

Mu-Calpain Monoclonal Antibody (9A4H8D3)

Catalog NumberMA3-940

Product data sheet

Details		Species Reactivity	
Size	100 µg	Species reactivity	Bovine, Hamster, Human, Mouse, Pig, Rabbit, Rat
Host/Isotope	Mouse / IgG1	Published species	Rabbit, Pig, Rat, Yeast, Bovine, Sheep, Arthropod, Hamster, Fish, Mouse, Human, Not Applicable
Class	Monoclonal		
Type	Antibody		
Clone	9A4H8D3		
Immunogen	Purified bovine skeletal muscle 80 kDa mu-calpain subunit.	Tested Applications	Dilution *
Conjugate	Unconjugated	Immunohistochemistry (Frozen) (IHC (F))	Assay-dependent
Form	Liquid	Immunohistochemistry (Paraffin) (IHC (P))	Assay-Dependent
Concentration	1.0 mg/mL	Western Blot (WB)	2 µg/mL
Purification	Protein A	Immunocytochemistry (ICC/IF)	Assay-dependent
Storage buffer	PBS with 1mg/mL BSA	Published Applications	
Contains	0.05% sodium azide	Western Blot (WB)	See 38 publications below
Storage Conditions	-20° C, Avoid Freeze/Thaw Cycles	Immunocytochemistry (ICC/IF)	See 2 publications below
		Immunohistochemistry (IHC)	See 2 publications below

* 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.

Product specific information

MA3-940 detects mu-calpain from human platelets and erythrocytes, bovine platelets, heart and skeletal muscle, rat myoblasts, kidney, liver and spleen, mouse lung, pig cultured cells and hamster and rabbit samples. This antibody does not cross-react with m-calpain, n-calpain, calmodulin or calpastatin. MA3-940 has been successfully used in Western blot, immunofluorescence, immunohistochemistry, and immunocytochemistry procedures. By Western blot, this antibody detects an 80 kDa protein representing mu-calpain from human platelets and erythrocytes and HeLa and A431 cell lysates. Immunocytochemical staining of mu-calpain in LLC-PK1 cells with MA3-940 results in diffuse cytoplasmic staining. This product has not been shown to be effective in immunoprecipitation experiments. The MA3-940 antigen is purified bovine skeletal muscle 80 kDa mu-calpain subunit. This antibody recognizes an epitope between amino acids 465-520 (domain III) of human mu-calpain.

Background/Target Information

The calpains including Calpain 1 (CAPN1), calcium-activated neutral proteases, are nonlysosomal, intracellular cysteine proteases. The mammalian calpains include ubiquitous, stomach-specific, and muscle-specific proteins. The ubiquitous enzymes consist of heterodimers with distinct large, catalytic subunits associated with a common small, regulatory subunit. This gene encodes the large subunit of the ubiquitous enzyme, calpain 1. Several transcript variants encoding two different isoforms have been found for this gene. Diseases associated with CAPN1 include Spastic Paraplegia 76, Autosomal Recessive and Spasticity.

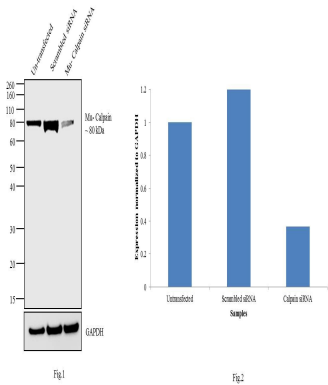
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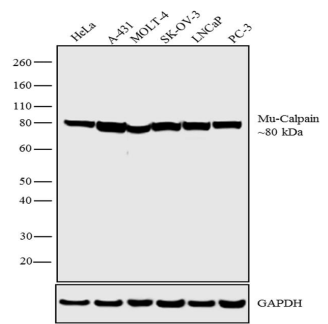
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Product Images For Mu-Calpain Monoclonal Antibody (9A4H8D3)



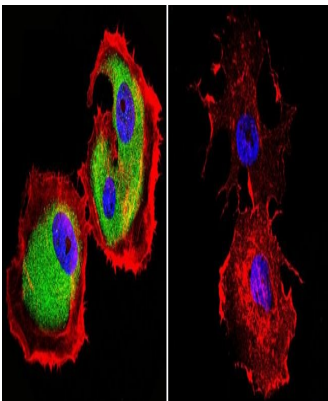
Mu-Calpain Antibody (MA3-940)

Antibody specificity was demonstrated by siRNA mediated knockdown of target protein. HeLa cells were transfected with Mu-Calpain siRNA and loss of signal was observed in Western Blot using Anti-Mu-Calpain Monoclonal Antibody (Product # MA3-940). {KD}



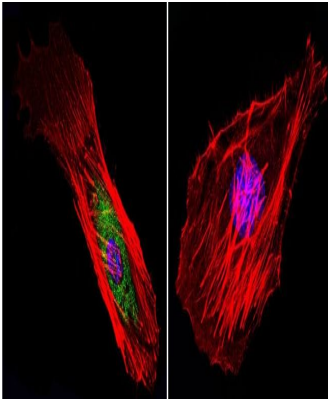
Mu-Calpain Antibody (MA3-940) in WB

Western blot analysis was performed on membrane enriched extracts (30 µg lysate) of HeLa (Lane 1), A-431 (Lane 2), MOLT-4 (Lane 3), SK-OV-3 (Lane 4), LNCaP (Lane 5) and PC-3 (Lane 6). The blot was probed with Mouse Anti-Mu-Calpain Monoclonal Antibody (Product # MA3-940, 2 µg/mL) and detected by chemiluminescence using Goat anti-Mouse IgG (H+L) Superclonal™ Secondary Antibody, HRP conjugate (Product # A28177, 0.25 µg/mL, 1:4000 dilution). An 80 kDa band corresponding to Mu-Calpain was observed across the cell lines tested. Known quantity of protein samples were electrophoresed using Novex® NuPAGE® 4-12 % Bis-Tris gel (Product # NP0321BOX), XCell SureLock™ Electrophoresis System (Product # EI0002) and Novex® Sharp Pre-Stained Protein Standard (Product # LC5800). Resolved proteins were then transferred onto a nitrocellulose membrane with iBlot® 2 Dry Blotting System (Product # IB21001). The membrane was probed with the relevant primary and secondary Antibody following blocking with 5 % skimmed milk. Chemiluminescent detection was performed using Pierce™ ECL Western Blotting Substrate (Product # 32106).



Mu-Calpain Antibody (MA3-940) in ICC/IF

Immunofluorescent analysis of Mu-Calpain in MCF-7 Cells. Cells were grown on chamber slides and fixed with formaldehyde prior to staining. Cells were probed without (control) or with a Mu-Calpain monoclonal antibody (Product # MA3-940) at a dilution of 1:20 overnight at 4 C, washed with PBS and incubated with a DyLight-488 conjugated secondary antibody (Product # 35503). Mu-Calpain staining (green), F-Actin staining with Phalloidin (red) and nuclei with DAPI (blue) is shown. Images were taken at 60X magnification. This image was taken using unpurified ascites antibody.



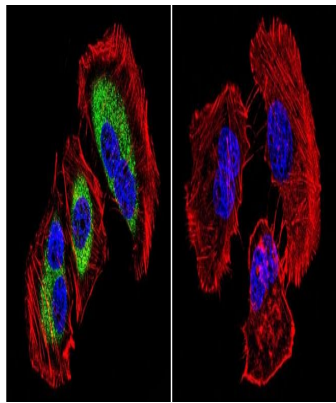
Mu-Calpain Antibody (MA3-940) in ICC/IF

Immunofluorescent analysis of Mu-Calpain in HeLa Cells. Cells were grown on chamber slides and fixed with formaldehyde prior to staining. Cells were probed without (control) or with a Mu-Calpain monoclonal antibody (Product # MA3-940) at a dilution of 1:100 overnight at 4 C, washed with PBS and incubated with a DyLight-488 conjugated secondary antibody (Product # 35503). Mu-Calpain staining (green), F-Actin staining with Phalloidin (red) and nuclei with DAPI (blue) is shown. Images were taken at 60X magnification. This image was taken using unpurified ascites antibody.

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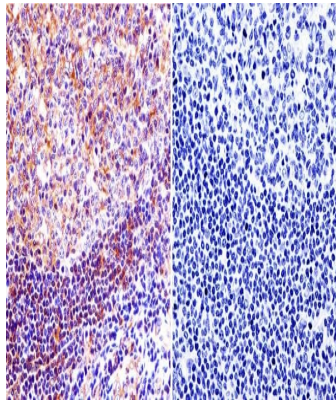
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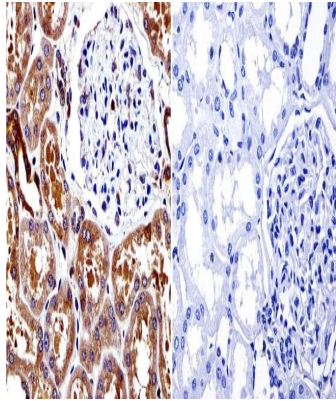
Mu-Calpain Antibody (MA3-940) in ICC/IF

Immunofluorescent analysis of Mu-Calpain in U251 Cells. Cells were grown on chamber slides and fixed with formaldehyde prior to staining. Cells were probed without (control) or with a Mu-Calpain monoclonal antibody (Product # MA3-940) at a dilution of 1:20 overnight at 4 C, washed with PBS and incubated with a DyLight-488 conjugated secondary antibody (Product # 35503). Mu-Calpain staining (green), F-Actin staining with Phalloidin (red) and nuclei with DAPI (blue) is shown. Images were taken at 60X magnification. This image was taken using unpurified ascites antibody.



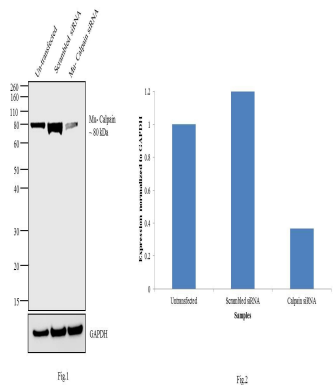
Mu-Calpain Antibody (MA3-940) in IHC (P)

Immunohistochemistry was performed on normal biopsies of deparaffinized human tonsil tissue. To expose target proteins, heat induced antigen retrieval was performed using 10mM sodium citrate (pH6.0) buffer, microwaved for 8-15 minutes. Following antigen retrieval tissues were blocked in 3% BSA-PBS for 30 minutes at room temperature. Tissues were then probed at a dilution of 1:20 with a Mouse Monoclonal Antibody recognizing Mu-Calpain (Product # MA3-940) or without primary antibody (negative control) overnight at 4°C in a humidified chamber. Tissues were washed extensively with PBST and endogenous peroxidase activity was quenched with a peroxidase suppressor. Detection was performed using a biotin-conjugated secondary antibody and SA-HRP, followed by colorimetric detection using DAB. Tissues were counterstained with hematoxylin and prepped for mounting. This image was taken using unpurified ascites antibody.



Mu-Calpain Antibody (MA3-940) in IHC (P)

Immunohistochemistry was performed on normal biopsies of deparaffinized human kidney tissue. To expose target proteins, heat induced antigen retrieval was performed using 10mM sodium citrate (pH6.0) buffer, microwaved for 8-15 minutes. Following antigen retrieval tissues were blocked in 3% BSA-PBS for 30 minutes at room temperature. Tissues were then probed at a dilution of 1:20 with a Mouse Monoclonal Antibody recognizing Mu-Calpain (Product # MA3-940) or without primary antibody (negative control) overnight at 4°C in a humidified chamber. Tissues were washed extensively with PBST and endogenous peroxidase activity was quenched with a peroxidase suppressor. Detection was performed using a biotin-conjugated secondary antibody and SA-HRP, followed by colorimetric detection using DAB. Tissues were counterstained with hematoxylin and prepped for mounting. This image was taken using unpurified ascites antibody.



Mu-Calpain Antibody (MA3-940) in WB

Knockdown of Mu-Calpain was achieved by transfecting HeLa cells with hnRNP K specific validated siRNAs (Silencer® select Product # s491). Western blot analysis (Fig. 1) was performed using whole cell extracts from the Mu-Calpain knockdown cells (lane 3), non-specific scrambled siRNA transfected cells (lane 2) and untransfected cells (lane 1). The blots were probed with Anti-Mu-Calpain Monoclonal Antibody (Product # MA3-940, 1 µg/mL) and Goat Mouse IgG (H+L) Superclonal™ Secondary Antibody, HRP conjugate (Product # A28177, 0.25 µg/mL, 1:4000 dilution). Densitometric analysis of this western blot is shown in histogram (Fig. 2). Decrease in signal upon siRNA mediated knock down confirms that antibody is specific to Mu-Calpain.

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PubMed References For Mu-Calpain Monoclonal Antibody (9A4H8D3)	
38 Western Blot References	
Species / Dilution	Summary
Mouse / 1:1000	MA3-940 was used in Western Blot to conclude that deletion of p53 decreases cardiac injury by protecting mitochondria through attenuation of oxidative stress and calpain activation during ischemia-reperfusion.
	Free radical biology & medicine (2020; 158: 162) "Cardiomyocyte specific deletion of p53 decreases cell injury during ischemia-reperfusion: Role of Mitochondria." Author(s):Chen Q,Thompson J,Hu Y,Lesnefsky EJ PubMed Article URL: http://dx.doi.org/10.1016/j.freeradbiomed.2020.06.006
Fish / Not Cited	MA3-940 was used in western blot to purify and characterize the calpain and calpastatin from rainbow trout
	Comparative biochemistry and physiology. Part B, Biochemistry & molecular biology (2007; 146: 445) "Purification and characterization of calpain and calpastatin from rainbow trout, Oncorhynchus mykiss." Author(s):Saito M,Li H,Thompson VF,Kunisaki N,Goll DE PubMed Article URL: http://dx.doi.org/10.1016/j.cbpb.2006.10.110
Pig / 1:10,000	MA3-940 was used in western blot to investigate the differences in calpain system, desmin degradation, pH values and water holding capacity between muscles of commercial Meishan and Duroc? x ?Landrace? x ?Yorkshire crossbred pigs
	Animal science journal = Nihon chikusan Gakkaiho (2016; 87: 109) "Differences in calpain system, desmin degradation and water holding capacity between commercial Meishan and Duroc x Landrace x Yorkshire crossbred pork." Author(s):Wang J,Yan XL,Liu R,Fu QQ,Zhou GH,Zhang WG PubMed Article URL: http://dx.doi.org/10.1111/asj.12394
Bovine / Not Cited	MA3-940 was used in western blot to study the biochemical factors governing commercially important beef cut tenderness
	Meat science (2012; 91: 247) "Profile of biochemical traits influencing tenderness of muscles from the beef round." Author(s):Anderson MJ,Lonergan SM,Fedler CA,Prusa KJ,Binning JM,Huff-Lonergan E PubMed Article URL: http://dx.doi.org/10.1016/j.meatsci.2012.01.022
Human / Not Cited	MA3-940 was used in western blot to study the calpains present in human placenta
	Life sciences (2002; 70: 2493) "The calpain system in human placenta." Author(s):Thompson VF,Saldaña S,Cong J,Luedke DM,Goll DE PubMed Article URL: http://dx.doi.org/10.1016/s0024-3205(02)01506-0
Bovine / 1:10000	MA3-940 was used in western blot to study the effects on beef quality of electrical input, wrapping, pre rigor temperature and different post rigor chilling rates
	Meat science (2012; 91: 62) "High pre rigor temperature limits the ageing potential of beef that is not completely overcome by electrical stimulation and muscle restraining." Author(s):Kim YH,Stuart A,Nygaard G,Rosenvold K PubMed Article URL: http://dx.doi.org/10.1016/j.meatsci.2011.12.007
Rat / 1:1000	MA3-940 was used in Western Blotting to show that activation of both cytosolic and mitochondrial calpains impairs mitochondria during cardiac ISC-REP. Mitochondria-localised calpains impair complex I via cleavage for a key subunit.
	American journal of physiology. Cell physiology (2019; 317: C910) "Inhibition of the ubiquitous calpains protects complex I activity and enables improved mitophagy in the heart following ischemia-reperfusion." Author(s):Chen Q,Thompson J,Hu Y,Dean J,Lesnefsky EJ PubMed Article URL: http://dx.doi.org/10.1152/ajpcell.00190.2019
Arthropod / 1:4000	MA3-940 was used in western blot to study the involvement of protease activity in storage of red swamp crayfish
	Journal of agricultural and food chemistry (2008; 56: 8658) "Protease activity in post-mortem red swamp crayfish (Procambarus clarkii) muscle stored in modified atmosphere packaging." Author(s):Chen G,Guttmann RP,Xiong YL,Webster CD,Romaine RP PubMed Article URL: http://dx.doi.org/10.1021/jf8007234

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	MA3-940 was used in western blot to study the effect of 25-hydroxyvitamin D3 and manipulated dietary cation-anion difference on beef quality
Bovine / 1:2000	Journal of animal science (2006; 84: 1481) "Effects of 25-hydroxyvitamin D3 and manipulated dietary cation-anion difference on the tenderness of beef from cull native Korean cows." Author(s):Cho YM,Choi H,Hwang IH,Kim YK,Myung KH PubMed Article URL: http://dx.doi.org/10.2527/2006.8461481x
	MA3-940 was used in western blot to investigate the effect of the high-oxygen modified atmosphere packaging system on oxidation and polymerization
Bovine / Not Cited	Meat science (2010; 85: 759) "High-oxygen modified atmosphere packaging system induces lipid and myoglobin oxidation and protein polymerization." Author(s):Kim YH,Huff-Lonergan E,Sebranek JG,Lonergan SM PubMed Article URL: http://dx.doi.org/10.1016/j.meatsci.2010.04.001
	MA3-940 was used in western blot to study the effect of different aging and freezing protocols on lamb loin tenderness and color stability
Sheep / 1:10,000	Meat science (2013; 95: 412) "Pre rigor processing, ageing and freezing on tenderness and colour stability of lamb loins." Author(s):Kim YH,Luc G,Rosenvold K PubMed Article URL: http://dx.doi.org/10.1016/j.meatsci.2013.05.017
	MA3-940 was used in western blot to study the rate of protein turnover in finisher pigs receiving low residual feed intake
Pig / 1:10,000	Journal of animal science (2013; 91: 4007) "Evidence of decreased muscle protein turnover in gilts selected for low residual feed intake." Author(s):Cruzen SM,Harris AJ,Hollinger K,Punt RM,Grubbs JK,Selsby JT,Dekkers JC,Gabler NK,Lonergan SM,Huff-Lonergan E PubMed Article URL: http://dx.doi.org/10.2527/jas.2013-6413
	MA3-940 was used in western blot to investigate the role of inactivation of mu-calpain for tenderization of beef steaks during oxidative environments
Bovine / 1:10,000	Journal of animal science (2004; 82: 3254) "Oxidative environments decrease tenderization of beef steaks through inactivation of mu-calpain." Author(s):Rowe LJ,Maddock KR,Lonergan SM,Huff-Lonergan E PubMed Article URL: http://dx.doi.org/10.2527/2004.82113254x
	MA3-940 was used in western blot to evaluate the effect of the postmortem storage time and temperature on calpain activity in bovine muscles
Bovine / Not Cited	Journal of animal science (2007; 85: 2670) "Effect of postmortem storage on activity of mu- and m-calpain in five bovine muscles." Author(s):Camou JP,Marchello JA,Thompson VF,Mares SW,Goll DE PubMed Article URL: http://dx.doi.org/10.2527/jas.2007-0164
	MA3-940 was used in western blot to study the role of small heat shock proteins in toughness of beef with an intermediate ultimate pH
Bovine / 1:5000	Meat science (2013; 95: 472) "Small heat shock proteins and toughness in intermediate pHu beef." Author(s):Lomiwes D,Farouk MM,Frost DA,Dobbie PM,Young OA PubMed Article URL: http://dx.doi.org/10.1016/j.meatsci.2013.05.022
	MA3-940 was used in western blot to study postmortem muscle proteolysis and fatty acid profiles in beef cattle receiving different amounts of dietary sulfur and the effects of supplemental vitamin C
Bovine / 1:10,000	Meat science (2014; 96: 956) "Influence of supplemental vitamin C on postmortem protein degradation and fatty acid profiles of the longissimus thoracis of steers fed varying concentrations of dietary sulfur." Author(s):Pogge DJ,Lonergan SM,Hansen SL PubMed Article URL: http://dx.doi.org/10.1016/j.meatsci.2013.08.031
	MA3-940 was used in western blot to investigate the effect of protein denaturation on u-calpain activation
Bovine / 1:10000	Meat science (2010; 86: 883) "Protein denaturing conditions in beef deep semimembranosus muscle results in limited -calpain activation and protein degradation." Author(s):Kim YH,Lonergan SM,Huff-Lonergan E PubMed Article URL: http://dx.doi.org/10.1016/j.meatsci.2010.06.002

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	MA3-940 was used in western blot to study the effect of specific calpain antibodies for the regulation of calpain function
Bovine / 1:40-100	<p>The Journal of biological chemistry (1993; 268: 25740) "Effect of monoclonal antibodies specific for the 28-kDa subunit on catalytic properties of the calpains." Author(s): Cong J, Thompson VF, Goll DE PubMed Article URL: http://www.ncbi.nlm.nih.gov/pubmed/7503986</p>
Sheep / 1:2500	<p>MA3-940 was used in Western Blotting to demonstrate that fast freezing then thaw-aging improves water-holding capacity and tenderness by minimizing extracellular ice crystal formation, reducing purge and drip losses, and improving proteolysis in thawed lamb.</p> <p>Animal science journal = Nihon chikusan Gakkaiho (2019; 90: 1060) "Effect of fast freezing then thaw-aging on meat quality attributes of lamb <i>M. longissimus lumborum</i>." Author(s): Balan P, Kim YHB, Stuart AD, Kemp R, Staincliffe M, Craigie C, Farouk MM PubMed Article URL: http://dx.doi.org/10.1111/asj.13216</p>
Pig / Not Cited	<p>MA3-940 was used in western blot to study the effect of pH and ionic strength on mu- and m-calpain activity and the ability of calpastatin to inhibit the activity of mu- or m-calpain</p> <p>Journal of animal science (2005; 83: 1370) "Effect of pH and ionic strength on mu- and m-calpain inhibition by calpastatin." Author(s): Maddock KR, Huff-Lonergan E, Rowe LJ, Lonergan SM PubMed Article URL: http://dx.doi.org/10.2527/2005.8361370x</p>
Pig / 1:10,000	<p>MA3-940 was used in western blot to investigate the differences in protein modifications between pale, soft, and exudative and red, firm, and nonexudative pork during postmortem aging</p> <p>Journal of animal science (2014; 92: 3745) "Comparison of protein degradation, protein oxidation, and -calpain activation between pale, soft, and exudative and red, firm, and nonexudative pork during postmortem aging." Author(s): Yin Y, Zhang WG, Zhou GH, Guo B PubMed Article URL: http://dx.doi.org/10.2527/jas.2014-7850</p>
Bovine / 1:5000	<p>MA3-940 was used in western blot to determine the effect of calcium lactate/phosphate enhancement on the quality of beef round cuts in high-oxygen modified atmosphere</p> <p>Meat science (2015; 101: 63) "Effect of early postmortem enhancement of calcium lactate/phosphate on quality attributes of beef round muscles under different packaging systems." Author(s): Cruzen SM, Kim YH, Lonergan SM, Grubbs JK, Fritchen AN, Huff-Lonergan E PubMed Article URL: http://dx.doi.org/10.1016/j.meatsci.2014.11.004</p>
Bovine / 1:10,000	<p>MA3-940 was used in western blot to study proteolysis and calpain/calpastatin in three postmortem muscles from young and mature beef cattle and the implications for meat tenderness</p> <p>Meat science (2014; 96: 854) "Postmortem proteolysis in three muscles from growing and mature beef cattle." Author(s): Cruzen SM, Paulino PV, Lonergan SM, Huff-Lonergan E PubMed Article URL: http://dx.doi.org/10.1016/j.meatsci.2013.09.021</p>
Pig / 1:10,000	<p>MA3-940 was used in western blot to investigate the effect of nitric oxide (NO) on calpain activation, protein proteolysis, and oxidation in porcine muscles</p> <p>Journal of agricultural and food chemistry (2014; 62: 5972) "Effect of nitric oxide on -calpain activation, protein proteolysis, and protein oxidation of pork during post-mortem aging." Author(s): Li YP, Liu R, Zhang WG, Fu QQ, Liu N, Zhou GH PubMed Article URL: http://dx.doi.org/10.1021/jf501332d</p>
Bovine / 1:5,000	<p>MA3-940 was used in Western Blotting to indicate that high-fiber diets may negatively impact meat tenderness, and further work is needed to clarify the influence of diet type on parameters of meat tenderness.</p> <p>Journal of animal science (2017; 95: 2986) "Influence of feed efficiency classification and growing and finishing diet type on meat tenderness attributes of beef steers." Author(s): Blank CP, Russell J, Lonergan SM, Hansen SL PubMed Article URL: http://dx.doi.org/10.2527/jas.2016.1312</p>
Bovine / 1:1000	<p>MA3-940 was used in Western Blotting to investigate the effects of pulse electric field (PEF) treatment on the tenderization of beef semitendinosus muscle.</p> <p>Foods (Basel, Switzerland) (2023; 12:) "Tenderization of Beef <i>Semitendinosus</i> Muscle by Pulsed Electric Field Treatment with a Direct Contact Chamber and Its Impact on Proteolysis and Physicochemical Properties." Author(s): Jeong SH, Jung YM, Kim S, Kim JH, Yeo H, Lee DU PubMed Article URL: http://dx.doi.org/10.3390/foods12030430</p>

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	MA3-940 was used in western blot to study the role of small heat shock proteins in protecting bovine skeletal myofibrils from post-mortem proteolytic degradation
Bovine / 1:5000	Meat science (2014; 97: 548) "The protection of bovine skeletal myofibrils from proteolytic damage post mortem by small heat shock proteins." Author(s):Lomiwes D,Hurst SM,Dobbie P,Frost DA,Hurst RD,Young OA,Farouk MM PubMed Article URL: http://dx.doi.org/10.1016/j.meatsci.2014.03.016
	MA3-940 was used in western blot to study the effect of pH changes on breakdown of porcine cytoskeletal proteins
Mouse / Not Cited	Meat science (2007; 76: 359) "Rate and extent of pH decline affect proteolysis of cytoskeletal proteins and water-holding capacity in pork." Author(s):Bee G,Anderson AL,Lonergan SM,Huff-Lonergan E PubMed Article URL: http://dx.doi.org/10.1016/j.meatsci.2006.12.004
	MA3-940 was used in western blot to study whether calpain activation and post-mortem proteolysis play any role in the relationship between cattle feed chute behaviour and meat tenderness
Bovine / 1:10,000	Meat science (2013; 95: 92) "Evaluation of feedlot cattle working chute behavior relative to temperament, tenderness, and postmortem proteolysis." Author(s):Magolski JD,Berg EP,Hall NL,Anderson VL,Keller WL,Jeske TM,Carlin KR PubMed Article URL: http://dx.doi.org/10.1016/j.meatsci.2013.04.001
	MA3-940 was used in western blot to isolate and characterize calpain isoforms and calpastatin
Bovine / 1:10,000	Journal of animal science (2007; 85: 3400) "Isolation and characterization of mu-calpain, m-calpain, and calpastatin from postmortem muscle. I. Initial steps." Author(s):Camou JP,Mares SW,Marchello JA,Vazquez R,Taylor M,Thompson VF,Goll DE PubMed Article URL: http://dx.doi.org/10.2527/jas.2007-0356
	MA3-940 was used in western blot to investigate the role of calpain 2 in the ionomycin-induced cell death in mouse lens epithelial cells
Mouse / 1:500	Current eye research (2011; 36: 930) "Involvement of calpain 2 in ionomycin-induced cell death in cultured mouse lens epithelial cells." Author(s):Nakajima T,Shearer TR,Azuma M PubMed Article URL: http://dx.doi.org/10.3109/02713683.2011.577264
	MA3-940 was used in western blot to investigate the role of calpain during hereditary cataract formation in sheep
Yeast / 1:2,000	Investigative ophthalmology & visual science (2005; 46: 4634) "Calpain may contribute to hereditary cataract formation in sheep." Author(s):Robertson LJ,Morton JD,Yamaguchi M,Bickerstaffe R,Shearer TR,Azuma M PubMed Article URL: http://dx.doi.org/10.1167/iov.04-1291
	MA3-940 was used in western blot to detect the changes of micro-calpain, m-calpain, and calpastatin in bovine muscle during postmortem storage
Bovine / 1:10	Journal of animal science (1998; 76: 2415) "Changes in the calpains and calpastatin during postmortem storage of bovine muscle." Author(s):Boehm ML,Kendall TL,Thompson VF,Goll DE PubMed Article URL: http://dx.doi.org/10.2527/1998.7692415x
	MA3-940 was used in western blot to study the effects of tannins on meat quality
Sheep / 1:5000	Journal of the science of food and agriculture (2016; 96: 1923) "Forage legumes rich in condensed tannins may increase n-3 fatty acid levels and sensory quality of lamb meat." Author(s):Girard M,Dohme-Meier F,Silacci P,Ampuero Kragten S,Kreuzer M,Bee G PubMed Article URL: http://dx.doi.org/10.1002/jsfa.7298
	MA3-940 was used in western blot to study the effect of finishing period vitamin C supplementation on various measures of meat quality in yearling steers fed a diet high in sulphur
Bovine / 1:10,000	Meat science (2014; 97: 419) "Influence of supplementing vitamin C to yearling steers fed a high sulfur diet during the finishing period on meat color, tenderness and protein degradation, and fatty acid profile of the longissimus muscle." Author(s):Pogge DJ,Lonergan SM,Hansen SL PubMed Article URL: http://dx.doi.org/10.1016/j.meatsci.2014.02.016

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	MA3-940 was used in western blot to study the role of mu-calpain in decidua from patients with recurrent miscarriage
Human / 1:2000	American journal of reproductive immunology (New York, N.Y. : 1989) (2008; 59: 339) "Role of mu-calpain in human decidua for recurrent miscarriage." Author(s):Kumagai K,Ozaki Y,Nakanishi T,Inomata M,Furuno T,Nakanishi M,Ogasawara MS PubMed Article URL: http://dx.doi.org/10.1111/j.1600-0897.2007.00576.x
	MA3-940 was used in western blot to study the effects of ultimate pH on the development of meat tenderness in Bulls
Bovine / 1:5000	Meat science (2014; 96: 646) "The development of meat tenderness is likely to be compartmentalised by ultimate pH." Author(s):Lomiwes D,Farouk MM,Wu G,Young OA PubMed Article URL: http://dx.doi.org/10.1016/j.meatsci.2013.08.022
	MA3-940 was used in western blot to investigate the postmortem changes of integrin, desmin, and calpain in pork
Pig / 1:10000	Meat science (2006; 74: 578) "Contribution of postmortem changes of integrin, desmin and -calpain to variation in water holding capacity of pork." Author(s):Zhang WG,Lonergan SM,Gardner MA,Huff-Lonergan E PubMed Article URL: http://dx.doi.org/10.1016/j.meatsci.2006.05.008

2 Immunocytochemistry References

Species / Dilution	Summary
	MA3-940 was used in immunocytochemistry to show that a calcium-binding ER protein with protective functions against calcium-induced apoptosis is a substrate for a calcium-activated protease
Hamster / 1:100	The Journal of biological chemistry (1999; 274: 28476) "The endoplasmic reticulum chaperone glycoprotein GRP94 with Ca(2+)-binding and antiapoptotic properties is a novel proteolytic target of calpain during etoposide-induced apoptosis." Author(s):Reddy RK,Lu J,Lee AS PubMed Article URL: http://dx.doi.org/10.1074/jbc.274.40.28476
	MA3-940 was used in immunocytochemistry to compare the cellular localization of calpains and calpastatin in human A431 cells
Human / 1 mg/ml	Experimental cell research (1992; 203: 5) "A comparison of the intracellular distribution of mu-calpain, m-calpain, and calpastatin in proliferating human A431 cells." Author(s):Lane RD,Allan DM,Mellgren RL PubMed Article URL: http://dx.doi.org/10.1016/0014-4827(92)90033-5

2 Immunohistochemistry References

Species / Dilution	Summary
	MA3-940 was used in immunohistochemistry to investigate the effect of early postmortem biochemical factors on tenderness and water-holding capacity of three porcine muscles
Pig / 1:100	Journal of animal science (2004; 82: 1195) "Early postmortem biochemical factors influence tenderness and water-holding capacity of three porcine muscles." Author(s):Melody JL,Lonergan SM,Rowe LJ,Huiatt TW,Mayes MS,Huff-Lonergan E PubMed Article URL: http://dx.doi.org/10.2527/2004.8241195x
	MA3-940 was used in immunohistochemistry to study the importance of two major proteolytic systems in tranforming rabbit and rat muscles
Rabbit / Not Cited	American journal of physiology. Cell physiology (2001; 280: C239) "Fiber type-specific expression of major proteolytic systems in fast- to slow-transforming rabbit muscle." Author(s):Sultan KR,Dittrich BT,Leisner E,Paul N,Pette D PubMed Article URL: http://dx.doi.org/10.1152/ajpcell.2001.280.2.C239

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