HLA Engineering Methods and Compositions for Treatment of Autoimmunity

~~**Pocket Engineering of HLA Alleles for Treating Autoimmunity**~~

FIELD

[0001] The disclosed compositions, methods, and systems are directed to treatment and prevention of autoimmune conditions.

CROSS-REFERENCE TO RELATED APPLICATIONS

[0002] This application claims benefit of and priority pursuant to 35 U.S.C. § 119(e) of U.S. provisional patent application No. 63/186,770 entitled "HLA Engineering Methods, Compounds, and Compositions for Treatment of Autoimmunity," filed on 10 May 2021, which is also hereby incorporated by reference in its entirety. This application is concurrently filed with related US non-provisional application entitled "HLA Engineering Methods and Compositions for Treatment of Autoimmunity" and PCT applications entitled "Methods of HLA Engineering and Treatments for Autoimmunity", and "Engineered HLA Alleles for Treating Autoimmunity," which are incorporated by reference.

SEQUENCE LISTING

[0003] The instant application contains a Sequence Listing which has been submitted electronically in ASCII format and is hereby incorporated by reference in its entirety.
Said ASCII copy, created on_____2022, is named_____.txt and is

____bytes in size.

BACKGROUND

[0004] Autoimmunity refers to pathologic conditions in which the body's immune system mistakenly identifies healthy tissues and cells as foreign and attacks them. Any disease that results from this mistaken immune response is termed an autoimmune disease, disorder or condition.. While some autoimmune diseases such as rheumatoid arthritis (RA), Type 1 diabetes (T1D), and multiple sclerosis (MS) are more prevalent than others, collectively they pose a serious public health challenge impacting millions of people across the world. Commonly, patients with an autoimmune disease suffer from various symptoms that, without limitation, can range from mild including fatigue, fever, muscle aches, joint pain and swelling, skin problems, abdominal pain, and digestion problems, to more severe, which can include decreased mobility, loss of vision, and organ failure.

[0005] Autoimmune disease can have various molecular, cellular, and physiological bases. Generally, autoimmunity is the result of a dysregulated immune system, which may stem from genetic or environmental factors, resulting in a subject's immune system