PRODUCT INFORMATION

STING R224 variant (human, recombinant)

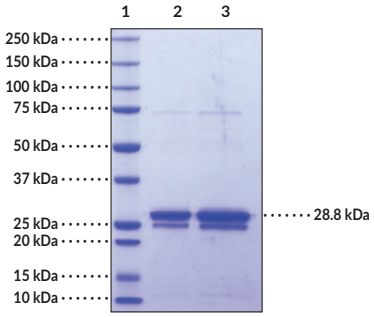
Item No. 23593

Overview and Properties

Synonyms:	Endoplasmic Reticulum Interferon Stimulator, Stimulator of Interferon Genes, TMEM173
Source:	N-terminal Histidine-tagged human STING R232, K224R mutant purified from *E. coli*
Amino acids:	138-379 (N-terminal truncation)
Molecular Weight:	28.8 kDa
Storage:	-80°C (as supplied)
Stability:	≥2 years
Purity:	***batch specific*** (≥70% estimated by SDS-PAGE)
Supplied in:	50 mM HEPES, pH 8.0, with 150 mM sodium chloride, and 10% glycerol
Protein Concentration:	***batch specific***
Activity:	Serial dilutions of canonical 3'3'-cGAMP were incubated with 5 µg recombinant human STING R224 variant in 50 mM HEPES, pH 7.5, 150 mM sodium chloride, 10% glycerol, and SYPRO® Orange dye at 4°C.[1] The reaction was read on a BioRad CFX96 Touch™ Real-Time PCR Detection System at 4-100°C.[2] The binding of the ligand stabilizes the protein structure, increasing the melting temperature (T_m), which is detected *via* a thermal shift assay (TSA), also known as a differential scanning fluorimetry (DSF) assay.[2]

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

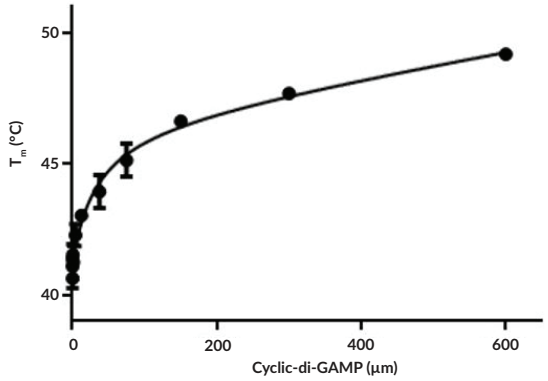
Images



Lane 1: MW Markers
Lane 2: STING R224 variant (2 µg)
Lane 3: STING R224 variant (4 µg)

Representative gel image shown; actual purity may vary between batches.

Melting Temperature (T_m) of STING with Cyclic-di-GAMP Concentration



Binding Activity of STING R224 variant (human, recombinant). STING R224 variant (human, recombinant) (5 µg) was incubated with serial dilutions of 3'3'-cGAMP (sodium salt) (Item No. 17966) and SYPRO® Orange dye. The detected increase in T_m indicates binding.

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

STING R224 variant (human, recombinant) contains amino acids 138-379 of the wild-type variant (R232) with lysine 224 substituted with arginine. Stimulator of interferon genes (STING) is a component of the innate immune response that binds to cyclic dinucleotides, which are bacterial second messengers, leading to activation of NF-κB and transcription of immunomodulatory genes, including type I interferon (IFN).[3-6] The R232 variant of STING is the most common variant in the human population, found at a frequency of 57.9% in the 1000 Genome Project.[7] The SNP variant H232 is found at a 13.7% frequency. The K224R mutation prevents ubiquitination of STING at position K224, a process which is essential for efficient cytosolic DNA-mediated signaling.[8] Therefore, this mutation disrupts optimal STING trafficking, which inhibits TBK1-mediated IRF3 activation but not NF-κB activation.

References

1. Diner, E.J., Burdette, D.L., Wilson, S.C., et al. The innate immune DNA sensor cGAS produces a noncanonical cyclic dinucleotide that activates human STING. Cell Rep. 3(5), 1355-1361 (2013).
2. Niesen, F.H., Berglund, H., and Vedadi, M. The use of differential scanning fluorimetry to detect ligand interactions that promote protein stability. Nat. Protoc. 2(9), 2212-2221 (2007).
3. Sun, L., Wu, J., Du, F., *et al.* Cyclic GMP-AMP synthase is a cytosolic DNA sensor that activates the type I interferon pathway. *Science* **339(6121)**, 786-791 (2013).
4. Wu, J., Sun, L., Chen, X., *et al.* Cyclic GMP-AMP is an endogenous second messenger in innate immune signaling by cytosolic DNA. *Science* **339(6121)**, 826-830 (2013).
5. Konno, H., Konno, K., and Barber, G.N. Cyclic dinucleotides trigger ULK1 (ATG1) phosphorylation of STING to prevent sustained innate immune signaling. *Cell* **155(3)**, 688-698 (2013).
6. Burdette, D.L., Monroe, K.M., Sotelo-Troha, K., *et al.* STING is a direct innate immune sensor of cyclic-di-GMP. *Nature* **478(7370)**, 515-518 (2011).
7. Yi, G., Brendel, V.P., Shu, C., *et al.* Single nucleotide polymorphisms of human STING can affect innate immune response to cyclic dinucleotides. *PLoS One* **8(10)**, e77846 (2013).
8. Ni, G., Konno, H., and Barber, G.N. Ubiquitination of STING at lysine 224 controls IRF3 activation. *Sci. Immunol.* **2(11)**, eaah7119 (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