

Table 2. Human genes for calpains and their regulatory subunits

Gene	Chromosome location	Phenotype of gene deficiency in mice	Gene product name ^{a)}	Aliases	Classical calpain	Expression			Active site res. ^{b)}		Domains ^{c)}					
						Ubiquitous	Tissue-specific calpain	Note	Cys	His	Asn	C2L	C2	PEF		
<i>CAPN1</i>	11q13	platelet dysfunction	CAPN1	μ-calpain large subunit (μCL), calpain-1 μCANP/calpain-I large subunit, μ80K	✓	✓			+	+	+	+	-	+		
<i>CAPN2</i>	1q41-q42	embryonic lethal	CAPN2	m-calpain large subunit (mCL), calpain-2, mCANP/calpain-II large subunit, m80K	✓	✓			+	+	+	+	-	+		
<i>CAPN3</i>	15q15.1-q21.1	muscular dystrophy	CAPN3	p94, calpain-3, calpain-3a, nCL-1	✓		✓		+	+	+	+	-	+		
			(CAPN3:ex1B 2-5 7-14 17-24, CAPN3:ex1B 2-5 7-14 17 18B 19-24, etc.)	Lp82, Lp85, etc.	✓		✓		+	+	+	+	-	+		
			CAPN3:ex1-14 16-24	p94:Δex15	✓		✓		+	+	+	+	-	+		
			CAPN3:ex1C 2-14 16-24	Up84	✓	✓			+	+	+	+	-	+		
			CAPN3:ex1D 13-24	Tp36	✓		✓		-	-		+/-	-	-	+	
CAPN3:ex1E 19-24	Mp18	✓		✓		-	-	-	-	-	-	+/-	-			
<i>CAPN5</i>	11q14	sudden death?	CAPN5	calpain-5, hTRA-3, nCL-3		✓			+	+	+	+	+	-		
<i>CAPN6</i>	Xq23	n.r. ^{d)}	CAPN6	calpain-6, calpamodulin, CANPX			✓		-	+	+	+	+	-		
<i>CAPN7</i>	3p24	n.r.	CAPN7	calpain-7, PalBH			✓		+	+	+	++	-	-		
<i>CAPN8</i>	1q41	stress-induced gastric ulcer	CAPN8	nCL-2, calpain-8, calpain-8a	✓			+	+	+	+	-	+			
			CAPN8:ex1-9 10B	nCL-2', calpain-8b		✓		+	+	+	-	-	-			
<i>CAPN9</i>	1q42.11-q42.3	stress-induced gastric ulcer	CAPN9	nCL-4, calpain-9, calpain-9a	✓		✓		+	+	+	+	-	+		
			CAPN9:ex1-7 9-21	nCL-4:Δex8, calpain-9b	✓		✓		+	+	+	+	-	+		
<i>CAPN10</i>	2q37.3	no significant phenotype	CAPN10	calpain-10calpain-10a				+	+	+	++	-	-			
			CAPN10:ex1-8 9B 10	calpain-10b			+	+	+	+	-	-				
			CAPN10:ex1-7 10-12	calpain-10c			+	+	+	+	-	-				
			CAPN10:ex1-8 10	calpain-10d			+	+	+	+	-	-				
			CAPN10:ex1-7 7B	calpain-10e		✓	+	+	+	+/-	-	-				
			CAPN10:ex1-2 3B 4-6	calpain-10f			+	-	-	-	-	-				
			CAPN10:ex1-2 13-14	calpain-10g			-	-	-	+/-	-	-				
CAPN10:ex1 10-12	calpain-10h			-	-	-	+/-	-	-							
<i>CAPN11</i>	6p12	n.r.	CAPN11	calpain-11, μ/mCL (chicken)	✓		✓		+	+	+	+	-	+		
<i>CAPN12</i>	19q13.2	n.r.	CAPN12	calpain-12, calpain-12a, calpain-12A	✓			+	+	+	+	-	+			
			CAPN12:ex1-11 12B	calpain-12b, calpain-12B			+	+	+	+/-	-	-				
			CAPN12:ex1-11 13	calpain-12c, calpain-12C			+	+	+	+/-	-	-				
CAPN12:ex1-9 20-21	calpain-12d (mouse)			+	+	+	-	-	+/-							
<i>CAPN13</i>	2p22-p21	n.r.	CAPN13	calpain-13	✓	✓			+	+	+	+	-	+		
<i>CAPN14</i>	2p23.1-p21	n.r.	CAPN14	calpain-14	✓	✓			+	+	+	+	-	+		
<i>CAPN15</i> <i>[SOLH]</i>	16p13.3	n.r.	CAPN15	calpain-15, SOLH		✓			+	+	+	-	-	-		
<i>CAPN16</i> <i>[C6orf103]</i>	6q24.3	n.r.	CAPN16	Demi-calpain, calpain-16, C6orf103		✓			+	-	-	-	-	-		
<i>CAPNS1</i>	19q13.1	embryonic lethal	CAPNS1	CANP/calpain small subunit, 30K, css1, calpain-s1, calpain-4, CAPN4	e)	✓			/	/	/	/	/	-	-	+
<i>CAPNS2</i>	16q12.2	n.r.	CAPNS2	calpain small subunit 2, 30K-2, css2, calpain-s2	e)	✓			/	/	/	/	/	-	-	+
<i>CAST</i>	5q14-q22	excitotoxicity	calpastatin	CANP inhibitor, CAST	e)	✓			/	/	/	/	/	-	-	-

^{a)} Splicing variant products are expressed as exon (ex) numbers used for translation. Exon numbers 1, 2, 3, etc. correspond to the representative transcripts that generate the longest polypeptide (thus, exons 8-15 of CAPN10 in the original report (Horikawa et al., 2000) are renumbered as exons 7B, 9-14 here). If alternative exons are used, they are shown as ex1B, 1C, 12B etc. (number 1 indicates the initiation exon).

^{b)} + indicates that the molecule has a well-conserved amino acid residue at the indicated position in the active site triad, and - means that it has another amino acid at that position.

^{c)} + or - indicates that the molecule has, or does not have, a corresponding domain, and +/- indicates that it contains one or more (but fewer than five) EF-hand motifs. For acronyms, see Fig. 1.

^{d)} not yet reported.

^{e)} CAPNS1, CAPNS2, and CAST are not “calpains” according to the definition adopted in this web site.