#### Fiche technique : génomique en ligne sur le NCBI



**<u>Objectifs</u>** : ce site en ligne, hébergé par le NCBI (National Centre for Biotechnology Information), permet de rechercher des informations relatives au génome d'une espèce.

- 1. Caryotype d'une espèce
- 2. Longueur (= nombre de nucléotides) et gènes d'un chromosome
- 3. Rechercher un gène dans le génome d'une espèce
- 4. Afficher la séquence en nucléotides de ce gène
- 5. Construire un arbre phylogénétique à partir de l'ADN, pour retracer la parenté entre espèces.

#### Objectif 1 : sélectionner l'espèce à étudier pour connaître son caryotype

https://www.ncbi.nlm.nih.gov/genome/gdv/





La fenêtre ci-dessous apparaît avec les chromosomes alignés du plus grand au plus petit.

!!! Pour simplifier, un seul des 2 chromosomes de chaque paire est figuré. Le nombre total de chromosomes est donc le double !!!

Le caryotype de l'Homme est donc de 46 chromosomes : 2 fois 22 + 1 chromosome X + 1 chromosome Y

### Objectif 2 : Longueur et gènes d'un chromosome



#### Objectif 3 : rechercher un gène précis dans le génome

#### https://www.ncbi.nlm.nih.gov/gene



LNA filamin A [ H	Table of contents Summary			
Sene ID: 2316, updated on 12-Mar-2019		Genomic context		
Summary		Genomic regions, transcripts, and products		
Official Symbol Official Full Name Primary source	FLNA provided by <u>HGNC</u> filamin A provided by <u>HGNC</u> HGNC: HGNC: 3754	Expression Bibliography		
See related Gene type	Ensembl ENSG0000196924 MIM 300017 protein coding EV/EWED	Variation		
Organism Lineage	Homo sapiens     Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Primates; Haplorrhini;     Catarrhini; Hominidae; Homo     FLN; FMD; MNS; OPD; ABPX; CSBS; CVD1; FGS2; FLN1; NHBP; OPD1; OPD2; XLVD; XMVD; FLN-A; ABP-280     Y The protein encoded by this gene is an actin-binding protein that crosslinks actin filaments and links actin filaments to membrane     glycoproteins. The encoded protein is involved in remodeling the cytoskeleton to effect changes in cell shape and migration. This protein     interacts with integrins, transmembrane receptor complexes, and second messengers. Defects in this gene are a cause of several     syndromes, including periventricular nodular heterotopias (PVNH1, PVNH4), otopalatodigital syndromes (OPD1, OPD2),     frontometaphyseal dysplasia (FMD), Mehrick-Needles syndrome (MNS), and X-linked congenital idiopathic intestinal pseudoobstruction     (CIIPX). Two transcript variants encoding different isoforms have been found for this gene [provided by RefSeq, Mar 2009]     Broad expression in endometrium (RPKM 345.6), esophagus (RPKM 285.0) and 22 other tissues <u>See more     mouse_all</u>	Pathways from BioSystems		
Also known as Summary		General gene information Markers, Clone Names, Homology, Gene Ontolog		
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## Objectif 4 : Afficher la séquence en nucléotides de ce gène

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	GTGGACGGGAACCTGAAGCTGATCCTGGGCCTCATCTGGACCCTGATCCTGCACT		

# <u>Objectif 5 : construire un arbre phylogénétique à partir de l'ADN pour retracer la parenté entre espèces.</u><sup>1</sup>

#### https://blast.ncbi.nlm.nih.gov/Blast.cgi

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<sup>1</sup> <u>https://www.carolina.com/teacher-resources/Interactive/video-comparing-dna-sequences/tr40201.tr?s cid=em tipsvideo 201901c&bro mid=72039026&bro rid=93f35dc2-3774-4190-b5f3-fb9907d46727&utm source=bronto&utm medium=email&utm term=Image+-+Video&utm content=01/17/2019&utm campaign=2019+-+Jan+Wk3+-+Tips& bta tid=2731801782213921247684238346637889035045810089961239200714215857647741914353140116967874941460 99444229</u>

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Apres un derai, plus ou moins iong, la		15708 15708	99% 0.0	100.00%	U727643.1
enêtre apparaît avec toutes les séquences		15464 15464	98% 0.0	100.00%	B593010.1
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Human mRNA for actine de la séquence recherchée. Le % de		15426 15426	98% 0.0	99.94%	<u>53416.1</u>
PREDICTED: Gorilla ge     ressemblance est indiqué dans cette		15313 15313	100% 0.0	99.17%	M 004065114.2
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Homo sapiens FLNA mi		15195 15195	96% 0.0	99.95%	B371574.1
Homo sapiens FLNA m		15195 15195	96% 0.0	99.95%	B191260.1
PREDICTED: Pongo at		15021 15021	99% 0.0	98.55%	M 024241128.1
<u>PREDICTED: Nomascu</u> Sélectionner les espèces de votre choix.	mRNA	14807 14807	100% 0.0	98.09%	M 004092567.2
PREDICTED: Papio ani	in the second se	14259 14259	99% 0.0	96.93%	M 009198523.2
PREDICTED: Theropith     Puis cliquer sur « Distance tree of results »		14229 14229	99% 0.0	96.87%	M 025371722.1
PREDICTED: Macaca ne pour afficher l'arbre correspondant		14229 14229	99% 0.0	96.87%	M 011717786.2
PREDICTED: Cercocebus a,		14218 14218	99% 0.0	96.85%	M 012088299.1
PREDICTED: Macaca fascicularis filamin A (FLNA), transcript variant X1, mRNA		14212 14212	99% 0.0	96.84%	M 005594971.2
PREDICTED: Macaca mulatta filamin A, alpha (FLNA), transcript variant X1, mRNA		14190 14190	99% 0.0	96.79%	M 001091073.3
PREDICTED: Chlorocebus sabaeus filamin A. alpha (FLNA), transcript variant X1, mRNA		14168 14168	99% 0.0	96.74%	M 007993134.1
PREDICTED: Rhinopithecus roxellana filamin A, alpha (FLNA), transcript variant X1, mRNA		14120 14120	99% 0.0	96.71%	M 010364786.1
DEEDICTED: Colobus angolansis nollistus filomin & Jakko (ELMA), transstint variant V3, mDMA		12001 12001	000/ 00	00 - 00	

#### Reset Tree

L'arbre affiché traduit la parenté entre les espèces pour le gène étudié. Pour modifier l'affichage, cliquer sur « tools », « Layout », « slanted cladogram »

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		PREDICTED: Nomascus leucogenys filamin A, alpha (FLNA)     PREDICTED: Gorilla gorilla filamin A (FLNA), trans     PREDICTED: Pan troglodytes filamin A (FLNA), transcript	Clear subtree		Use distance	
			Expand all		Midpoint root	
			Edit labels			
		PREDICTED: Pan paniscus filamin A (FLNA), mRNA				
		Homo sapiens filamin A (FLNA), transcript variant 2, mRNA				

Database nr

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		PREDICTED: Castor canadensis filamin A (Flna), transcript variant X4, mRNA
		PREDICTED: Camelus bactrianus filamin A, alpha (FLNA), mRNA
	•	PREDICTED: Sus serofa filamin A (FLNA), transcript variant X10, mRNA
		PREDICTED: Equus asinus filamin A, alpha (FLNA), transcript variant X1, mRNA
		PREDICTED: Colobus angolensis palliatus filamin A, alpha (FLNA), transcript variant X3, mRNA
0		PREDICTED: Nomascus leucogenys filamin A, alpha (FLNA), mRNA
		PREDICTED: Gorilla gorilla filamin A (FLNA), transcript variant X1, mRNA
		PREDICTED: Pan troglodytes filamin A (FLNA), transcript variant X1, mRNA
Dans cet arbre, c'est bien le chimpanzé qui est le plus proche	le	PREDICTED: Pan paniscus filamin A (FLNA), mRNA
	ne	◆ Icl Query_121231
I Homme 😊		Homo sapiens filamin A (FLNA), transcript variant 2, mRNA

https://www.ncbi.nlm.nih.gov/gene https://blast.ncbi.nlm.nih.gov/Blast.cgi