CDC42EP1

Cdc42 effector protein 1 is a protein that in humans is encoded by the *CDC42EP1* gene.[5][6][7]

CDC42 is a member of the Rho GTPase family that regulates multiple cellular activities, including actin polymerization. The protein encoded by this gene is a CDC42 binding protein that mediates actin cytoskeleton reorganization at the plasma membrane. The encoded protein, which is secreted, is primarily found in bone marrow. Two transcript variants encoding different isoforms have been found for this gene.[7]

References

1. GRCh38: Ensembl release 89: ENSG00000128283 (http://M

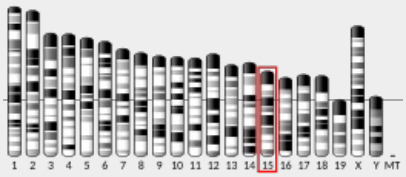
CDC42EP1

Identifiers	
Aliases	CDC42EP1 (https://www.genenames.org/data/gene-symbol-report/#!/hgnc_id/17014), BORG5, CEP1, MSE55, CDC42 effector protein 1
External IDs	OMIM: 606084 (https://omim.org/entry/606084); MGI: 1929763 (http://www.informatics.jax.org/marker/MGI:1929763); HomoloGene: 5128 (https://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=homologene&dopt=HomoloGene&list_uids=5128); GeneCards: CDC42EP1 (https://www.genecards.org/cgi-bin/carddisp.pl?gene=CDC42EP1); OMA:CDC42EP1 - orthologs (https://omabrowser.org/oma/vps/ENSG00000128283)

Gene location (Human)

Chr.	Chromosome 22 (human)[1]		
Band	22q13.1	**Start**	37,560,480 bp[1]
		End	37,569,405 bp[1]

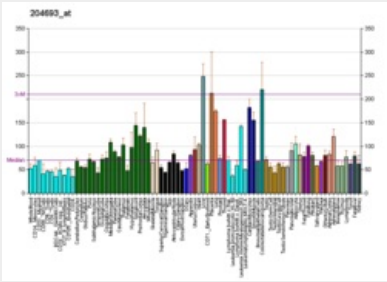
Gene location (Mouse)



Chr.	Chromosome 15 (mouse)[2]		
Band	15|15 E1	**Start**	78,726,824 bp[2]
		End	78,735,097 bp[2]

RNA expression pattern

Bgee (https://www.bgee.org/)	Human	Mouse (ortholog)
	Top expressed in (https://www.bgee.org/gene/ENSG00000128283)	Top expressed in (https://www.bgee.org/gene/ENSMUSG00000049521)
	▪ body of pancreas ▪ body of stomach ▪ C1 segment ▪ minor salivary glands ▪ right coronary artery ▪ left adrenal cortex ▪ left uterine tube ▪ right adrenal gland ▪ ascending aorta ▪ ectocervix	▪ epithelium of stomach ▪ left lung ▪ left lung lobe ▪ right lung ▪ lacrimal gland ▪ pyloric antrum ▪ white adipose tissue ▪ right lung lobe ▪ subcutaneous adipose tissue ▪ interventricular

	septum More reference expression data (https://www.bgee.org/gene/ENSG00000128283)
BioGPS (http://biogps.org/)	 More reference expression data (http://biogps.org/gene/11135/)

Gene ontology	
Molecular function	▪ protein binding (http://amigo.geneontology.org/amigo/term/GO:0005515) ▪ GTPase activator activity (http://amigo.geneontology.org/amigo/term/GO:0005096) ▪ cadherin binding involved in cell-cell adhesion (http://amigo.geneontology.org/amigo/term/GO:0098641)
Cellular component	▪ cytoskeleton (http://amigo.geneontology.org/amigo/term/GO:0005856) ▪ membrane (http://amigo.geneontology.org/amigo/term/GO:0016020) ▪ endomembrane system (http://amigo.geneontology.org/amigo/term/GO:0012505) ▪ focal adhesion (http://amigo.geneontology.org/amigo/term/GO:0005925) ▪ cytoplasm (http://amigo.geneontology.org/amigo/term/GO:0005737) ▪ plasma membrane (http://amigo.geneontology.org/amigo/term/GO:0005886)
Biological process	▪ positive regulation of pseudopodium assembly (http://amigo.geneontology.org/amigo/term/GO:0031274) ▪ positive regulation of actin filament polymerization (http://amigo.geneontology.org/amigo/term/GO:0030838) ▪ Rho protein signal transduction (http://amigo.geneontology.org/amigo/term/GO:0007266) ▪ regulation of cell shape (http://amigo.geneontology.org/amigo/term/GO:0008360) ▪ positive regulation of GTPase activity (http://amigo.geneontology.org/amigo/term/GO:0043547) ▪ cell-cell adhesion (http://amigo.geneontology.org/amigo/term/GO:0098609)

Sources:Amigo (http://amigo.geneontology.org/) / QuickGO (https://www.ebi.ac.uk/QuickGO/)

Orthologs		
Species	**Human**	**Mouse**
Entrez	11135 (https://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=gene&cmd=retrieve&dopt=default&list_uids=11135&rn=1)	104445 (https://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=gene&cmd=retrieve&dopt=default&list_uids=104445&rn=1)

Ensembl	ENSG00000128283 (http://www.ensembl.org/Homo_sapiens/geneview?gene=ENSG00000128283;db=core)	ENSMUSG00000049521 (http://www.ensembl.org/Mus_musculus/geneview?gene=ENSMUSG00000049521;db=core)
UniProt	Q00587 (https://www.uniprot.org/uniprot/Q00587)	Q91W92 (https://www.uniprot.org/uniprot/Q91W92)
RefSeq (mRNA)	NM_152243 (https://www.ncbi.nlm.nih.gov/entrez/viewer.fcgi?val=NM_152243)	NM_027219 (https://www.ncbi.nlm.nih.gov/entrez/viewer.fcgi?val=NM_027219)
RefSeq (protein)	NP_689449 (https://www.ncbi.nlm.nih.gov/entrez/viewer.fcgi?val=NP_689449)	NP_081495 (https://www.ncbi.nlm.nih.gov/entrez/viewer.fcgi?val=NP_081495)
Location (UCSC)	Chr 22: 37.56 – 37.57 Mb (https://genome.ucsc.edu/cgi-bin/hgTracks?org=Human&db=hg38&position=chr22:37560480-37569405)	Chr 15: 78.73 – 78.74 Mb (https://genome.ucsc.edu/cgi-bin/hgTracks?org=Mouse&db=mm0&position=chr15:78726824-78735097)
PubMed search	[3]	[4]
	Wikidata	
	View/Edit Human	View/Edit Mouse

ay2017.archive.ensembl.org/Homo_sapiens/Gene/Summary?db=core;g=ENSG00000128283) – Ensembl, May 2017

2. GRCm38: Ensembl release 89: ENSMUSG00000049521 (http://May2017.archive.ensembl.org/Mus_musculus/Gene/Summary?db=core;g=ENSMUSG00000049521) – Ensembl, May 2017
3. "Human PubMed Reference:" (https://www.ncbi.nlm.nih.gov/sites/entrez?db=gene&cmd=Link&LinkName=gene_pubmed&from_uid=11135). *National Center for Biotechnology Information, U.S. National Library of Medicine*.
4. "Mouse PubMed Reference:" (https://www.ncbi.nlm.nih.gov/sites/entrez?db=gene&cmd=Link&LinkName=gene_pubmed&from_uid=104445). *National Center for Biotechnology Information, U.S. National Library of Medicine*.
5. Bahou WF, Campbell AD, Wicha MS (Aug 1992). "cDNA cloning and molecular characterization of MSE55, a novel human serum constituent protein that displays bone marrow stromal/endothelial cell-specific expression" (https://doi.org/10.1016%2FS0021-9258%2819%2949667-1). *J Biol Chem*. **267** (20): 13986–92. doi:10.1016/S0021-9258(19)49667-1 (https://doi.org/10.1016%2FS0021-9258%2819%2949667-1). PMID 1629197 (https://pubmed.ncbi.nlm.nih.gov/1629197).
6. Burbelo PD, Snow DM, Bahou W, Spiegel S (Sep 1999). "MSE55, a Cdc42 effector protein, induces long cellular extensions in fibroblasts" (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC17736). *Proc Natl Acad Sci U S A*. **96** (16): 9083–8. Bibcode:1999PNAS...96.9083B (https://ui.adsabs.harvard.edu/abs/1999PNAS...96.9083B). doi:10.1073/pnas.96.16.9083 (https://doi.org/10.1073%2Fpnas.96.16.9083). PMC 17736 (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC17736). PMID 10430899 (https://pubmed.ncbi.nlm.nih.gov/10430899).
7. "Entrez Gene: CDC42EP1 CDC42 effector protein (Rho GTPase binding) 1" (https://www.ncbi.nlm.nih.gov/sites/entrez?Db=gene&Cmd=ShowDetailView&TermToSearch=11135).

External links

- Human *CDC42EP1* (https://genome.ucsc.edu/cgi-bin/hgTracks?db=hg38&singleSearch=knownCanonical&position=CDC42EP1) genome location and *CDC42EP1* (https://genome.ucsc.edu/cgi-bin/hgGene?db=hg38&hgg_type=knownGene&hgg_gene=CDC42EP1) gene details page in the UCSC Genome Browser.

Further reading

- Joberty G, Perlungher RR, Macara IG (2000). "The Borgs, a New Family of Cdc42 and TC10 GTPase-Interacting Proteins" (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC84628). *Mol. Cell. Biol.* **19** (10): 6585–97. doi:10.1128/MCB.19.10.6585 (https://doi.org/10.1128%2FMCB.19.10.6585). PMC 84628 (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC84628). PMID 10490598 (https://pubmed.ncbi.nlm.nih.gov/10490598).

/pmc/articles/PMC1356129). PMID 16344560 (https://pubmed.ncbi.nlm.nih.gov/16344560).

- Dunham I, Shimizu N, Roe BA, et al. (1999). "The DNA sequence of human chromosome 22" (https://doi.org/10.1038%2F990031). *Nature*. **402** (6761): 489–95. Bibcode:1999Natur.402..489D (https://ui.adsabs.harvard.edu/abs/1999Natur.402..489D). doi:10.1038/990031 (https://doi.org/10.1038%2F990031). PMID 10591208 (https://pubmed.ncbi.nlm.nih.gov/10591208).
- Hirsch DS, Pirone DM, Burbelo PD (2001). "A new family of Cdc42 effector proteins, CEPs, function in fibroblast and epithelial cell shape changes" (https://doi.org/10.1074%2Fjbc.M007039200). *J. Biol. Chem*. **276** (2): 875–83. doi:10.1074/jbc.M007039200 (https://doi.org/10.1074%2Fjbc.M007039200). PMID 11035016 (https://pubmed.ncbi.nlm.nih.gov/11035016).
- Strausberg RL, Feingold EA, Grouse LH, et al. (2003). "Generation and initial analysis of more than 15,000 full-length human and mouse cDNA sequences" (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC139241). *Proc. Natl. Acad. Sci. U.S.A*. **99** (26): 16899–903. Bibcode:2002PNAS...9916899M (https://ui.adsabs.harvard.edu/abs/2002PNAS...9916899M). doi:10.1073/pnas.242603899 (https://doi.org/10.1073%2Fpnas.242603899). PMC 139241 (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC139241). PMID 12477932 (https://pubmed.ncbi.nlm.nih.gov/12477932).
- Gevaert K, Goethals M, Martens L, et al. (2004). "Exploring proteomes and analyzing protein processing by mass spectrometric identification of sorted N-terminal peptides". *Nat. Biotechnol*. **21** (5): 566–9. doi:10.1038/nbt810 (https://doi.org/10.1038%2Fnbt810). PMID 12665801 (https://pubmed.ncbi.nlm.nih.gov/12665801). S2CID 23783563 (https://api.semanticscholar.org/CorpusID:23783563).
- Ballif BA, Villén J, Beausoleil SA, et al. (2005). "Phosphoproteomic analysis of the developing mouse brain" (https://doi.org/10.1074%2Fmcp.M400085-MCP200). *Mol. Cell. Proteomics*. **3** (11): 1093–101. doi:10.1074/mcp.M400085-MCP200 (https://doi.org/10.1074%2Fmcp.M400085-MCP200). PMID 15345747 (https://pubmed.ncbi.nlm.nih.gov/15345747).
- Collins JE, Wright CL, Edwards CA, et al. (2005). "A genome annotation-driven approach to cloning the human ORFeome" (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC545604). *Genome Biol*. **5** (10): R84. doi:10.1186/gb-2004-5-10-r84 (https://doi.org/10.1186%2Fgb-2004-5-10-r84). PMC 545604 (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC545604). PMID 15461802 (https://pubmed.ncbi.nlm.nih.gov/15461802).
- Gerhard DS, Wagner L, Feingold EA, et al. (2004). "The Status, Quality, and Expansion of the NIH Full-Length cDNA Project: The Mammalian Gene Collection (MGC)" (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC528928). *Genome Res*. **14** (10B): 2121–7. doi:10.1101/gr.2596504 (https://doi.org/10.1101%2Fgr.2596504). PMC 528928 (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC528928). PMID 15489334 (https://pubmed.ncbi.nlm.nih.gov/15489334).
- Zhang J, Zhu J, Bu X, et al. (2005). "Cdc42 and RhoB Activation Are Required for Mannose Receptor-mediated Phagocytosis by Human Alveolar Macrophages" (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC545914). *Mol. Biol. Cell*. **16** (2): 824–34. doi:10.1091/mbc.E04-06-0463 (https://doi.org/10.1091%2Fmbc.E04-06-0463). PMC 545914 (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC545914). PMID 15574879 (https://pubmed.ncbi.nlm.nih.gov/15574879).
- Rual JF, Venkatesan K, Hao T, et al. (2005). "Towards a proteome-scale map of the human protein-protein interaction network". *Nature*. **437** (7062): 1173–8. Bibcode:2005Natur.437.1173R (https://ui.adsabs.harvard.edu/abs/2005Natur.437.1173R). doi:10.1038/nature04209 (https://doi.org/10.1038%2Fnature04209). PMID 16189514 (https://pubmed.ncbi.nlm.nih.gov/16189514). S2CID 4427026 (https://api.semanticscholar.org/CorpusID:4427026).
- Kimura K, Wakamatsu A, Suzuki Y, et al. (2006). "Diversification of transcriptional modulation: Large-scale identification and characterization of putative alternative promoters of human genes" (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1356129). *Genome Res*. **16** (1): 55–65. doi:10.1101/gr.4039406 (https://doi.org/10.1101%2Fgr.4039406). PMC 1356129 (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1356129). PMID 16344560 (https://pubmed.ncbi.nlm.nih.gov/16344560).
- Olsen JV, Blagoev B, Gnad F, et al. (2006). "Global, in vivo, and site-specific phosphorylation dynamics in signaling networks" (https://doi.org/10.1016%2Fj.cell.2006.09.026). *Cell*. **127** (3): 635–48. doi:10.1016/j.cell.2006.09.026 (https://doi.org/10.1016%2Fj.cell.2006.09.026). PMID 17081983 (https://pubmed.ncbi.nlm.nih.gov/17081983).
