Practical session:

Variants & diseases

- Exploring ClinGen and ClinVar resources to find out relationships between genetic diseases and genes/ variants implicated.

ClinVar

ClinVar | Search ClinVar for gene symbols, HGVS expressions, conditions, and more | Search

Advanced

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ClinVar

ClinVar aggregates information about genomic variation and its relationship to human health.

Using ClinVar

- About ClinVar
- Data Dictionary
- Downloads/FTP site
- FAQ
- Contact Us
- RSS feed/What's new?
- Factsheet

Tools

- ACMG Recommendations for Reporting of Incidental Findings
- ClinVar Submission Portal
- Submissions
- Variation Viewer
- Clinical Remapping - Between assemblies and RefSeqGenes
- RefSeqGene/LRG

Related Sites

- ClinGen
- GeneReviews ®
- GTR ®
- MedGen
- OMIM ®
- Variation

Example: Worflow for a monogenic disease: Gilbert's syndrome

	Variation *Location*	Gene(s)	Condition(s)	Clinical significance (Last reviewed)	Review status
1.	UGT1A1*28 *GRCh37:* Chr2:234668881-234668882 *GRCh38:* Chr2:233760235-233760236	UGT1A, UGT1A10, UGT1A8, UGT1A7, UGT1A6, UGT1A5, UGT1A9, UGT1A4, UGT1A1, UGT1A3	Bilirubin, serum level of, quantitative trait locus 1, Lucey-Driscoll syndrome, Crigler-Najjar syndrome, type II,	Conflicting interpretations of pathogenicity, Affects, association, drug response, other (Apr 4, 2018)	criteria provided, conflicting interpretations

Interpretation

Clinical significance:	Conflicting interpretations of pathogenicity, Affects, association, drug response, other Benign(1);Pathogenic(2)
Last evaluated:	Apr 4, 2018
Number of submission(s):	7
Condition(s):	• Bilirubin, serum level of, quantitative trait locus 1 [MedGen - OMIM] • Lucey-Driscoll syndrome [MedGen - Orphanet - OMIM] • Crigler-Najjar syndrome, type II [MedGen - Orphanet - OMIM] • Gilbert's syndrome [MedGen - OMIM] • Irinotecan response [MedGen]

See supporting ClinVar records

Assertion and evidence details

Clinical assertions | Summary evidence | Supporting observations

Allele(s)

UGT1A1*28

Allele ID:	27314
Variant type:	Duplication
Cytogenetic location:	2q37.1
Genomic location:	• Chr2: 233760235 - 233760236 (on Assembly GRCh38) • Chr2: 234668881 - 234668882 (on Assembly GRCh37)
Other names:	• A(TA)7TAA • (TA)7TAA
HGVS:	• NG_002601.2:g.175492_175493[8] • NG_033238.1:g.4963_4964[8] • NM_000463.2:c.-53_-52[8] ...more
Note:	Until October 16, 2017, this allele had conflicting molecular definitions. UGT1A1*28 is the allele with 8 copies of the TA repeat (1 copy more than reference). We deleted the representations that reported 7 copies and refreshed the database.
Links:	• OMIM: 191740.0011 • dbSNP: rs34983651 • dbSNP: rs606231201 • dbSNP: rs8175347
NCBI 1000 Genomes Browser:	rs34983651
Molecular consequence:	NM_000463.2:c.-41_-40dupTA: 2KB upstream variant [Sequence Ontology SO:0001636]

Explore ClinVar

Task: Create a **relational list**

Disease	Gene	Variant
Gilbert's syndrome	UGT1A	HGVS (id)
...	...	...
Thalassaemia		
Sickle cell anemia		
Haemophilia		
Cystic Fibrosis		
Tay sachs disease		
Fragile X syndrome		
Huntington's disease		

http://www.hgvs.org/mutnomen/recs-DNA.html

Explore the clinical relevance of genes & variants

ClinGen is a National Institutes of Health (NIH)-funded resource dedicated to building a central resource that defines the clinical relevance of genes and variants for use in precision medicine and research.

Search: Gene | Gene... | Go! | Browse Curations

ClinGen is defining the clinical relevance of genes and variants

ClinGen was founded in 2013 by the National Human Genome Research Institute, ClinGen is a growing collaborative effort, involving three grants, nine principal investigators and over 970 contributors from more than 29 countries. Below are a series of recent updates that ClinGen has been working on.

CFTR

Curation Status: Complete

id: ISCA-30165

Date last evaluated: 2016-08-22

Issue Type: ClinGen Gene Curation

Gene type: protein-coding

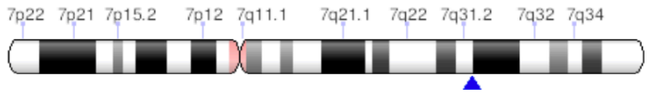
Entrez Gene: https://www.ncbi.nlm.nih.gov/gene/1080

OMIM: https://omim.org/entry/602421

Gene Reviews: https://www.ncbi.nlm.nih.gov/books/NBK1116/?term=CFTR%5Bgenesymbol%5D

ClinGen Haploinsufficiency Score: Gene associated with autosomal recessive phenotype

ClinGen Triplosensitivity Score: Not yet evaluated



Location Information

7q31.2

GRCh37/hg19 chr7: 117,120,017-117,308,719

View: NCBI | Ensembl | UCSC

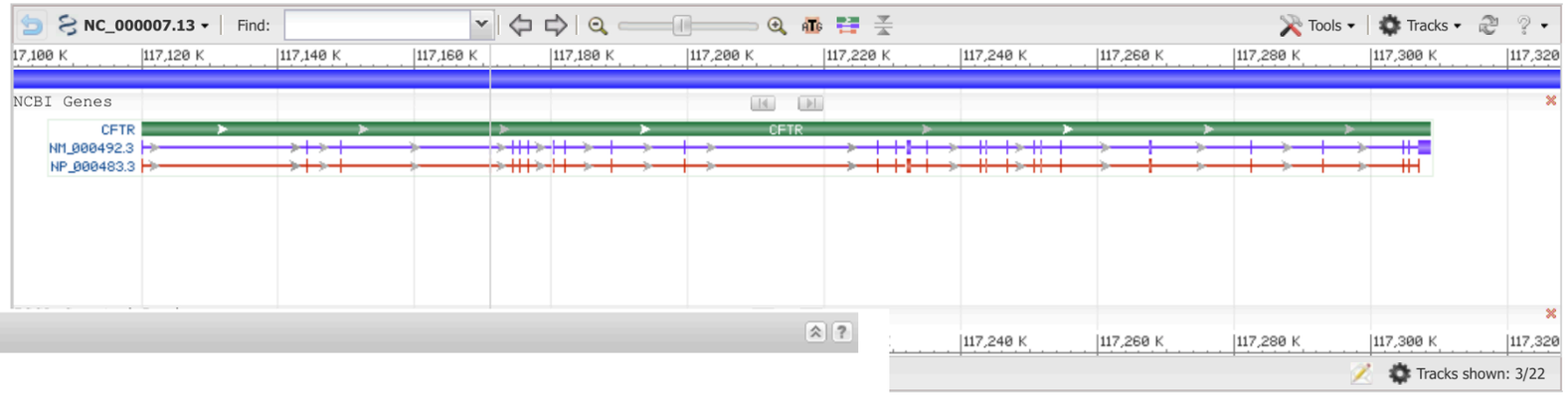
GRCh38/hg38 chr7: 117,478,367-117,668,665

View: NCBI | Ensembl | UCSC

Print Full Report

Genome View | Evidence for Haploinsufficiency Phenotypes | Evidence for Triplosensitive Phenotypes

Select assembly: GRCh37/hg19 chr7: 117,120,017-117,308,719 (NC_000007.13)



Phenotypes

Find tests for this gene in the NIH Genetic Testing Registry (GTR)

Review eQTL and phenotype association data in this region using PheGenI

Associated conditions

Description	Tests
Bronchiectasis with or without elevated sweat chloride 1 MedGen: C2749757, OMIM: 211400, GeneReviews: Not available	Compare labs
Congenital bilateral absence of the vas deferens MedGen: C0403814, OMIM: 277180, GeneReviews: Cystic Fibrosis and Congenital Absence of the Vas Deferens	Compare labs
Cystic fibrosis MedGen: C0010674, OMIM: 219700, GeneReviews: Cystic Fibrosis and Congenital Absence of the Vas Deferens	Compare labs
Hereditary pancreatitis MedGen: C0238339, OMIM: 167800, GeneReviews: PRSS1-Related Hereditary Pancreatitis, Pancreatitis Overview	Compare labs
Ivacaftor response MedGen: CN185459, GeneReviews: Not available	Compare labs

Explore ClinGen

Task: Create a **relational list**

Gene/locus	Gene name	Chromosomal location[#]	Gene product: protein function	Disease
CFTR	CF transmembrane conductance regulator	7q31.2	Ion channel: chloride transport	CF
SERPINEA1	α1-antitrypsin	14q32.13	Serine protease inhibitor	α1-antitrypsin deficiency (COPD, emphysema, liver disease)
DNAI1	Dynein, axonemal, intermediate chain 1	9p13.3	Dynein arm: ciliary function	CILD1, with or without situs inversus (Kartagener syndrome)
CYBB	p91-phox (phagocyte oxidase): beta subunit of cytochrome b, component of the phagocyte NADPH oxidase complex	Xp11.4	Killing of microbes in phagocytes by generation of reactive oxygen species	CGD, X-linked
CYBA	p22-phox (phagocyte oxidase): alpha subunit of cytochrome b, component of the phagocyte NADPH oxidase complex	16q24.3	Killing of microbes in phagocytes by generation of reactive oxygen species	CGD, autosomal recessive
SFTPC	Surfactant, pulmonary-associated protein C	8p21.3	Surfactant proteins are essential for lung function, preventing lung collapse by lowering surface tension	Respiratory distress syndrome of prematurity
SFTPB	Surfactant, pulmonary-associated protein B	2p11.2	Surfactant proteins are essential for lung function, preventing lung collapse by lowering surface tension	Respiratory distress syndrome of prematurity