

MMP9 Monoclonal Antibody (GE-213)

Catalog NumberMA5-13595

Product data sheet

Details		Species Reactivity	
Size	500 µL	Species reactivity	Human
Host/Isotope	Mouse / IgG1	Published species	Rat, Human, Mouse, Not Applicable
Class	Monoclonal	Tested Applications	
Type	Antibody	Inhibition Assays (IA)	Dilution *2-4 µg/mL
Clone	GE-213	Immunohistochemistry (Frozen) (IHC (F))	Assay-dependent
Immunogen	Purified human MMP-9	Immunoprecipitation (IP)	2 µg/mL
Conjugate	Unconjugated	Published Applications	
Form	Liquid	Immunohistochemistry (IHC)	See 33 publications below
Concentration	0.2 mg/mL	Neutralization (Neu)	See 1 publications below
Purification	Protein G	Immunocytochemistry (ICC/IF)	See 5 publications below
Storage buffer	PBS, pH 7.4, with 0.2% BSA	Western Blot (WB)	See 8 publications below
Contains	0.09% sodium azide	* Suggested working dilutions are given as a guide only. It is recommended that the user titrate the product for use in their own experiment using appropriate negative and positive controls.	
Storage Conditions	4° C		

Product specific information

MA5-13595 targets MMP-9 (92kDa Collagenase IV) in IA, IHC (F), and IP applications and shows reactivity with Human samples. The MA5-13595 immunogen is purified human MMP-9.

Background/Target Information

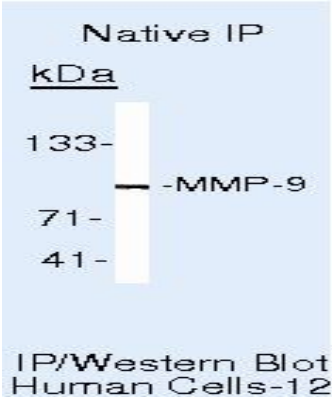
MMP9 (matrix metalloproteinase 9, GELB, CLG4B) is a matrix metalloproteinase, a family of zinc and calcium-dependent endopeptidases that degrade extracellular matrix proteins. MMP9 is secreted as a 92kDa zymogen and cleavage of pro-MMP9 results in the active enzyme with a molecular weight of 82kDa. MMP9 has a gelatin-binding domain consisting of three fibronectin type II units, a catalytic domain containing the zinc-binding site, a proline-rich type V collagen-homologous domain and a hemopexin-like domain. MMP9 is produced by monocytes, macrophages, neutrophils, keratinocytes, fibroblasts, osteoclasts and endothelial cells, and is involved in inflammatory responses, tissue remodeling, wound healing, tumor growth and metastasis. MMP9 is supplied by bone marrow-derived cells and contributes to skin carcinogenesis. Further, MMP9 degrades type IV and V collagens. Studies in rhesus monkeys suggest that the enzyme is involved in IL-8-induced mobilization of hematopoietic progenitor cells from bone marrow, and murine studies suggest a role in tumor-associated tissue remodeling. Studies have shown that elevated MMP9 is associated with progression of idiopathic atrial fibrillation and aortic aneurysm.

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**MMP9 Antibody (MA5-13595) in IP**  
Immunoprecipitation of MMP-9 (92kDa Collagenase IV) using MMP-9 (92kDa Collagenase IV) Monoclonal Antibody (Product # MA5-13595) on Native Human HT1080-TPA (Medium) Cells.

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PubMed References For MMP9 Monoclonal Antibody (GE-213)

33 Immunohistochemistry References

Species / Dilution	Summary
	MA5-13595 was used in immunohistochemistry to study expression and role of MMP19 during the progression of melanoma
Human / Not Cited	Modern pathology : an official journal of the United States and Canadian Academy of Pathology, Inc ( 2010; 23: 511) <b>"MMP19 is upregulated during melanoma progression and increases invasion of melanoma cells."</b> Author(s):Müller M,Beck IM,Gadesmann J,Karschuk N,Paschen A,Proksch E,Djonov V,Reiss K,Sedlacek R PubMed Article URL: <a href="http://dx.doi.org/10.1038/modpathol.2009.183">http://dx.doi.org/10.1038/modpathol.2009.183</a>
	MA5-13595 was used in immunohistochemistry and western blot to study the role of MMP-9 in the ex vivo expansion of human limbal explants with or without amniotic membrane
Human / 1:100	Investigative ophthalmology & visual science ( 2005; 46: 808) <b>"Role of matrix metalloproteinase-9 in ex vivo expansion of human limbal epithelial cells cultured on human amniotic membrane."</b> Author(s):Sun CC,Cheng CY,Chien CS,Pang JH,Ku WC,Chen PY,Yang CM PubMed Article URL: <a href="http://dx.doi.org/10.1167/iov.04-0370">http://dx.doi.org/10.1167/iov.04-0370</a>
	MA5-13595 was used in immunohistochemistry to study MMP9 expression in pleural effusions of tuberculosis and lung cancer
Human / Not Cited	Respiration; international review of thoracic diseases ( 2005; 72: 166) <b>"Expression of matrix metalloproteinase-9 in pleural effusions of tuberculosis and lung cancer."</b> Author(s):Park KJ,Hwang SC,Sheen SS,Oh YJ,Han JH,Lee KB PubMed Article URL: <a href="http://dx.doi.org/10.1159/000084048">http://dx.doi.org/10.1159/000084048</a>
	MA5-13595 was used in immunohistochemistry to study the expression of LGR8, VEGF, MMP-2, MMP-9, fascin-1 and cortactin in hepatocellular carcinoma and their relationship with clinicopathology
Human / 1:100	The Chinese journal of physiology ( 2011; 54: 161) <b>"Expression of LGR8 and related biomarkers in hepatocellular carcinoma: correlation with clinicopathological parameters."</b> Author(s):Lin CK,Jin JS,Yu CP,Tsai WC PubMed Article URL: <a href="http://dx.doi.org/10.4077/cjp.2011.amm021">http://dx.doi.org/10.4077/cjp.2011.amm021</a>
	MA5-13595 was used in immunohistochemistry to study the role of MMP-9 and TIMP-1 imbalance in metastasis and poor prognosis in gastric carcinoma
Human / 1:10	World journal of gastroenterology ( 2003; 9: 899) <b>"Imbalance between expression of matrix metalloproteinase-9 and tissue inhibitor of metalloproteinase-1 in invasiveness and metastasis of human gastric carcinoma."</b> Author(s):Zhang S,Li L,Lin JY,Lin H PubMed Article URL: <a href="http://dx.doi.org/10.3748/wjg.v9.i5.899">http://dx.doi.org/10.3748/wjg.v9.i5.899</a>
	MA5-13595 was used in Immunohistochemistry to show that, with its antioxidant and anti-inflammatory properties, G. Lucidum is an important factor in the treatment of calvarial bone defects.
Rat / 1:200	Acta chirurgica brasileira ( 2019; 34: ) <b>"Ganoderma lucidum, a promising agent possessing antioxidant and anti-inflammatory effects for treating calvarial defects with graft application in rats."</b> Author(s):Laçin N,zol SB,pek F,Tuncer MC PubMed Article URL: <a href="http://dx.doi.org/10.1590/s0102-865020190090000004">http://dx.doi.org/10.1590/s0102-865020190090000004</a>
	MA5-13595 was used in immunohistochemistry to investigate the prediction of lymph node metastasis in human breast cancer through CXCR4, VEGF, and MMP-9
Human / Not Cited	Cancer letters ( 2007; 253: 34) <b>"Recombination of CXCR4, VEGF, and MMP-9 predicting lymph node metastasis in human breast cancer."</b> Author(s):Hao L,Zhang C,Qiu Y,Wang L,Luo Y,Jin M,Zhang Y,Guo TB,Matsushima K,Zhang Y PubMed Article URL: <a href="http://dx.doi.org/10.1016/j.canlet.2007.01.005">http://dx.doi.org/10.1016/j.canlet.2007.01.005</a>
	MA5-13595 was used in immunohistochemistry to study the expression of MMPs and TIMPs in different histological subtypes of breast cancer
Human / 1:100	Journal of cancer research and clinical oncology ( 2010; 136: 811) <b>"Expression of metalloproteases and their inhibitors in different histological types of breast cancer."</b> Author(s):Del Casar JM,González-Reyes S,González LO,González JM,Junquera S,Bongera M,García MF,Andicoechea A,Serra C,Vizoso FJ PubMed Article URL: <a href="http://dx.doi.org/10.1007/s00432-009-0721-2">http://dx.doi.org/10.1007/s00432-009-0721-2</a>

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	MA5-13595 was used in immunohistochemistry to study the expression of MMPs and TIMPs in prostate cancer
Human / 1:100	British journal of cancer ( 2010; 102: 922) <b>"Study of matrix metalloproteinases and their inhibitors in prostate cancer."</b> Author(s):Escaff S,Fernández JM,González LO,Suárez A,González-Reyes S,González JM,Vizoso FJ PubMed Article URL: <a href="http://dx.doi.org/10.1038/sj.bjc.6605569">http://dx.doi.org/10.1038/sj.bjc.6605569</a>
Human / 1:100	MA5-13595 was used in immunohistochemistry to use cDNA arrays to study the distinct gene expression profiles of esophageal squamous cell carcinoma cells and the surrounding normal tissue  The Tohoku journal of experimental medicine ( 2012; 226: 301) <b>"Identification of distinct gene expression profiles between esophageal squamous cell carcinoma and adjacent normal epithelial tissues."</b> Author(s):Tao Y,Chai D,Ma L,Zhang T,Feng Z,Cheng Z,Wu S,Qin Y,Lai M PubMed Article URL: <a href="http://dx.doi.org/10.1620/tjem.226.301">http://dx.doi.org/10.1620/tjem.226.301</a>
Human / 1:50	MA5-13595 was used in immunohistochemistry to study effect of photodynamic therapy on the expression of MMPs by photo-damaged skin  The British journal of dermatology ( 2009; 161: 647) <b>"Immunohistochemical expression of matrix metalloproteinases in photodamaged skin by photodynamic therapy."</b> Author(s):Almeida Issa MC,Piñeiro-Maceira J,Farias RE,Pureza M,Raggio Luiz R,Manela-Azulay M PubMed Article URL: <a href="http://dx.doi.org/10.1111/j.1365-2133.2009.09326.x">http://dx.doi.org/10.1111/j.1365-2133.2009.09326.x</a>
Human / 1:1000	MA5-13595 was used in immunohistochemistry to study the role of MMP-8 in tongue cancer  British journal of cancer ( 2008; 98: 766) <b>"Collagenase-2 (matrix metalloproteinase-8) plays a protective role in tongue cancer."</b> Author(s):Korpi JT,Kervinen V,Mäklin H,Väänänen A,Lahtinen M,Läärä E,Ristimäki A,Thomas G,Ylipalosaari M,Aström P,Lopez-Otin C,Sorsa T,Kantola S,Pirilä E,Salo T PubMed Article URL: <a href="http://dx.doi.org/10.1038/sj.bjc.6604239">http://dx.doi.org/10.1038/sj.bjc.6604239</a>
Human / 15 µg/mL	MA5-13595 was used in immunohistochemistry to study the significance of MMP9 and CD34 expression and DNA content in esophageal carcinoma  Journal of clinical gastroenterology ( 2005; 39: 791) <b>"Significance of matrix metalloproteinase 9 and CD34 expressions in esophageal carcinoma: correlation with DNA content."</b> Author(s):El-Kenawy Ael-M,Lotfy M,El-Kott A,El-Shahat M PubMed Article URL: <a href="http://dx.doi.org/10.1097/01.mcg.0000177244.59591.c3">http://dx.doi.org/10.1097/01.mcg.0000177244.59591.c3</a>
Human / Not Cited	MA5-13595 was used in immunohistochemistry to study the association between testicular aryl hydrocarbon receptor levels and idiopathic male infertility  The Science of the total environment ( 2011; 409: 3267) <b>"Association between testicular Aryl hydrocarbon Receptor levels and idiopathic male infertility: a case-control study in Iran."</b> Author(s):Bidgoli SA,Karimi M,Asami Z,Baher H,Djamali Zavarhei M PubMed Article URL: <a href="http://dx.doi.org/10.1016/j.scitotenv.2011.03.024">http://dx.doi.org/10.1016/j.scitotenv.2011.03.024</a>
Human / 1:100	MA5-13595 was used in immunohistochemistry to study the expression of MMPs and TIMPs in the chamber angle of normal eyes and patients with primary open-angle glaucoma and exfoliation glaucoma  Graefe's archive for clinical and experimental ophthalmology = Albrecht von Graefes Archiv fur klinische und experimentelle Ophthalmologie ( 2007; 245: 697) <b>"Matrix metalloproteinases and their inhibitors in the chamber angle of normal eyes and patients with primary open-angle glaucoma and exfoliation glaucoma."</b> Author(s):Rönkkö S,Rekonen P,Kaarniranta K,Puustjärvi T,Teräsvirta M,Uusitalo H PubMed Article URL: <a href="http://dx.doi.org/10.1007/s00417-006-0440-1">http://dx.doi.org/10.1007/s00417-006-0440-1</a>
Human / Not Cited	MA5-13595 was used in immunohistochemistry to study the therapeutic effects and mechanisms of a CD147/HAb18 monoclonal antibody in a SCID mouse model of rheumatoid arthritis  Rheumatology (Oxford, England) ( 2009; 48: 721) <b>"Inhibitory effect of CD147/HAb18 monoclonal antibody on cartilage erosion and synovitis in the SCID mouse model for rheumatoid arthritis."</b> Author(s):Jia J,Wang C,Shi Z,Zhao J,Jia Y,Zhao-Hui Z,Li X,Chen Z,Zhu P PubMed Article URL: <a href="http://dx.doi.org/10.1093/rheumatology/kep099">http://dx.doi.org/10.1093/rheumatology/kep099</a>
Human / 1:100	MA5-13595 was used in immunohistochemistry to study the role of MMPs and TIMPs in breast cancer  British journal of cancer ( 2007; 96: 903) <b>"Study of matrix metalloproteinases and their inhibitors in breast cancer."</b> Author(s):Vizoso FJ,González LO,Corte MD,Rodríguez JC,Vázquez J,Lamelas ML,Junquera S,Merino AM,García-Muñiz JL PubMed Article URL: <a href="http://dx.doi.org/10.1038/sj.bjc.6603666">http://dx.doi.org/10.1038/sj.bjc.6603666</a>

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	MA5-13595 was used in immunohistochemistry to study changes in corneal extracellular matrix and MMPs following complicated laser-assisted in situ keratomileusis
Human / Not Cited	Cornea ( 2002; 21: 95) <b>"Extracellular matrix and matrix metalloproteinase changes in human corneas after complicated laser-assisted in situ keratomileusis (LASIK)."</b> Author(s):Maguen E,Zorapapel NC,Zieske JD,Ninomiya Y,Sado Y,Kenney MC,Ljubimov AV PubMed Article URL: <a href="http://dx.doi.org/10.1097/00003226-200201000-00020">http://dx.doi.org/10.1097/00003226-200201000-00020</a>
	MA5-13595 was used in immunohistochemistry to study the expression of Nogo-B in coronary arteries during the progression of atherosclerosis
Human / Not Cited	Journal of Korean medical science ( 2009; 24: 596) <b>"Atherosclerotic progression attenuates the expression of Nogo-B in autopsied coronary artery: pathology and virtual histology intravascular ultrasound analysis."</b> Author(s):Lee WS,Kim SW,Hong SA, Lee TJ,Park ES,Kim HJ, Lee KJ,Kim TH,Kim CJ,Ryu WS PubMed Article URL: <a href="http://dx.doi.org/10.3346/jkms.2009.24.4.596">http://dx.doi.org/10.3346/jkms.2009.24.4.596</a>
	MA5-13595 was used in immunohistochemistry to study the prognostic value of TGF-alpha, COX-2, MMP7, MMP9 and CXCR4 in patients with gastric cancer
Human / 1:200	Histopathology ( 2012; 61: 153) <b>"The influence of transforming growth factor-, cyclooxygenase-2, matrix metalloproteinase (MMP)-7, MMP-9 and CXCR4 proteins involved in epithelial-mesenchymal transition on overall survival of patients with gastric cancer."</b> Author(s):Fanelli MF,Chinen LT,Begnami MD,Costa WL,Fregnami JH,Soares FA, Montagnini AL PubMed Article URL: <a href="http://dx.doi.org/10.1111/j.1365-2559.2011.04139.x">http://dx.doi.org/10.1111/j.1365-2559.2011.04139.x</a>
	MA5-13595 was used in immunohistochemistry to study the immunohistochemical expression of MMPs and TIMPs in different types of breast carcinoma
Human / 1:100	Human pathology ( 2010; 41: 980) <b>"Immunohistochemical study of matrix metalloproteinases and their inhibitors in pure and mixed invasive and in situ ductal carcinomas of the breast."</b> Author(s):Gonzalez LO,Junquera S,del Casar JM,González L,Marín L,González-Reyes S,Andicoechea A,González-Fernández R,González JM,Pérez-Fernández R,Vizoso FJ PubMed Article URL: <a href="http://dx.doi.org/10.1016/j.humpath.2009.08.027">http://dx.doi.org/10.1016/j.humpath.2009.08.027</a>
	MA5-13595 was used in immunohistochemistry to study the progression of fibroatheromas in the general population using autopsied coronary arteries
Human / Not Cited	Korean circulation journal ( 2009; 39: 399) <b>"Progression and observational frequency of atheromatous plaques in autopsied coronary arteries."</b> Author(s):Lee WS,Kim SW,Ryu WS PubMed Article URL: <a href="http://dx.doi.org/10.4070/kcj.2009.39.10.399">http://dx.doi.org/10.4070/kcj.2009.39.10.399</a>
	MA5-13595 was used in immunohistochemistry to investigate the expression and role of multiple proteins in ovarian epithelial cancer at various stages
Human / 1:200	Annals of diagnostic pathology ( 2010; 14: 387) <b>"Immunohistochemical expression of epidermal growth factor receptor, E-cadherin, and matrix metalloproteinase-9 in ovarian epithelial cancer and relation to patient deaths."</b> Author(s):Alshenawy HA PubMed Article URL: <a href="http://dx.doi.org/10.1016/j.anndiagpath.2010.05.005">http://dx.doi.org/10.1016/j.anndiagpath.2010.05.005</a>
	MA5-13595 was used in immunohistochemistry to study the correlation of clinicopathology with the expression of six biomarkers in the four most common ovarian cancers
Human / 1:100	APMIS : acta pathologica, microbiologica, et immunologica Scandinavica ( 2009; 117: 162) <b>"The expression of six biomarkers in the four most common ovarian cancers: correlation with clinicopathological parameters."</b> Author(s):Lin CK,Chao TK,Yu CP,Yu MH,Jin JS PubMed Article URL: <a href="http://dx.doi.org/10.1111/j.1600-0463.2008.00003.x">http://dx.doi.org/10.1111/j.1600-0463.2008.00003.x</a>
	MA5-13595 was used in immunohistochemistry to study the prognostic value of MMP-9 activity in T3-T4 node-negative colorectal cancer
Human / 1:300	Human pathology ( 2007; 38: 1603) <b>"Matrix metalloproteinase-9 activity is associated with poor prognosis in T3-T4 node-negative colorectal cancer."</b> Author(s):Cho YB, Lee WY,Song SY,Shin HJ,Yun SH,Chun HK PubMed Article URL: <a href="http://dx.doi.org/10.1016/j.humpath.2007.03.018">http://dx.doi.org/10.1016/j.humpath.2007.03.018</a>

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	MA5-13595 was used in immunohistochemistry to study the immunohistochemical expression of MMPs and TIMPs in ductal carcinoma in situ of the breast
Human / 1:100	Journal of cancer research and clinical oncology ( 2010; 136: 1313) <b>"Expression of metalloproteases and their inhibitors by tumor and stromal cells in ductal carcinoma in situ of the breast and their relationship with microinvasive events."</b> Author(s):González LO,González-Reyes S,Junquera S,Marín L,González L,Del Casar JM,González JM,Vizoso F PubMed Article URL: <a href="http://dx.doi.org/10.1007/s00432-010-0782-2">http://dx.doi.org/10.1007/s00432-010-0782-2</a>
	MA5-13595 was used in immunohistochemistry to study the role of lipocalin-2 in blocking MMP-9 autodegradation and the significance for gastric cancer progression
Human / 1:400	European journal of cancer (Oxford, England : 1990) ( 2007; 43: 1869) <b>"Clinical evidence for a protective role of lipocalin-2 against MMP-9 autodegradation and the impact for gastric cancer."</b> Author(s):Kubben FJ,Sier CF,Hawinkels LJ,Tschesche H,van Duijn W,Zuidwijk K,van der Reijden JJ,Hanemaaijer R,Griffioen G,Lamers CB,Verspaget HW PubMed Article URL: <a href="http://dx.doi.org/10.1016/j.ejca.2007.05.013">http://dx.doi.org/10.1016/j.ejca.2007.05.013</a>
	MA5-13595 was used in immunohistochemistry to study the expression of a range of invasion-related proteins in Chinese patients with invasive ductal breast carcinomas
Human / Not Cited	Chinese medical journal ( 2007; 120: 1597) <b>"Expression of E-cadherin, beta-catenin, cathepsin D, gelatinases and their inhibitors in invasive ductal breast carcinomas."</b> Author(s):Zhang YG,DU J,Tian XX,Zhong YF,Fang WG PubMed Article URL: <a href="http://www.ncbi.nlm.nih.gov/pubmed/17908479">http://www.ncbi.nlm.nih.gov/pubmed/17908479</a>
	MA5-13595 was used in immunohistochemistry to value of tumor MMP9 and TIMP1 levels for predicting tumor recurrence in patients undergoing curative resection for gastric carcinoma
Human / 1:10	Digestive diseases and sciences ( 2007; 52: 753) <b>"Usefulness of MMP-9/TIMP-1 in predicting tumor recurrence in patients undergoing curative surgical resection for gastric carcinoma."</b> Author(s):Seo YS,Park JJ,Kim JH,Kim JY,Yeon JE,Kim JS,Byun KS,Bak YT PubMed Article URL: <a href="http://dx.doi.org/10.1007/s10620-006-9535-0">http://dx.doi.org/10.1007/s10620-006-9535-0</a>
	MA5-13595 was used in immunohistochemistry to study the clinical significance MMP and TIMP expression by intratumor stromal and invasive front fibroblasts in breast carcinoma
Human / 1:100	Breast cancer research and treatment ( 2009; 116: 39) <b>"Comparative analysis and clinical value of the expression of metalloproteases and their inhibitors by intratumor stromal fibroblasts and those at the invasive front of breast carcinomas."</b> Author(s):Del Casar JM,González LO,Alvarez E,Junquera S,Marín L,González L,Bongera M,Vázquez J,Vizoso FJ PubMed Article URL: <a href="http://dx.doi.org/10.1007/s10549-009-0351-z">http://dx.doi.org/10.1007/s10549-009-0351-z</a>
	MA5-13595 was used in immunohistochemistry to study the clinical value of soluble IL-2 receptor levels in B-cell lymphomas
Human / Not Cited	PloS one ( 2014; 8: ) <b>"Clinical significance of sIL-2R levels in B-cell lymphomas."</b> Author(s):Yoshida N,Oda M,Kuroda Y,Katayama Y,Okikawa Y,Masunari T,Fujiwara M,Nishisaka T,Sasaki N,Sadahira Y,Mihara K,Asaoku H,Matsui H,Seto M,Kimura A,Arihiro K,Sakai A PubMed Article URL: <a href="http://dx.doi.org/10.1371/journal.pone.0078730">http://dx.doi.org/10.1371/journal.pone.0078730</a>
	MA5-13595 was used in immunohistochemistry to study the expression of MMPs and TIMPs in breast cancer primary tumors and in local recurrences following mastectomy
Human / 1:100	Journal of cancer research and clinical oncology ( 2010; 136: 1049) <b>"Expression of metalloproteases and their inhibitors in primary tumors and in local recurrences after mastectomy for breast cancer."</b> Author(s):del Casar JM,Carreño G,González LO,Junquera S,González-Reyes S,González JM,Bongera M,Merino AM,Vizoso FJ PubMed Article URL: <a href="http://dx.doi.org/10.1007/s00432-009-0750-x">http://dx.doi.org/10.1007/s00432-009-0750-x</a>
	MA5-13595 was used in immunohistochemistry to study the expression of stromal matrix metalloproteases and TIMP-1 in basal cell carcinomas of immunosuppressed patients
Human / 1:100	Virchows Archiv : an international journal of pathology ( 2008; 452: 83) <b>"Differential expression of stromal MMP-1, MMP-9 and TIMP-1 in basal cell carcinomas of immunosuppressed patients and controls."</b> Author(s):Boyd S,Tolvanen K,Virolainen S,Kuivanen T,Kyllönen L,Saarialho-Kere U PubMed Article URL: <a href="http://dx.doi.org/10.1007/s00428-007-0526-0">http://dx.doi.org/10.1007/s00428-007-0526-0</a>

1 Neutralization References	
Species / Dilution	Summary

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Mouse / Not Cited	MA5-13595 was used in blocking or activating experiment to study the role of MMP2 and MMP9 in the migration of Langerhans cells and dermal dendritic cells from skin
	Journal of immunology (Baltimore, Md. : 1950) ( 2002; 168: 4361) <b>"Matrix metalloproteinases 9 and 2 are necessary for the migration of Langerhans cells and dermal dendritic cells from human and murine skin."</b> Author(s):Ratzinger G,Stoitzner P,Ebner S,Lutz MB,Layton GT,Rainer C,Senior RM,Shipley JM,Fritsch P,Schuler G,Romani N PubMed Article URL: <a href="http://dx.doi.org/10.4049/jimmunol.168.9.4361">http://dx.doi.org/10.4049/jimmunol.168.9.4361</a>

## 5 Immunocytochemistry References

Species / Dilution	Summary
Human / Not Cited	MA5-13595 was used in Western Blotting to examine soluble NSF attachment protein receptor function in the trafficking of matrix metalloproteinases.
	Journal of cell science ( 2009; 122: 4089) <b>"VAMP3, syntaxin-13 and SNAP23 are involved in secretion of matrix metalloproteinases, degradation of the extracellular matrix and cell invasion."</b> Author(s):Kean MJ,Williams KC,Skalski M,Myers D,Burtinik A,Foster D,Coppolino MG PubMed Article URL: <a href="http://dx.doi.org/10.1242/jcs.052761">http://dx.doi.org/10.1242/jcs.052761</a>
Human / 1:50	MA5-13595 was used in immunocytochemistry to investigate the effect of an inhibitor against GSK-3 on the epithelial-mesenchymal transition process and the maintenance of th pluripotency of stem cells
	Molecular human reproduction ( 2008; 14: 169) <b>"GSK-3-specific inhibitor-supplemented hESC medium prevents the epithelial-mesenchymal transition process and the up-regulation of matrix metalloproteinases in hESCs cultured in feeder-free conditions."</b> Author(s):Ullmann U,Gilles C,De Rycke M,Van de Velde H,Sermon K,Liebaers I PubMed Article URL: <a href="http://dx.doi.org/10.1093/molehr/gan001">http://dx.doi.org/10.1093/molehr/gan001</a>
Human / 1:100	MA5-13595 was used in immunocytochemistry, immunohistochemistry, and western blot to study the signaling pathways involved in MMP9 expression and limbal epithelial outgrowth
	Stem cell research ( 2012; 9: 9) <b>"PI3-K/Akt/JNK/NF-B is essential for MMP-9 expression and outgrowth in human limbal epithelial cells on intact amniotic membrane."</b> Author(s):Cheng CY,Hsieh HL,Hsiao LD,Yang CM PubMed Article URL: <a href="http://dx.doi.org/10.1016/j.scr.2012.02.005">http://dx.doi.org/10.1016/j.scr.2012.02.005</a>
Rat / Not Cited	MA5-13595 was used in Immunohistochemistry to examine whether phenotypically modulated smooth muscle cells and related inflammation are associated with the progression of experimental occlusive pulmonary vascular disease.
	PloS one ( 2016; 10: ) <b>"Potential contribution of phenotypically modulated smooth muscle cells and related inflammation in the development of experimental obstructive pulmonary vasculopathy in rats."</b> Author(s):Otsuki S,Sawada H,Yodoya N,Shinohara T,Kato T,Ohashi H,Zhang E,Imanaka-Yoshida K,Shimpo H,Maruyama K,Komada Y,Mitani Y PubMed Article URL: <a href="http://dx.doi.org/10.1371/journal.pone.0118655">http://dx.doi.org/10.1371/journal.pone.0118655</a>
Mouse / Not Cited	MA5-13595 was used in immunocytochemistry and western blot to study subcellular localization of an alphaMbeta2 integrin-pro-MMP9 complex in neutrophils
	Journal of immunology (Baltimore, Md. : 1950) ( 2004; 172: 7060) <b>"Intracellular and cell surface localization of a complex between alphaMbeta2 integrin and promatrix metalloproteinase-9 progelatinase in neutrophils."</b> Author(s):Stefanidakis M,Ruohtula T,Borregaard N,Gahmberg CG,Koivunen E PubMed Article URL: <a href="http://dx.doi.org/10.4049/jimmunol.172.11.7060">http://dx.doi.org/10.4049/jimmunol.172.11.7060</a>

## 8 Western Blot References

Species / Dilution	Summary
Rat / Not Cited	MA5-13595 was used in western blot to study the role of MMP-9 in early brain injury after subarachnoid hemorrhage and the therapeutic potential of its inhibition
	Neurological research ( 2010; 32: 715) <b>"Matrix metalloproteinase-9 potentiates early brain injury after subarachnoid hemorrhage."</b> Author(s):Guo Z,Sun X,He Z,Jiang Y,Zhang X,Zhang JH PubMed Article URL: <a href="http://dx.doi.org/10.1179/016164109X12478302362491">http://dx.doi.org/10.1179/016164109X12478302362491</a>

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	MA5-13595 was used in western blot to perform a proteomic study of monocyte-derived macrophages infected by HIV-1
Human / Not Cited	Journal of neuroimmunology ( 2004; 157: 11) <b>"Diminished matrix metalloproteinase 9 secretion in human immunodeficiency virus-infected mononuclear phagocytes: modulation of innate immunity and implications for neurological disease."</b> Author(s):Ciborowski P,Enose Y,Mack A,Fladseth M,Gendelman HE PubMed Article URL: <a href="http://dx.doi.org/10.1016/j.jneuroim.2004.08.033">http://dx.doi.org/10.1016/j.jneuroim.2004.08.033</a>
Human / Not Cited	MA5-13595 was used in western blot to study the role of NFkB activation in the mechanism by which andrographolide inhibits MMP9 expression by human THP-1 cells Phytomedicine : international journal of phytotherapy and phytopharmacology ( 2012; 19: 270) <b>"Suppression of matrix metalloproteinase-9 expression by andrographolide in human monocytic THP-1 cells via inhibition of NF-B activation."</b> Author(s):Lee WR,Chung CL,Hsiao CJ,Chou YC,Hsueh PJ,Yang PC,Jan JS,Cheng YW,Hsiao G PubMed Article URL: <a href="http://dx.doi.org/10.1016/j.phymed.2011.11.012">http://dx.doi.org/10.1016/j.phymed.2011.11.012</a>
Rat / Not Cited	MA5-13595 was used in western blot to study the role of ROS in the induction of MMP-9 expression and cell migration of brain astrocytes exposed to elevated glucose levels Molecular neurobiology ( 2013; 48: 601) <b>"High glucose induces reactive oxygen species-dependent matrix metalloproteinase-9 expression and cell migration in brain astrocytes."</b> Author(s):Hsieh HL,Lin CC,Hsiao LD,Yang CM PubMed Article URL: <a href="http://dx.doi.org/10.1007/s12035-013-8442-6">http://dx.doi.org/10.1007/s12035-013-8442-6</a>
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Human / 1:200	MA5-13595 was used in western blot to derive and characterize a Wilms' tumour cell line International journal of cancer ( 2003; 107: 365) <b>"Derivation and characterization of a Wilms' tumour cell line, WiT 49."</b> Author(s):Alami J,Williams BR,Yeger H PubMed Article URL: <a href="http://dx.doi.org/10.1002/ijc.11429">http://dx.doi.org/10.1002/ijc.11429</a>

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