

UnlCas12f1 (Cas14a) Nuclease (Lyophilized)

#V32119E/V32119T/V32119S

Version e153.3.2

■ Introduction

UnlCas12f1 (previously known as UnlCas14a) is an endonuclease that specifically binds and cleaves ssDNA target under the guidance of tracrRNA and crRNA (or sgRNA alone), and does not require a PAM site. In addition, UnlCas12f1 can also specifically cleave dsDNA target in a PAM-dependent manner, causing DSBs and generating sticky ends. Similar to other Cas12 family proteins, UnlCas12f1 protein also has the *trans*-cleavage activity against ssDNA, and both dsDNA or ssDNA targets can trigger its *trans*-cleavage activity, that is, when UnlCas12f1 binds sgRNA and target DNA to form a ternary complex, it releases *trans*-cleavage activity to non-specifically cleave ssDNA sequences in the reaction system.

Compared with other Cas proteins, Cas12f1 protein is generally smaller (400-700 AA). Similar to Cas12a and Cas12b, Cas12f can also be used to develop CRISPR-Dx systems for rapid detection of nucleic acids (For details, please refer to PMID: 30337455).

■ Components

UnlCas12f1 Powder	V32119E-SP	V32119E-01	V32119E-02
○ UnlCas12f1 Lyophilized Powder (SCREW CAP TUBES)	10 µg	100 µg	100 µg × 5
● Reconstitution Solution	200 µL	200 µL	1 mL
● 10 × HOLMES Buffer for Cas12f	1 mL	1 mL	1 mL × 5

• It is recommended to use 150 µL of reconstitution solution to reconstitute 100 µg UnlCas12f1 lyophilized powder, generating 10 µM (10 pmol/µL) liquid enzyme. Once dissolved, the liquid enzyme should be stored at -20 °C or below.

UnlCas12f1 Powder (Single Reaction)	V32119T-SP	V32119T-01	V32119T-02
● UnlCas12f1 Lyophilized Powder (8-TUBE STRIPS)	8 T	48 T	96 T
● 10 × HOLMES Buffer for Cas12f	1 mL	1 mL	1 mL

• The amount of UnlCas12f1 for a single reaction is 10 pmol and is recommended for a 20 µL CRISPR reaction system.

UnlCas12f1 Beads (Single Reaction)	V32119S-SP	V32119S-01	V32119S-02
● UnlCas12f1 Lyophilized Beads (8-TUBE STRIPS)	8 T	48 T	96 T
● 10 × HOLMES Buffer for Cas12f	1 mL	1 mL	1 mL

• The amount of UnlCas12f1 in a single lyophilized bead is 10 pmol and is recommended for a 20 µL CRISPR reaction system.

■ Storage Conditions

This product is stored and shipped at room temperature. After reconstitution, the liquid enzyme should be stored at -20°C or below and is stable for at least one month. Repeated freezing and thawing should be avoided for reconstituted liquid enzyme.

■ Experiment Procedure

UnlCas12f1 (Cat # V32119E) CRISPR *Trans*-cleavage Experiment

1) Prepare the reaction mixture of CRISPR *Trans*-cleavage Experiment on ice as below.

Components	Volume	Final Concentration
10 × HOLMES Buffer for Cas12f (#32044)	2 μL	1 ×
10 μM UnlCas12f1 Nuclease	0.5 μL	250 nM
10 μM sgRNA	0.5 μL	250 nM
1 μM Target DNA	0.5~5 μL	25~250 nM
10 μM HOLMES ssDNA Reporter (#31101)	0.5 μL	250 nM
Nuclease-free Water	Up to 20 μL	

2) Put the reaction mixture in the real-time PCR instrument to detect the fluorescent signal at 37°C, and collect the fluorescent signals every 30 sec.

UnlCas12f1 (Cat# V32119T/V32119S) CRISPR *Trans*-cleavage Experiment

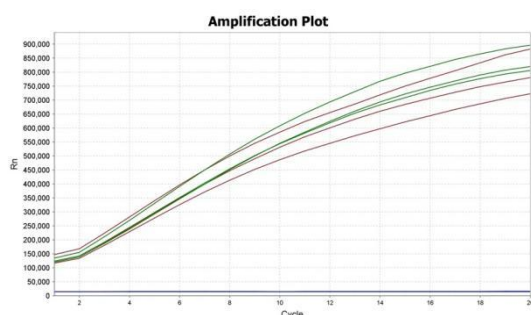
1) Prepare the reaction mixture of CRISPR *Trans*-cleavage Experiment on ice as below.

Components	Volume	Final Concentration
10 × HOLMES Buffer for Cas12f (#32044)	2 μL	1 ×
10 μM sgRNA	0.5 μL	250 nM
1 μM Target DNA	0.5~5 μL	25~250 nM
10 μM HOLMES ssDNA Reporter (#31101)	0.5 μL	250 nM
Nuclease-free Water	Up to 20 μL	

2) Dissolve the lyophilized powder/bead for a single reaction using the 20 μL reaction mixture prepared above.

3) Put the reaction mixture in the real-time PCR instrument to detect the fluorescent signal at 37°C, and collect the fluorescent signals every 30 sec.

■ Experimental Results



- UnlCas12f1 Nuclease (lyophilized)
- UnlCas12f1 Nuclease (liquid form, #32119)