

Enzyme	Synonyms	Latent Form MW _{appr} (kDa)	Activating Agent	Conditions	Activation Termination	Active Form MW _{appr} (kDa)			Mature Active Form N-terminal sequence	Relative Activation Level	Reference		
						Intermediates	Mature Form	Calculated					
MMP-1	Collagenase-I, Fibroblast Collagenase, Intersitital Collagenase	57 ^{Gly} & 52 aa=51.8 acGly~1x5	APMA, 1mM	37°C, 2-4h	A	44	43	42.5	V ⁸² LTEG & L ⁸³ TEGN	1x	Grant et al., jbc 1987, 262, 5886; Fields et al. Biochemistry 1990, 29, 6671; Windsor et al., JBC 1994, 269,26201; Goldberg et al., JBC 1986, 261, 6600		
			Trypsin ^{TPCK} , 10 µg/ml	25°C, 10-20 min	B	47							
			active-MMP-7 (1:1 molar ratio)	37°C, slow	C		43	42.6	F ⁸¹ VLTEG	low			
			APMA 1mM + MMP-7 (1:1)	37°C, 2-6h						6.5x			
			active-MMP-3	37°C; slow					43	42.6		F ⁸¹ VLTEG	low
			APMA 1mM + active-MMP-3	37°C					41 ^{C-term}	40.8			5-8x
MMP-2	Gelatinase A, 72kDa Gelatinase, Type IV Collagenase	72 aa=71.0	APMA, 1mM	37°C, 1-2h	A		62	62.1	Y ⁸¹ NFFPR	1x	Stetler-Stevenson et al., jbc 1989, 264, 1353; Nagase et al., Matrix Suppl. 1992 1:237 Crabbe FEBS Lett 1994 345 14, Okada Eur j biochem 1990 194 721		
			Trypsin ^{TPCK} , 10 µg/ml	does not activate									
			active-MMP-3	does not activate									
			active-MMP-7	37°C, 8h	C	?			n.d.	0.6x			
MMP-3	Stromelysin-1	(59 & 57) ^{Gly} aa=52.2 acGly~1x5	APMA, 1mM	37°C, 6-12h	A	46	47 ^{Gly} & 45	42.8	F ⁸³ RTFPG	1x	Galazka bioch 1996 1996/34/11221; Nagase,bioch 1990/29/ 5783; Chen et al Biochem 1993/39/10289 Docherty, Murphy Ann Rheum.Dis 1990/49/469 Harrison, etal. Biochem 31,1992, 10757		
			Trypsin ^{TPCK} , 10µg/ml	37°C, 30min	B	53	47 ^{Gly} & 45	42.8	F ⁸³ RTFPG	1x			
			active-MMP-7	does not activate									
MMP-7	Matrilysin, PUMP	28 aa=27.9	APMA, 1mM	37°C, 1h	A		19	19.1	Y ⁷⁸ SLFPNS	1x	Imai et al., JBC270/95/6691 Crabbe, et.al. Biochem. 31,1992,8500		
			Trypsin ^{TPCK} , 10µg/ml	37°C, 1-2h	B								
			MMP-3 (5x molar excess)	37°C, 8-16h	C								

MMP-8	Collagenase-2, Neutrophil collagenase	(75 & 58 ^{N-trm} _{Gly} aa=51.1 ppGly~2x5 acGly~3x5	APMA, 1mM	37°C, 1-3h	A		58 ^{Gly}	41.9	M ⁸⁰ LTPGNP & L ⁸¹ TPGNP	1x	Mallya Biochem 1990/29/10628; Tschesche Matrix Suppl. 1992 1/245
			Trypsin ^{TPCK} , 10µg/ml	37°C, slow	B					Slow	
			MMP-3		C		58 ^{Gly}	41.9	F ⁷⁹ MLTPGNP	Superact.	Knauper, Biochem J. 1993/295/581; Reinemer, FEBS Lett. 1994/338/227; Farr et al Biochem. 1999; 38, 7332
MMP-9	92kDa Gelatinase, Gelatinase B	92 ^{Gly} aa=76.3 ppGly~1x5 acGly~2x5	APMA, 1mM	37°C, 16-24h	A	83	67	66.6*	M ⁷⁵ RTPR	1x	Wilhelm et al., 1989, Imai, JBC270/'95/6691; Okada, JBC267,'92, 21712; Shapiro JBC 270,1995,6351
			Trypsin ^{TPCK} , 10 µg/ml	37°C, 2h	B	74 & 68	64	66.6*	A ⁷⁴ MRTPR; C-term cleavage	1x	Tschesche et al.1992, Matrix Supp 1. 245, Okada, JBC267/'92/21712
			activeMMP-7 1:1	37°C, 4h	C	83 & 80	78	74.6*	L ¹⁶ RTNL; C-term cleavage	0.25x	Imai, jbc270/1995/6691
			APMA, 1mM + activeMMP-7 (1:1)	37°C, 12h		83	62	66.6*	M ⁷⁵ RTPR & F ⁸⁸ QTFE; C- term cleavage	0.7x	Imai, jbc270/1995/6691
			Active MMP-3 (1:1)	37°C, 1-2h		82 (70)	67 (64)	66.6*	F ⁸⁸ QTFE; N-term & C- term cleavage	1x	Okada, JBC267/'92/21712; Shapiro JBC 270,1995,6351
MMP-10	Stromelysin-2		Same as MMP-3								
MMP-11	Stromelysin-3	62	APMA	does not activate							Santavicca Biochem J 1996 315, 953
			Furin	intracellularly			47			1x	
MMP-12	macrophage metalloelastase	54	Autolytic	Refolding in Ca ²⁺ /Zn ²⁺ buffer		45	22		N-tem & C- term cleavage	1x	Shapiro et al., JBC 267/ '92/ 4664
MMP-13	Collagenase -III	60	APMA, 1mM	37°C, 30-60 min	A				Y85NVFPRT	1x	Knauper et al., JBC 271/'96/1544
			MMP-3 (1/10 moles)	37°C; 3-7h	C			48		1x	
			Trypsin ^{TPCK} , 10 µg/ml	37°C: 10-30 min	B					1x	
MMP-14	MT1-MMP	31 ^{rProCatDom.}	APMA	Does not activate					YAIGGLKW		Will et al., JBC 271/'96/17119 Pei and Weiss. JBC 271/ '96/ 9135
			Furin	Intracellularly				25 & 23 ^{C-term} trunc			
			Trypsin ^{TPCK} , 5 µg/ml	25°C; 10-60 min	B					1x	
MMP-15	MT2-MMP	33 ^{rProCatDom.}	Autolytic for rPro	Refolding in Ca ²⁺ /Zn ²⁺ buffer		30	24 & 22		L84 & L93	1x	Kolkenbrock et al., Biol.Chem. 378/ '97/ 71
MMP-16	MT3-MMP	rProCatDom	Autolytic for rPro	Refolding in Ca ²⁺ /Zn ²⁺ buffer			21		L91		Shofuda et al. JBC 272/ '97/ 9749
MMP-17	MT4-MMP	rProCatDom	Trypsin ^{TPCK} , 5 µg/ml	25°C; 30-120 min			24				Takino et al., JBC 270/ '95/ 23013
MMP-24	MT5-MMP	63	nd	Intracellularly		40-46	29				Pei JBC 274/ '99/ 8925

Activation & Reaction Buffer**50mM Tris; 0.15M NaCl; 5.0mM CaCl₂; 0.05% Brij 35****Activation Termination:****A Spin column****B PMSF 2mM; Aprotinin 10 µg/ml; Soybean Trypsin Inhibitor 2-10x of the Trypsin amount****C EDTA 20mM; o-Phenantroline 1 mM (will inactivate the enzyme MMP and the activator MMP)**