

Store at
4°C

Deoxyribonuclease I, Recombinant (Animal-Free, Protease and RNase Free)

**Cell Signaling**
TECHNOLOGY®

#53331

10,000 units

Support: +1-978-867-2388 (U.S.)
www.cellsignal.com/support**Orders:** 877-616-2355 (U.S.)
orders@cellsignal.com

For Research Use Only. Not For Use In Diagnostic Procedures.

Description: Deoxyribonuclease I, Recombinant (Animal-Free, Protease and RNase Free), also known as DNase I, is isolated from bovine pancreas and produced recombinantly in *Pichia pastoris*. This endonuclease cleaves DNA to produce products with 5'-phospho and 3'-hydroxy ends (1). DNase I is dependent on calcium ions (Ca²⁺) and activated by magnesium ions (Mg²⁺) and manganese ions (Mn²⁺). The Ca²⁺ work to maintain the enzyme conformation and the Mg²⁺ and Mn²⁺ help to catalyze the cleavage of phosphodiester bonds (2). In the presence of Mg²⁺, DNase I cleaves each strand of dsDNA independently and at random. In the presence of Mn²⁺, DNase I cleaves each strand of dsDNA at approximately the same site. This enzyme can be used to remove genomic DNA from RNA preparations prior to RT-PCR, to degrade DNA templates after transcription reactions, and to remove unwanted DNA from samples prior to Northern blotting (3-5). DNase is used in tissue dissociation protocols to digest any DNA that may be present due to cell damage.

Specificity/Sensitivity: One Kunitz unit digests 1 mg of calf thymus DNA in 10 minutes at 37°C in 50 mM Tris, 1 mM Mg²⁺, 1 mM Ca²⁺, pH 7.8. The correlation of digestion units with Kunitz units can change in other buffer systems.

Source/Purification: Deoxyribonuclease I, Recombinant (Animal-Free, Protease and RNase Free) is chromatographically purified from recombinant bovine pancreatic Deoxyribonuclease I produced in *Pichia pastoris*. Production in yeast decreases levels of contaminating RNase and eliminates potential pathogens associated with animal-based materials.

Purity: > 99% purity was determined by SDS-PAGE.

Activity: ≥ 5,000 units per mg protein

Unit Definition: One unit causes an increase in absorbance at 260 nm of 0.001 per minute at 25°C when reacting with highly polymerized DNA at pH 5.0 (6).

Storage: Deoxyribonuclease I, Recombinant (Animal-Free, Protease and RNase Free) is a lyophilized powder that contains glycine as a stabilizer. Store at 4°C and protect from moisture. This product is stable for 12 months when stored at 4°C. Once in solution, store at -20°C. *Aliquot to avoid multiple freeze/thaw cycles.*

Directions for Use: Deoxyribonuclease I, Recombinant (Animal-Free, Protease and RNase Free) contains 10,000 units and is sensitive to denaturation. Mix by gently inverting the tube. Do not vortex. It is recommended to reconstitute with a buffer compatible with the intended assay. Vials should be brought to room temperature prior to opening and they should not be opened in humid areas.

Background References:

- (1) Lauková, L. et al. (2020) *Biomolecules* 10, .
- (2) Suck, D. (1994) *J Mol Recognit* 7, 65-70.
- (3) Rio, D.C. et al. (2010) *Cold Spring Harb Protoc* 2010, pdb. prot5443.
- (4) Stöcher, M. and Berg, J. (2004) *Biotechniques* 36, 480-2.
- (5) Mishima, E. et al. (2015) *PLoS One* 10, e0143756.
- (6) KUNITZ, M. (1950) *J Gen Physiol* 33, 349-62.

All other trademarks are the property of their respective owners. Visit cellsignal.com/trademarks for more information.

Thank you for your recent purchase. If you would like to provide a review visit cellsignal.com/comments.

www.cellsignal.com