

Engineering *Pasteurella Multocida* Heparosan Synthase 2 (Pmhs2) For Efficient Synthesis Of Heparosan Heparin And Heparan Sulfate Oligosaccharides

Tech ID: 33438 / UC Case 2019-805-0

ABSTRACT

Researchers at the University of California, Davis have developed improved variants of a Heparosan synthase supporting efficient synthesis of heparosan, heparin, and heparan sulfate analogs.

FULL DESCRIPTION

Researchers at the University of California Davis have developed a technology that employs engineered variants of *Pasteurella multocida* heparosan synthase 2 (PmHS2) for efficient synthesis of heparosan, heparin, and heparan sulfate oligosaccharides/polysaccharides and analogs. These variants have enhanced expression levels, improved thermal stability, and reduced reverse glycosylation activity, thereby increasing the synthetic efficiency and overall yields.

APPLICATIONS

- ▶ Biomedical research for understanding the role of heparan sulfate in cellular processes
- ▶ Pharmaceutical industry for the manufacture of anticoagulants such as heparin
- ▶ Development of new therapeutic drugs and interventions

FEATURES/BENEFITS

- ▶ Increased expression levels
- ▶ Improved heat resistance
- ▶ Reduced reverse glycosylation activity
- ▶ Efficient synthesis of heparosan, heparin, and heparan sulfate analogs
- ▶ Addresses challenges in synthesizing heparan sulfate-like oligosaccharides and polysaccharides
- ▶ Solves low synthetic efficiency of existing methods
- ▶ Addresses difficulty of obtaining homogeneous, structurally defined heparan sulfate

PATENT STATUS

| Country | Type | Number | Dated | Case |
|--------------------------|---------------|----------------------------|------------|----------|
| United States Of America | Issued Patent | 11,441,131 | 09/13/2022 | 2019-805 |

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OTHER INFORMATION

KEYWORDS

anticoagulants, enhanced expression, heparan sulfate, heparosan, heparosan synthase 2 (pmhs2), synthetic efficiency, thermal stability, therapeutic drugs, biomedical research

CATEGORIZED AS

- ▶ **Biotechnology**
- ▶ Health
- ▶ Other
- ▶ **Materials & Chemicals**

- ▶ Biological
- ▶ Chemicals
- ▶ **Medical**
 - ▶ New Chemical Entities, Drug Leads
 - ▶ Research Tools
 - ▶ Therapeutics
- ▶ **Research Tools**
 - ▶ Bioinformatics
 - ▶ Other
 - ▶ Protein Synthesis

RELATED CASES

2019-805-0

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

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