ArcticZymes R2D Ligase™

ArcticZymes RNA to DNA Ligase (ArcticZymes R2D Ligase) is the first ligase on the market that is able to ligate DNA to 5'-phosphorylated ends of RNA in the presence of a DNA template positioning the ligatable ends.

With its unique substrate specificity, ArcticZymes R2D Ligase allows the development of new technologies in molecular biology research, diagnostics, and manufacturing.

ArcticZymes R2D Ligase is extensively tested for contaminating DNase and RNase activities as well as residual host-cell gDNA.

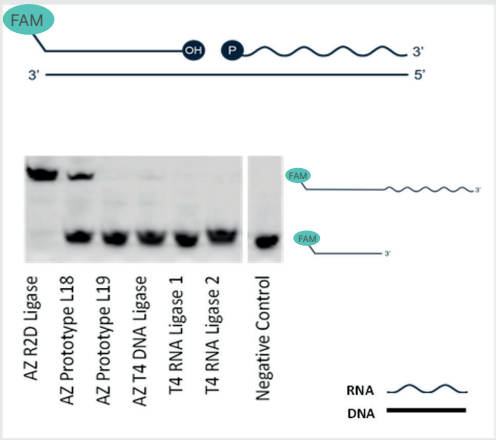

Figure 1: *R2D Ligase displays good excellent nick-joining activity between DNA and RNA.*

R2D Ligase activity on various substrates. ArcticZymes R2D Ligase exhibits the unique feature of being able to ligate DNA to both the 5'- and the 3' end of RNA in the presence of a DNA template positioning the ligatable ends of DNA and RNA. When compared to other ligases, the efficiency of this activity in ArcticZymes R2D Ligase clearly stands out as proven when using a fluorescein labelled oligo neighboring a phosphorylated oligo forming a nick. Successful ligation of the nick increases the length of the fluorophore-labelled oligo resulting in slower migration during gel separation.

Specifications

- Source: Recombinantly expressed in *E. coli.*
- Size: 52.9 kDa
- Storage buffer: 10 mM Tris-HCl pH 7.5 (@25°C), 300 mM KCl, 5 mM $MgCl_2$, 1 mM DTT, 0.1 mM EDTA, 50% (v/v) Glycerol.

Quality control

dsDNA endonuclease activity	2.5 U R2D Ligase was incubated with a supercoiled plasmid (1 µg) for 4 hours at 37°C. Agarose gel electrophoresis did not reveal any transformation of closed circular DNA to nicked DNA.
ssDNA endonuclease activity	2.5 U R2D Ligase was incubated with M13 ssDNA (0.5 µg) for 4 hours at 37°C. Agarose gel electrophoresis did not reveal any visible signs of ssDNA degradation.
Exonuclease activity	2.5 U R2D Ligase was incubated with either 3H-dATP labelled ds or ssDNA (0.5 µg, 500 bp) for 4 hours at 37°C. Acid soluble radioactivity from labelled DNA was not significantly over blank test for either substrate.
RNAse activity	2.5 U R2D Ligase was incubated with a 2 kb RNA transcript (0.5 µg) for 4 hours at 37°C. Agarose gel electrophoresis did not reveal any visible signs of RNA degradation.
***E. coli* gDNA contamination**	2.5 U R2D Ligase was analysed in a probe-based qPCR assay detecting the 23S ribosomal subunit in *E. coli*. No *E. coli* gDNA could be detected (LOD: < 3 *E. coli* genomic copies.).

Ordering information

	Article no.	Pack size*	Concentration
ArcticZymes R2D Ligase™	71900-105	5.000 U	10 U/µl
	71900-100	Custom	Custom

* One milliunit is defined as the amount of enzyme needed to ligate 1 pmol (of 18 pmol) of a nicked DNA substrate in 20 minutes at 25 °C in a 20 µl reaction volume in a buffer consisting of 62.5 mM Tris-HCl, pH 7.5 (25°C), 5 mM $MgCl_2$, 1 mM ATP, 10 mM DTT, 0.025 mg/ml BSA and 25 mM KCl.

Your OEM Partner to deliver novel solutions for genomics and proteomics.

Quality

ArcticZymes is dedicated to the quality of its products and is certified according to ISO 13485:2016. ArcticZymes offers the convenience of providing standard bulk enzymes as off the shelf products. In addition, ArcticZymes offers enzymes in customized formats. For additional information, please contact us.

Additional information

We are pleased to provide data and information relating to ArcticZymes R2D Ligase. Available data includes stability, buffer storage conditions, pH, specific activity data. For more information, please check our website www.arcticzymes.com

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