

PRODUCT INFORMATION



TMPRSS2 (human, recombinant)

Item No. 35340

Overview and Properties

Synonyms: Epitheliasin, PRSS10, Serine Protease 10, Transmembrane Protease Serine 2, Transmembrane Serine Protease 2
Source: Active recombinant human N-terminal His-tagged TMPRSS2 expressed in *E. coli*
Amino Acids: 247-492
Uniprot No.: O15393
Molecular Weight: 29.4 kDa
Storage: -80°C (as supplied)
Stability: ≥6 months
Purity: *batch specific* (≥80% estimated by SDS-PAGE)
Supplied in: 50 mM Tris-HCl, pH 7.4, with 300 mM sodium chloride and 0.001% NP-40 with 5% glycerol

Protein

Concentration: *batch specific* mg/ml

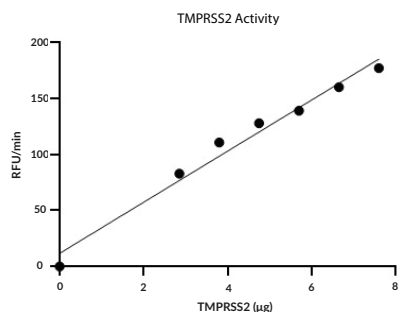
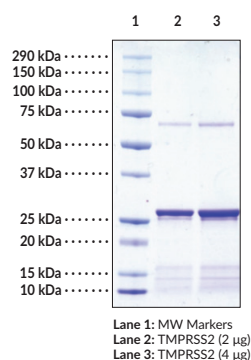
Activity: *batch specific* U/ml

Specific Activity: *batch specific* U/mg

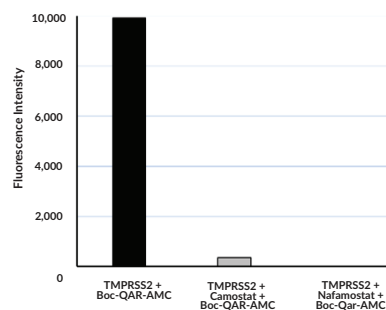
Unit Definition: One unit is defined as the amount of enzyme required to produce 1 pmol of AMC per minute at 26°C in 50 mM Tris-HCl, pH 7.4, with 300 mM sodium chloride and 0.001% NP-40 with 5% glycerol containing 50 μM Boc-Gln-Ala-AMC substrate.

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

Images



TMPRSS2 activity was determined by measuring proteolytic cleavage of Boc-QAR-AMC substrate. Free AMC fluorescence is detected at Ex = 380 nm and Em = 460 nm.



Inhibition of TMPRSS2 activity by camostat (Item No. 16018) and nafamostat (Item No. 14837).

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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Description

TMPRSS2 is a type II transmembrane serine protease that has major roles in androgen receptor signaling, viral infection, and carcinogenesis.¹ TMPRSS2 is composed of an N-terminal transmembrane domain and an extracellular stem region that contains an LDL receptor class A (LDLRA) domain that binds calcium, as well as a scavenger receptor cysteine-rich (SRCR) domain that interacts with other extracellular molecules. It is synthesized as a zymogen and the C-terminal serine protease domain undergoes autoproteolytic cleavage, releasing the soluble protease into the extracellular space. *TMPRSS2* mRNA is mainly expressed in the prostate gland but is also found in the salivary and mammary glands, colon, stomach, small intestine, kidney, liver, and lung.² Soluble TMPRSS2 cleaves and activates proteinase-activated receptor 2 (PAR2) in prostate cancer cells.³ TMPRSS2 facilitates host cell entry of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) *in vitro*, and knockout of *Tmprss2* in human dipeptidyl peptidase 4-expressing transgenic mice reduces disease severity in a model of Middle East respiratory syndrome coronavirus (MERS-CoV) infection.^{4,5} Chromosomal translocations leading to *TMPRSS2-ERG* fusions are associated with prostate cancer.⁶ Cayman's TMPRSS2 (human, recombinant) protein can be used for enzyme activity assays.

References

1. Thunders, M. and Delahunt, B. Gene of the month: *TMPRSS2* (transmembrane serine protease 2). *J. Clin. Pathol.* **73**(12), 773-776 (2020).
2. Vaarala, M.H., Porvari, K.S., Kellokumpu, S., *et al.* Expression of transmembrane serine protease TMPRSS2 in mouse and human tissues. *J. Pathol.* **193**(1), 134-140 (2001).
3. Wilson, S., Greer, B., Hooper, J., *et al.* The membrane-anchored serine protease, TMPRSS2, activates PAR-2 in prostate cancer cells. *Biochem. J.* **388**(Pt 3), 967-972 (2005).
4. Hoffmann, M., Kleine-Weber, H., Schroeder, S., *et al.* SARS-CoV-2 cell entry depends on ACE2 and TMPRSS2 and is blocked by a clinically proven protease inhibitor. *Cell* **181**(2), 271-280 (2020).
5. Iwata-Yoshikawa, N., Okamura, T., Shimizu, Y., *et al.* TMPRSS2 contributes to virus spread and immunopathology in the airways of murine models after coronavirus infection. *J. Virol.* **93**(6), e01815-18 (2019).
6. García-Perdomo, H.A., Chaves, M.J., Osorio, J.C., *et al.* Association between TMPRSS2:ERG fusion gene and the prostate cancer: Systematic review and meta-analysis. *Cent. European J. Urol.* **71**(4), 410-419 (2018).

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