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A Photobacterium Sp. Alpha2-6-Sialyltransferase 9Psp2.6St) A366g Mutant With Increased Expression Level And Improved Activity In Sialylating Tn Antigen

Tech ID: 24841 / UC Case 2015-315-0

ABSTRACT

Researchers at the University of California, Davis have developed an improved sialyltransferase that can be used for the preparation of tumor-associated carbohydrate antigens.

FULL DESCRIPTION

Sialic acid-containing structures in eukaryotic systems play important roles in a variety of physiological and pathological processes, including cell-cell interactions, inflammation, fertilization, viral infection, differentiation, malignancies, and cell signaling. Thus far, more than 50 different sialic acid structures have been identified in nature.

Sialyltransferases are key enzymes involved in the biosynthesis of sialic acid-containing oligosaccharides and glycoconjugates. The ubiquity of sialic acid-containing structures and their roles in diverse pathologies make sialyltransferases attractive targets and tools for biomedical research, including the synthesis of tumor-associated carbohydrate antigens and other sialosides. Since bacterial sialyltransferases can be produced more easily as active forms in larger amounts in *Escherichia coli* expression systems, and many of them have broader substrate specificities than their mammalian counterparts, they have been used as efficient catalysts in preparative and large scale synthesis of biological important sialosides.

Researchers at the University of California, Davis have developed an improved alpha2-6-sialyltransferase that, when expressed in an *Escherichia coli* system, exhibits markedly improved enzyme expression levels. In addition, catalytic activity of the enzyme has also been reported to be improved.

APPLICATIONS

- ▶ Synthesis of oligosaccharide and glycoconjugate research tools

FEATURES/BENEFITS

- ▶ Increased expression level
- ▶ Improved catalytic activity
- ▶ Can be used in a one-pot two-enzyme sialylation system for improved synthetic efficiency

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	9,938,510	04/10/2018	2015-315

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OTHER INFORMATION

CATEGORIZED AS

- ▶ **Biotechnology**
 - ▶ Proteomics
- ▶ **Materials & Chemicals**
 - ▶ Chemicals
- ▶ **Medical**
 - ▶ Research Tools

RELATED CASES

2015-315-0

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- ▶ Purification of Glycosphingosines and Glycosphingolipids
- ▶ Synthesis of Capsular Polysaccharides
- ▶ Legionaminic Acid Glycosyltransferases for Chemoenzymatic Synthesis of Glycans and Glycoconjugates
- ▶ Using *Escherichia coli* to Produce Human Milk Oligosaccharide Lactodifucotetraose
- ▶ 4-N-Derivatized Sialic Acids and Related Sialosides
- ▶ Substrate And Process Engineering For Biocatalytic Synthesis And Facile Purification Of Human Milk Oligosaccharides (HMOs)
- ▶ O-Acetyl Glycosphingosines and Gangliosides, as well as Their N-Acetyl Analogs

- ▶ Stable N-acetylated analogs of Sialic Acids and Sialosides
- ▶ Alpha1–2-Fucosyltransferase for Enzymatic Synthesis of Alpha1–2-linked Fucosylated Glycans
- ▶ Engineering Pasteurella Multocida Heparosan Synthase 2 (Pmhs2) For Efficient Synthesis Of Heparosan Heparin And Heparan Sulfate Oligosaccharides
- ▶ One-Pot Multienzyme Synthesis of Sialidase Reagents, Probes and Inhibitors
- ▶ Novel Methods For Chemical Synthesis Of Lactosyl Sphingosines, Glucosylsphingosines, Galactosylsphingosines, And 3-O-Sulfogalactosylsphingosines

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