



# CERTIFICATE OF ANALYSIS

Version 3.7

revised on Jul 26, 2018

## Glycan Sequencing Kit

PRODUCT NAME: Glycan Sequencing Kit  
PRODUCT NUMBERS: KE-SQ01

LOT NUMBER: 807.1A  
EXPIRATION DATE: March 03, 2020  
ASSAY DATE: April 20, 2018

STORAGE: 4°C (Do not freeze)

ENZYME: Sialidase Au  
PARENT LOT NUMBER: 1012.1A  
SOURCE: recombinant gene from *Arthrobacter ureafaciens* expressed in *E. Coli*  
FORMULATION: 20 mM Tris-HCl, 20 mM NaCl pH 7.5, filter sterilized  
ACTIVITY: Activity<sup>1</sup> 5 U/ml (Specification: ≥ 5 U/ml)  
Specific Activity<sup>2</sup> 210 U/mg (Specification: ≥ 135 U/mg)

CONTAMINATING ACTIVITY ASSAYS:  
Protease Assay<sup>3</sup> Passed (Specification "Passed")

ENZYME: β(1-4) Galactosidase  
PARENT LOT NUMBER: 505.1C  
SOURCE: recombinant gene from *Streptococcus pneumoniae* expressed in *E. Coli*  
FORMULATION: 20 mM Tris-HCl, 25 mM NaCl pH 7.5, filter sterilized  
ACTIVITY: Activity<sup>1</sup> 3 U/ml (Specification: ≥ 3 U/ml)  
Specific Activity<sup>2</sup> 12.4 U/mg (Specification: ≥ 6 U/mg)

CONTAMINATING ACTIVITY ASSAYS:  
Protease Assay<sup>3</sup> Passed (Specification "Passed")

ENZYME: Beta-N-acetylglucosaminidase  
PARENT LOT NUMBER: 502.1A  
SOURCE: recombinant gene from *Streptococcus pneumoniae* expressed in *E. Coli*  
FORMULATION: 20 mM Tris-HCl pH 7.5, 25 mM NaCl filter sterilized  
ACTIVITY: Activity<sup>1</sup> 50 U/ml (Specification: ≥ 40 U/ml)  
Specific Activity<sup>2</sup> 118 U/mg (Specification: ≥ 80 U/mg)

CONTAMINATING ACTIVITY ASSAYS:  
Protease Assay<sup>3</sup> Passed (Specification "Passed")

ENZYME: Alpha-(1-2,3,6) Mannosidase  
PARENT LOT NUMBER: 401.1G  
SOURCE: Jack Bean  
FORMULATION: 20 mM Tris pH 7.5, 50 mM NaCl, 0.1 mM zinc chloride, filter sterilized  
ACTIVITY: Activity<sup>1</sup> 20 U/ml (Specification: ≥ 9 U/ml)  
Specific Activity<sup>2</sup> 7.1 U/mg (Specification: ≥ 4 U/mg)

CONTAMINATING ACTIVITY ASSAYS:  
Protease Assay<sup>3</sup> Passed (Specification "Passed")  
Glycosidase activity<sup>4</sup>  
Beta-Galactosidase Passed (Specification "Passed")  
N-acetylglucosaminidase Passed (Specification "Passed")  
Alpha-Galactosidase Passed (Specification "Passed")

(Continued on page 2)



# CERTIFICATE OF ANALYSIS

Version 3.7

revised on Jul 26, 2018

## Glycan Sequencing Kit

(Page 2 of 2)

PRODUCT NAME: Glycan Sequencing Kit  
PRODUCT NUMBER: KE-SQ01  
  
LOT NUMBER: 807.1A  
EXPIRATION DATE: March 03, 2020  
ASSAY DATE: April 20, 2018  
  
STORAGE: 4°C (Do not freeze)  
  
ENZYME:  $\alpha(1-6)$  Core Mannosidase  
PARENT LOT NUMBER: 126.1A  
SOURCE: recombinant gene from *Streptococcus pneumoniae* expressed in *E. Coli*  
FORMULATION: 50 mM sodium phosphate pH 7.5, 0.1 mM zinc chloride, filter sterilized  
ACTIVITY: Activity<sup>1</sup> 1 U/ml (Specification:  $\geq 1$  U/ml)  
Specific Activity<sup>2</sup> 1.2 U/mg (Specification:  $\geq 0.75$  U/mg)  
CONTAMINATING ACTIVITY ASSAYS: Protease Assay<sup>3</sup> Passed (Specification "Passed")

1. Defined as the amount of enzyme required to hydrolyze 1  $\mu$ mole of p-nitrophenyl-alpha-p-mannoside to p-nitrophenol in 1 minute at pH 5.0 and 37°C.
2. Protein concentration determined by Bradford method, using BSA as a standard.
3. For the protease assay, 10  $\mu$ g of denatured BSA is incubated at 37°C for 24 hr with 2 ul of enzyme. SDS-PAGE analysis of the treated BSA shows no evidence of degradation.
4. Unexpected glycosidic activity is tested by incubating the enzyme for 24 hours at 37°C with the appropriate substrates; the detection limit of this assay is 5  $\mu$ U/ml (IUB). A passing lot will have no detectable activity.

President - QA-Bio Inc  
Authorized by Mike Gibson  
Jul 26, 2018