

PRODUCT INFORMATION



MMP-9 Q279R Variant (human, recombinant)

Item No. 32560

Overview and Properties

Synonyms: 92 kDa Type IV Collagenase, Gelatinase B, MANDP2, Matrix Metalloproteinase-9
Source: Active recombinant C-terminal His-tagged protein expressed in HEK293 cells
Amino Acids: 20-707
Uniprot No.: P14780
Molecular Weight: 77.8 kDa
Storage: -80°C (as supplied)
Stability: ≥6 months
Purity: ≥90% estimated by SDS-PAGE
Supplied in: 40 mM Tris-HCl buffer, pH 8.0, with 110 mM sodium chloride, 2.2 mM potassium chloride, 200 mM imidazole, and 20% glycerol

Protein

Concentration: *batch specific* mg/ml

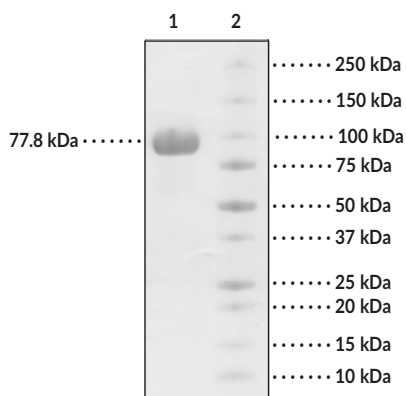
Activity: *Activation:* This is a proform enzyme and requires activation prior to testing activity. Dilute the enzyme to 100 ng/ml in a solution containing 50 mM HEPES, pH 7.4, 10 mM CaCl₂, 0.05% Brij-35, and 1 mM APMA (amino-phenyl mercuric acetate). Incubate at 37°C for 2 hours.

Assay Conditions: Enzyme mixed with 10 μM of 390 MMP substrate 1 and incubated for 30 minutes at room temperature. Fluorescence intensity is measured at Ex./Em.: 328/393 nm

Specific Activity: *batch specific* U/mg

Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

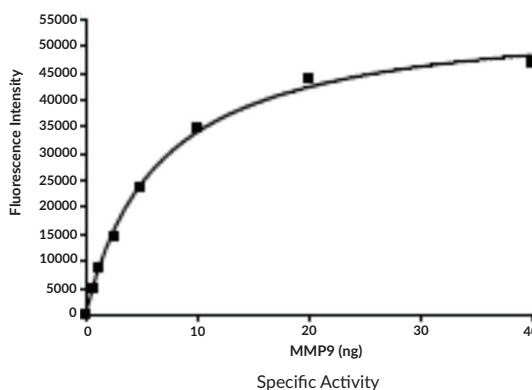
Images



Lane 1: MMP-9 Q279R Variant (6.3 μg)
Lane 2: MW Markers

SDS-PAGE Analysis of MMP-9 Q279R Variant. This protein has a calculated molecular weight of 77.8 kDa.

Representative gel image shown; actual purity may vary between each batch.



WARNING
THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA
This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the [complete](#) Safety Data Sheet, which has been sent via email to your institution.

WARRANTY AND LIMITATION OF REMEDY
Buyer agrees to purchase the material subject to Cayman's Terms and Conditions. Complete Terms and Conditions including Warranty and Limitation of Liability information can be found on our website.

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CAYMAN CHEMICAL
1180 EAST ELLSWORTH RD
ANN ARBOR, MI 48108 · USA
PHONE: [800] 364-9897
[734] 971-3335
FAX: [734] 971-3640
CUSTSERV@CAYMANCHEM.COM
WWW.CAYMANCHEM.COM

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Description

Matrix metalloproteinase-9 (MMP-9) is an endopeptidase and a member of the type IV collagenase subfamily of MMPs that has a major role in tissue remodeling.¹ It is composed of an N-terminal prodomain containing a cysteine switch that interacts with the catalytic domain to regulate the proteolytic activity of MMP-9, a fibronectin-like domain that binds various extracellular matrix (ECM) proteins, and a C-terminal hemopexin-like domain that inhibits the proteolytic activity of MMP-9 by binding tissue inhibitor of metalloproteinases (TIMPs). The Q279R variant of MMP-9 possesses a glutamine-to-arginine substitution at Glu279, which is found in the substrate-binding region of the fibronectin-like domain.² MMP-9 is synthesized and secreted as an inactive enzyme by a variety of cells, including neutrophils, macrophages, and fibroblasts, and is activated in the extracellular space by proteolytic cleavage of the prodomain by several proteases.^{1,3,4} MMP9 expression is regulated by the transcription factors NF- κ B and AP-1, which can be induced by a variety of biological mediators, including reactive oxygen species (ROS) and inflammatory cytokines.¹ MMP-9 participates in ECM remodeling, a process that is critical for development and wound healing, by degrading a variety of ECM proteins, including collagens and gelatins. Increased MMP-9 activity has been observed in a variety of pathological conditions, including cardiovascular diseases, arthritis, and cancer. The MMP-9 Q279R variant has been found in patients with polycythemia vera, essential thrombocytosis, or idiopathic myelofibrosis.² Cayman's MMP-9 Q279R Variant (human, recombinant) protein can be used for enzyme activity applications.

References

1. Yabluchanskiy, A., Ma, Y., Iyer, R.P., *et al.* Matrix metalloproteinase-9: Many shades of function in cardiovascular disease. *Physiology* **28**(6), 391-403 (2013).
2. Maral, S., Acar, M., Balcik, O.S., *et al.* Matrix metalloproteinases 2 and 9 polymorphism in patients with myeloproliferative diseases: A STROBE-compliant observational study. *Medicine* **94**(16), e732 (2015).
3. Löffek, S., Schilling, O., and Franzke, C.-W. Series "matrix metalloproteinases in lung health and disease": Biological role of matrix metalloproteinases: a critical balance. *Eur. Respir. J.* **38**(1), 191-208 (2011).
4. Xie, Y., Mustafa, A., Yerzhan, A., *et al.* Nuclear matrix metalloproteinases: Functions resemble the evolution from the intracellular to the extracellular compartment. *Cell Death Discov.* **3**, 17036 (2017).

CAYMAN CHEMICAL
1180 EAST ELLSWORTH RD
ANN ARBOR, MI 48108 · USA
PHONE: [800] 364-9897
[734] 971-3335
FAX: [734] 971-3640
CUSTSERV@CAYMANCHEM.COM
WWW.CAYMANCHEM.COM