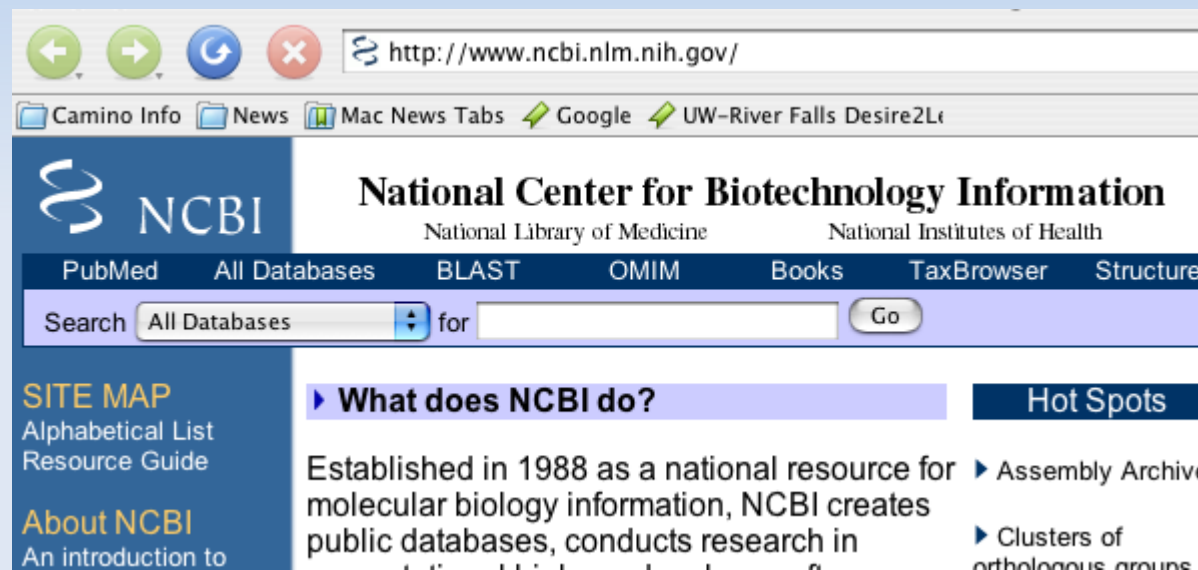


Topic 4 – Genes and Databases

Exons, Introns, UTRs



Surfing – Start with a Protein



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

Search Protein database for **P0A334**

Protein to Journal Article

Click on the Pubmed link “7489706”

The screenshot shows the NCBI PubMed website interface. At the top, there's a navigation bar with links to 'All Databases', 'PubMed', 'Nucleotide', 'Protein', 'Genome', 'Structure', 'OMIM', 'PMC', and 'Journals'. Below this is a search bar with 'PubMed' selected and a 'Go' button. The main content area displays a search result for '1: EMBO J. 1995 Nov 1;14(21):5170-8.' with a 'FREE full text article in PubMed Central' badge. The article title is 'A prokaryotic potassium ion channel with two predicted transmembrane segments from Streptomyces lividans.' and the authors are 'Schrempf H, Schmidt O, Kümmerlen R, Hinnah S, Müller D, Betzler M, Steinkamp T, Wagner R.' The abstract text below the authors reads: 'Angewandte Genetik der Mikroorganismen, Universität Osnabrück, Germany. We report the identification, functional expression, purification, reconstitution and electrophysiological characterization of an up to now unique prokaryotic potassium ion channel (KcsA). It has a rectifying current-voltage relationship'.

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NCBI PubMed A service of the U.S. National Library of Medicine and the National Institutes of Health My NCBI [Sign In] [Register]

All Databases PubMed Nucleotide Protein Genome Structure OMIM PMC Journals

Search PubMed for Go Clear

Limits Preview/Index History Clipboard Details

Display AbstractPlus Show 20 Sort By Send to

All: 1 Review: 0

1: EMBO J. 1995 Nov 1;14(21):5170-8. FREE full text article in PubMed Central Links

A prokaryotic potassium ion channel with two predicted transmembrane segments from *Streptomyces lividans*.

Schrempf H, Schmidt O, Kümmerlen R, Hinnah S, Müller D, Betzler M, Steinkamp T, Wagner R.

Angewandte Genetik der Mikroorganismen, Universität Osnabrück, Germany.

We report the identification, functional expression, purification, reconstitution and electrophysiological characterization of an up to now unique prokaryotic potassium ion channel (KcsA). It has a rectifying current-voltage relationship

Patient Drug Information

Potassium (Glu-K⁺, K⁺ 10⁺, K⁺ 8⁺, ...) Potassium is essential for the proper functioning of the heart, kidneys, muscles, nerves, and digestive system. » read more ...

Related Links

Molecular compatibility of the channel gate and the N terminus of S5 segment for [J Biol Chem. 2005]

Journals to Nucleotide

Look in the

"Associated data" area:

Click on **Z37969** and choose
"Search in Nucleotides"

Publication types

- > Research Support, Non-U.S. Gov't

MeSH terms

- > Amino Acid Sequence
- > Base Sequence
- > Cloning, Molecular
- > Electrophysiology
- > Molecular Sequence Data
- > Potassium Channels* / chemistry
- > Potassium Channels* / genetics
- > Potassium Channels* / isolation & purification
- > Potassium Channels* / metabolism
- > Sequence Alignment
- > Streptomyces / genetics
- > Streptomyces / metabolism*

Substances

- > Potassium Channels

Associated data

- > GENBANK/Z37969

Related information

Nucleotide Data

Do the lengths of
coding sequence
protein sequence
tell you anything about
the number of introns?

Look at the translation table
and compare with the one
in the lecture notes.
Where is the stop codon for
this sequence?

S.lividans skc1 gene for potassium channel protein

GenBank: Z37969.1

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

Go to: ☐

LOCUS Z37969 1161 bp DNA linear BCT 18-APR-2005
DEFINITION S.lividans skc1 gene for potassium channel protein.
ACCESSION Z37969
VERSION Z37969.1
KEYWORDS potassium channel protein; skc1 gene.
SOURCE Streptomyces lividans 1326
ORGANISM [Streptomyces lividans 1326](#)
Bacteria; Actinobacteria; Streptomycetales; Streptomycetaceae;
Streptomyces.
REFERENCE 1 (bases 1 to 1161)
AUTHORS Schrepf,H., Schmidt,O., Kummerlen,R., Hinnah,S., Muller,D.,
Betzler,M., Steinkamp,T. and Wagner,R.
TITLE A prokaryotic potassium ion channel with two predicted
transmembrane segments from Streptomyces lividans
JOURNAL EMBO J. 14 (21), 5170-5178 (1995)
PUBMED [7489706](#)
REFERENCE 2 (bases 1 to 1161)
AUTHORS Schrepf,H.
TITLE Direct Submission
JOURNAL Submitted (23-SEP-1994) Schrepf H., Abt. AGM, FB Biologie /
Chemie, Uni Osnabrueck, Barbarastr. 11, D-49090 Osnabrueck, FRG
FEATURES
Location/Qualifiers
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/db_xref="GOA:P0A334"
/db_xref="InterPro:TPR003091"

Compare with an eukaryotic gene

Find the NIH Gene database entry for
human KCNH2 gene

The screenshot shows the Entrez Gene database interface. At the top, the 'Entrez Gene' logo is visible. Below it, a search bar contains the text 'for KCNH2'. To the right of the search bar are buttons for 'Go', 'Clear', and 'Save Search'. Above the search bar, there are tabs for 'PubMed', 'Nucleotide', 'Protein', 'Genome', 'Structure', 'PMC', 'Taxonomy', 'Books', and 'OM'. Below the search bar, there are buttons for 'Limits', 'Preview/Index', 'History', 'Clipboard', and 'Details'. The 'Display' section shows 'Summary' selected, with a 'Show' button and a '20' dropdown menu. To the right of the 'Show' button is a 'Send to' button. Below the 'Display' section, there are buttons for 'All: 24', 'Current Only: 24', 'Genes Genomes: 23', and 'SNP GeneView: 13'. The 'Items 1 - 20 of 24' text is displayed. On the right side, there is a 'Page' dropdown menu showing '1' of '2'. The main content area displays the entry for '1: KCNH2'. The entry includes the following information: 'Official Symbol KCNH2 and Name: potassium voltage-gated channel, subfamily H (eag-related), member 2 [Homo sapiens]', 'Other Aliases: ERG1, HERG, HERG1, Kv11.1, LQT2, SQT1', 'Other Designations: cause of Long QT Syndrome Type 2; ether-a-go-go-related potassium channel protein; human eag-related; potassium channel HERG; potassium channel HERG1; potassium voltage-gated channel, subfamily H, member 2; voltage-gated potassium channel; voltage-gated potassium channel, subfamily H, member 2', 'Chromosome: 7; Location: 7q35-q36', 'Annotation: Chromosome 7, NC_000007.12 (150272982..150305947, complement)', and 'MIM: 152427'.

Entrez Gene

My NCBI
[Sign In] [Re]

PubMed Nucleotide Protein Genome Structure PMC Taxonomy Books OM

for KCNH2 Go Clear Save Search

Limits Preview/Index History Clipboard Details

Display Summary Show 20 Send to

All: 24 Current Only: 24 Genes Genomes: 23 SNP GeneView: 13

Items 1 - 20 of 24 Page 1 of 2

1: [KCNH2](#)

Official Symbol KCNH2 and **Name:** potassium voltage-gated channel, subfamily H (eag-related), member 2 [*Homo sapiens*]

Other Aliases: ERG1, HERG, HERG1, Kv11.1, LQT2, SQT1

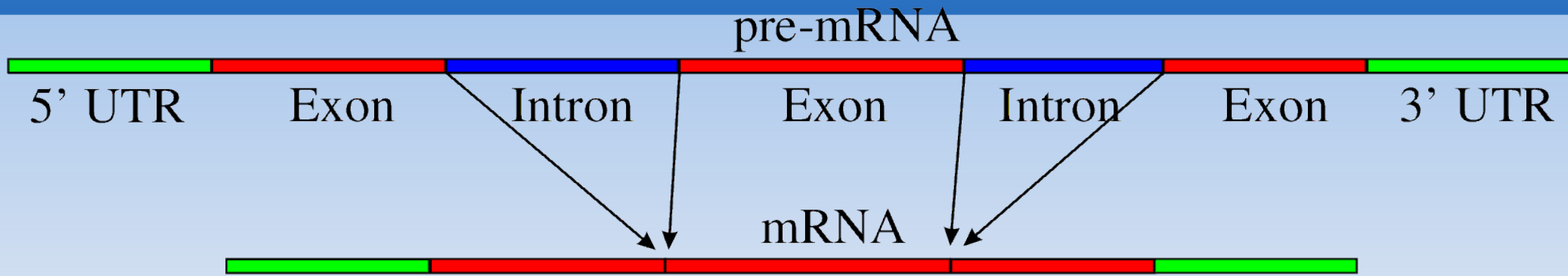
Other Designations: cause of Long QT Syndrome Type 2; ether-a-go-go-related potassium channel protein; human eag-related; potassium channel HERG; potassium channel HERG1; potassium voltage-gated channel, subfamily H, member 2; voltage-gated potassium channel; voltage-gated potassium channel, subfamily H, member 2

Chromosome: 7; **Location:** 7q35-q36

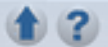
Annotation: Chromosome 7, NC_000007.12 (150272982..150305947, complement)

MIM: 152427

Alternative Splicing

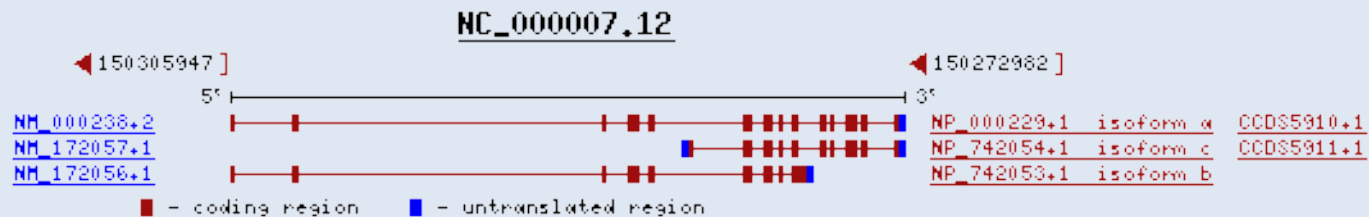


Genomic regions, transcripts, and products



(minus strand) Go to [reference sequence details](#)

[Try our new Sequence Viewer](#)



Genomic context



chromosome: 7; Location: 7q35-q36

[See KCNH2 in MapViewer](#)



Alternative Splicing

- Humans have about 20,000 genes
- And about 100,000 distinct proteins!
 - on average, each gene may be capable of giving us 5 splice variants!
- We have tissue/organ-specific splicing factors that give us different mature mRNAs in different organs or tissues

From NCBI Gene to the Kyoto Encyclopedia of Genes and Genomes

Click on the 3D Structures link to see protein structure data.

Try our new Sequence Viewer

150272982

3'

NP_000229.1 isoform_a CCDS5910.1
NP_742054.1 isoform_c CCDS5911.1
NP_742053.1 isoform_b

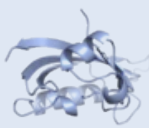
See KCNH2 in MapViewer

150375802

KCNH2 NOS3
ATG9B
RECB8

Publications
Full text in PMC
Probe
Protein
PubMed
PubMed (OMIM)
PubMed (GeneRIF)
SNP
SNP: Genotype
SNP: GeneView
Taxonomy
UniSTS
AceView
Ensembl
Evidence Viewer
Gene Connection for the Heart -
KCNH2(HERG)
GeneTests for MIM: 152427
HGMD
HGNC
HPRD
HuGE Navigator
KCNH2 @ ZAC-GGM
✓ **KEGG**
Long QT Syndrome Database,
KCNH2 (HERG) mutations

Scroll down to the "Links to other resources" and click the KEGG link to see information about diseases, drugs, etc.

KEGG Homo sapiens (human): 3757 Help			
Entry	3757	CDS	H.sapiens
Gene name	KCNH2, LQT2		
Definition	potassium voltage-gated channel, subfamily H (eag-related), member 2		
Orthology	KO: K04905 potassium voltage-gated channel, Eag-related subfamily H, member 2		
Class	BRITE hierarchy		
SSDB	Ortholog Paralog Gene cluster		
Motif	Pfam: PAS PAS_3 Ion trans Ion_trans_2 cNMP_binding PROSITE: CNMP_BINDING_3 PAS PAC Motif		
Other DBs	OMIM: 152427 NCBI-GI: 4557729 NCBI-GeneID: 3757 HGNC: 6251 HPRD: 01069 Ensembl: ENSG00000055118 UniProt: A5H1P7 Q12809		
LinkDB	All DBs		
Structure	PDB: 1BYW Thumbnails  Jmol		
Position	7q35-q36		
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