

# Les Arbres

Par Joel Sandé

# Les arbres

- Il y a 3 groupes d'arbres: L'arbre des distances, l'arbre de parcimonie, et l'arbre des vraisemblances (Likelihood). Ils ont chacun leurs forces et faiblesse.
- L'arbre des distances est le plus facile et rapide à rouler...
- Toutefois, les arbres de parcimonie et de vraisemblance son en théorie, les plus précis, mais prennent plus de temps à rouler.

# Arbre des distances

- Quand on décide d'utiliser l'arbre des distances, on doit tenir compte de 4 choses, dont 2 majeurs :
  - L'algorithme de reconstruction (UPGA, NJ, Fitch, Kitsch)
  - Le type d'arbre qu'on veut construire.
    - Arbre sans distances (Cladogram)
    - Arbre avec distances (Phenogram)
    - Arbre enraciné ou non-enraciné

# Afficher un arbre sur l'ordinateur

- Philip est le nom du Package qui permet de construire les arbres phylogéniques (petit détail).
- Construisons l'arbre de l'hémoglobine HB2

Vous pouvez construire un cladogram directement via NCBI en cliquant Tree

[https://www.ncbi.nlm.nih.gov/gene?term=hb2\[gene\]%20AND%20alive\[prop\]%20NOT%20newentry\[gene\]&sort=weight](https://www.ncbi.nlm.nih.gov/gene?term=hb2[gene]%20AND%20alive[prop]%20NOT%20newentry[gene]&sort=weight)

## Search results

Items: 17

Showing Current items.

Name/Gene ID	Description	Location	Aliases	MIM
<input type="checkbox"/> <a href="#">SCN5A</a> ID: 6331	sodium voltage-gated channel alpha subunit 5 [ <i>Homo sapiens</i> (human)]	Chromosome 3, NC_000003.12 (38548061..38649673, complement)	CDCD2, CMD1E, CMPD2, HB1, HB2, HBB, HH1, ICCD, IVF, LQT3, Nav1.5, PFHB1, SSS1, VF1	600163
<input type="checkbox"/> <a href="#">HB-2</a> ID: 827384	homeobox protein 2 [ <i>Arabidopsis thaliana</i> (thale cress)]	Chromosome 4, NC_003075.7 (9449114..9450905)	AT4G16780, ARABIDOPSIS THALIANA HOMEBOX PROTEIN 2, ATHB-2, ATHB2, DL4415W, FCAALL.101, HAT4, homeobox protein 2	
<input type="checkbox"/> <a href="#">HB2</a> ID: 820216	hemoglobin 2 [ <i>Arabidopsis thaliana</i> (thale cress)]	Chromosome 3, NC_003074.8 (3276163..3277930, complement)	AT3G10520, AHB2, ARABIDOPSIS HEMOGLOBIN 2, ARATH GLB2, ATGLB2, GLB2, HEMOGLOBIN, HEMOGLOBIN 2, NON-SYMBIOTIC HAEMOGLOBIN 2, NSHB2, haemoglobin 2	
<input type="checkbox"/> <a href="#">KRT82</a> ID: 3888	keratin 82 [ <i>Homo sapiens</i> (human)]	Chromosome 12, NC_000012.12 (52393951..52406392, complement)	HB2, Hb-2, KRTHB2	601078
<input type="checkbox"/> <a href="#">HB21</a> ID: 816370	homeobox protein 21 [ <i>Arabidopsis thaliana</i> (thale cress)]	Chromosome 2, NC_003071.7 (8049371..8051316, complement)	AT2G18550, ATHB21, F24H14.10, F24H14_10, HB-2, homeobox protein 21, homeobox-2	
<input type="checkbox"/> <a href="#">Glb2</a> ID: 543822	non-symbiotic hemoglobin class 2 [ <i>Solanum lycopersicum</i> (tomato)]	Chromosome 3, NC_015440.2 (18328609..18330350, complement)	Hb2	
<input type="checkbox"/> <a href="#">hb2</a>	globin [ <i>Ciona intestinalis</i> ]			

## Results by taxon

Top Organisms [Tree](#)

*Arabidopsis thaliana* (3)  
*Oryza sativa Japonica Group* (3)  
*Homo sapiens* (2)  
*Gossypium hirsutum* (2)  
*Zea mays* (2)  
 All other taxa (5)

[More...](#)

## Find related data

Database: [Select](#)

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## Search details

hb2[gene] AND alive[prop] NOT newentry[gene] AND  
 alive[prop]

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[Q](#) hb2[gene] AND alive[prop] NOT newentry[gene] AND  
 (alive[prop]) (17) Gene

## Search results

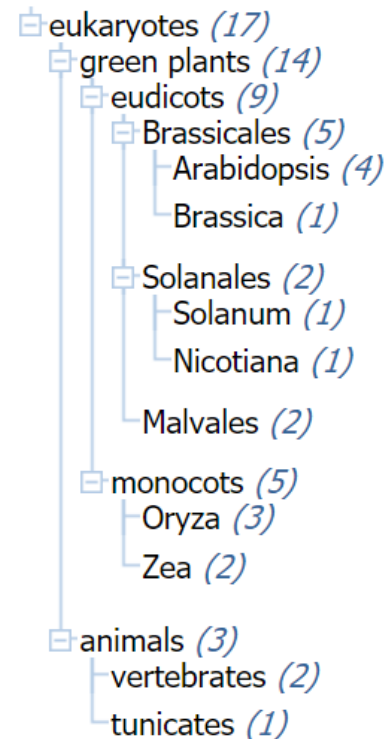
Items: 17

 Showing Current items.

Name/Gene ID	Description	Location	Aliases
<input type="checkbox"/> <a href="#">SCN5A</a> ID: 6331	sodium voltage-gated channel alpha subunit 5 [ <i>Homo sapiens</i> (human)]	Chromosome 3, NC_000003.12 (38548061..38649673, complement)	CDCD, HB2, LQT3, VF1
<input type="checkbox"/> <a href="#">HB-2</a> ID: 827384	homeobox protein 2 [ <i>Arabidopsis thaliana</i> (thale cress)]	Chromosome 4, NC_003075.7 (9449114..9450905)	AT4G, THAL, PROT, DL44, home
<input type="checkbox"/> <a href="#">HB2</a> ID: 820216	hemoglobin 2 [ <i>Arabidopsis thaliana</i> (thale cress)]	Chromosome 3, NC_003074.8 (3276163..3277930, complement)	AT3G, ARAE, 2, AR

## Results by taxon

### Taxonomic Groups [\[List\]](#)



Pour l'arbre référez-vous à ClustalW




[www.ebi.ac.uk/clustalw/](http://www.ebi.ac.uk/clustalw/)

Ou


<http://www.genome.jp/tools-bin/clustalw>

Je vous le montre dans les prochaines slides



# SCN5A sodium voltage-gated channel alpha subunit 5 [ *Homo sapiens* (human) ]

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Gene

Gene 

Advanced

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**SCN5A sodium voltage-gated channel alpha subunit 5 [ *Homo sapiens* (human) ]**  
Gene ID: 6331, updated on 11-Mar-2018

 **Summary**  

**Official Symbol**

SCN5A provided by HGNC

**Official Full Name**

sodium voltage-gated channel alpha subunit 5 provided by HGNC

**Primary source**

[HGNC:HGNC:10593](#)

**See related**

[Ensembl:ENSG00000183873](#) [MIM:600163](#); [Vega:OTTHUMG00000156166](#)

**Gene type**

protein coding

**RefSeq status**

REVIEWED

**Organism**

[Homo sapiens](#)

**Lineage**

Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Primates; Haplorrhini; Catarrhini; Hominidae; Homo

**Also known as**

HB1; HB2; HH1; IVF; VF1; HBBB; ICCD; LQT3; SSS1; CDCD2; CMD1E; CMPD2; PFHB1; Nav1.5

**Summary**




The protein encoded by this gene is an integral membrane protein and tetrodotoxin-resistant voltage-gated sodium channel subunit. This protein is found primarily in cardiac muscle and is responsible for the initial upstroke of the action potential in an electrocardiogram. Defects in this gene are a cause of long QT syndrome type 3 (LQT3), an autosomal dominant cardiac disease. Alternative splicing results in several transcript variants encoding different isoforms. [provided by RefSeq, Jul 2008]

**Expression**

Restricted expression toward heart (RPKM 17.6) [See more](#)

**Orthologs**

[mouse](#) [all](#)

 **Genomic context**  

Location: 3p22.2 See SCN5A in [Genome Data Viewer](#) [Map Viewer](#)

Exon count: 29

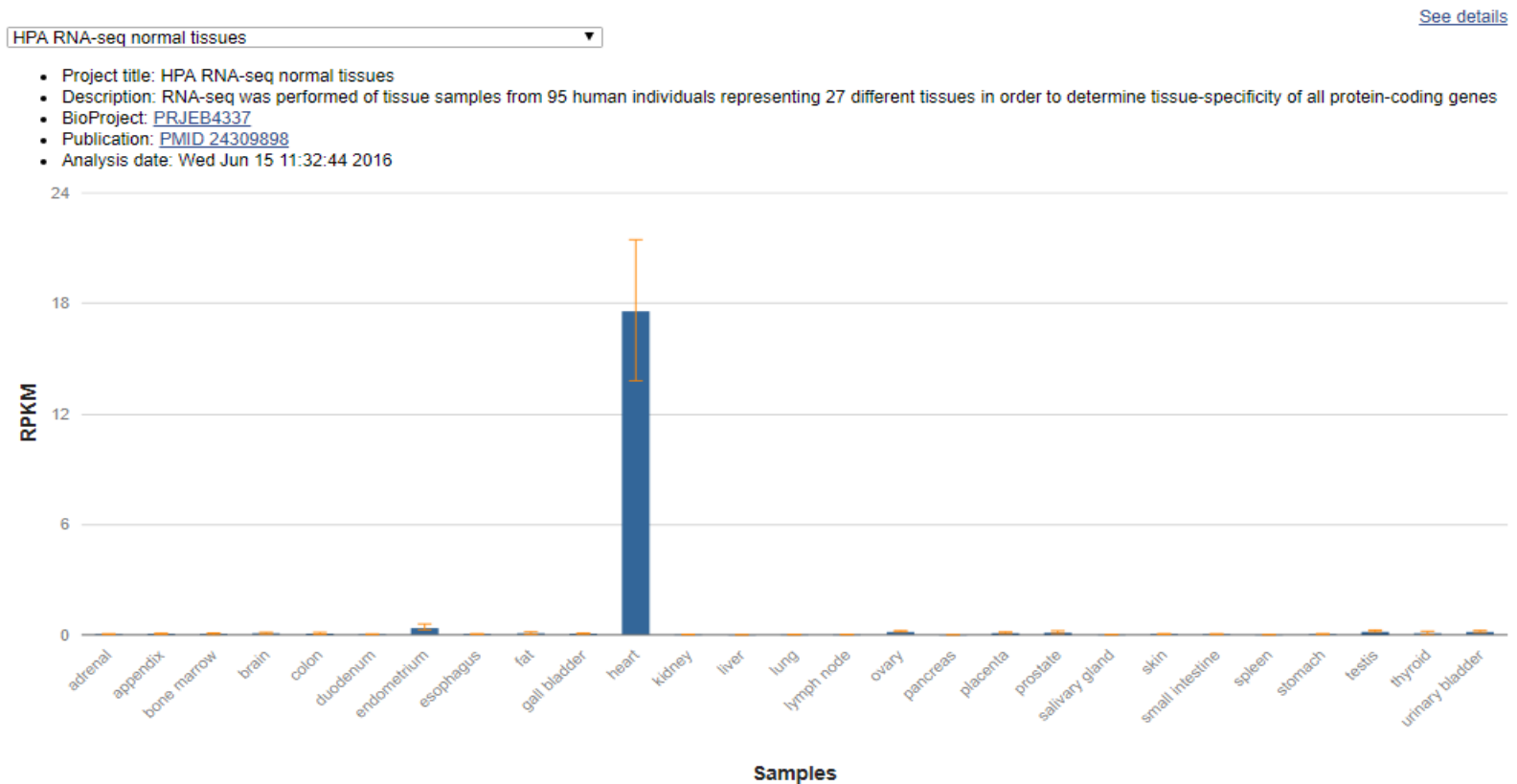
Annotation release	Status	Assembly	Chr	Location
<a href="#">108</a>	current	GRCh38.p7 ( <a href="#">GCF_000001405.33</a> )	3	NC_000003.12 (38548061..38649673, complement)
<a href="#">105</a>	previous assembly	GRCh37.p13 ( <a href="#">GCF_000001405.25</a> )	3	NC_000003.11 (38589553..38691164, complement)






# SCN5A sodium voltage-gated channel alpha subunit 5

## [ *Homo sapiens* (human) ]

Si vous descendez plus bas, vous verrez les tissus sujets d'études de ce gènes.  
Dans cet exemple-ci, le tissus cardiaque est le plus concerné



## Ainsi que la Bibliographie à ce gène

 Bibliography  

**Related articles in PubMed**

1. [Genotype-Phenotype Correlation of SCN5A Mutation for the Clinical and Electrocardiographic Characteristics of Probands With Brugada Syndrome: A Japanese Multicenter Registry.](#)  
Yamagata K, *et al.* Circulation, 2017 Jun 6. PMID 28341781
2. [Electrocardiogram changes and atrial arrhythmias in individuals carrying sodium channel SCN5A D1275N mutation.](#)  
Vanninen SUM, *et al.* Ann Med, 2017 Sep. PMID 28294644
3. [Gain-of-function mutation in SCN5A causes ventricular arrhythmias and early onset atrial fibrillation.](#)  
Lieve KV, *et al.* Int J Cardiol, 2017 Jun 1. PMID 28262340
4. [A Common Variant in SCN5A and the Risk of Ventricular Fibrillation Caused by First ST-Segment Elevation Myocardial Infarction.](#)  
Jabbari R, *et al.* PLoS One, 2017. PMID 28085969, [Free PMC Article](#)
5. [Multilevel analyses of SCN5A mutations in arrhythmogenic right ventricular dysplasia/cardiomyopathy suggest non-canonical mechanisms for disease pathogenesis.](#)  
Te Riele AS, *et al.* Cardiovasc Res, 2017 Jan. PMID 28069705, [Free PMC Article](#)

[See all \(539\) citations in PubMed](#)

[See citations in PubMed for homologs of this gene provided by HomoloGene](#)

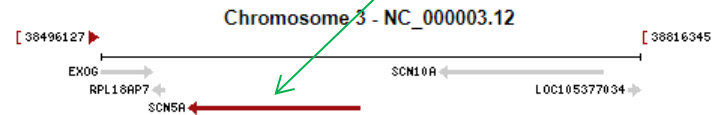
## La localisation du gène sur son chromosome

Location: 3p22.2

Exon count: 29

See SCN5A in [Genome Data Viewer Map View](#)

Annotation release	Status	Assembly	Chr	Location
<a href="#">108</a>	current	GRCh38.p7 ( <a href="#">GCF_000001405.33</a> )	3	NC_000003.12 (38548061..38649673, complement)
<a href="#">105</a>	previous assembly	GRCh37.p13 ( <a href="#">GCF_000001405.25</a> )	3	NC_000003.11 (38589553..38691164, complement)

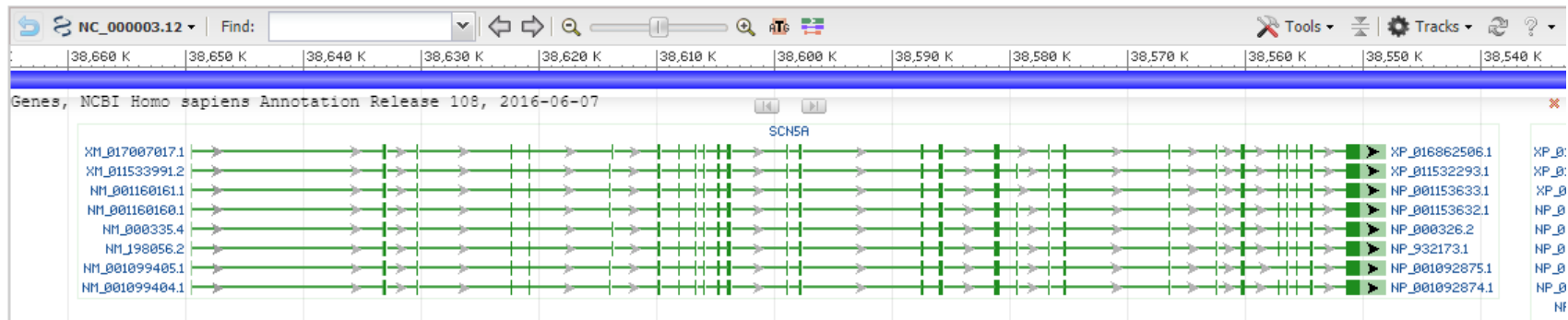


### Genomic regions, transcripts, and products

Go to [reference sequence details](#)

Genomic Sequence: [NC\\_000003.12](#) Chromosome 3 Reference GRCh38.p7 Primary Assembly

Go to nucleotide: [Graphics](#) [FASTA](#) [GenBank](#)



# Le format Fasta

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[illegible]

Nucleotide

Nucleotide

Advanced

FASTA

Format

- Summary
- GenBank
- GenBank (full)
- FASTA**
- FASTA (text)
- Graphics
- ASN.1
- Revision History
- Accession List
- GI List

Human chromosome 3, GRCh38.p7 Primary Assembly

Sequence: NC\_000003.12

49673-38548061 Homo sapiens chromosome 3, GRCh38.p7 Primary Assembly

GTAGGATGCAAGGGATCGTCTCCCCGGGGCGCTGAGCCTGCGCCAGTGCCCG  
GAGTCCGCGCAAGACGACGCGCCACCCGGGGCCCGCGGGGACACAG  
CGCGCCCGGACGCCCTGGCCCGCGCGAGGCCCTTCCGCTCGCCCGCGCCCA  
CGAAGCTTCAAGTCCCTGCGTGCTCTCCCTCGCCCGGGTCCCGACGCGC  
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GATTGGGCTTGGAGGACTAGTGGGAGGACACGAGGAGGCTGGGGATGGGAGAGAGGCGGAGGCTGTGGT

- Copier-coller le format .txt à soumettre sur ClustalW.
- Faites en de même pour toutes les espèces qui vous intéressent.
- Bonne pratique.. N'hésitez pas à me contacter en cas de problèmes techniques.