Novel Therapeutic alpha2beta1 Integrin Inhibitory Compounds Targeting Airway Smooth Muscle for Severe Asthma Treatment

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TECHNOLOGY DESCRIPTION

UCSF researchers have developed novel therapeutic compounds for severe asthma that target airway smooth muscle tension transmission by disrupting integrin interactions with extracellular matrix proteins—a critical mechanism of airway narrowing that has remained unaddressed for decades. Severe asthma affects 10% of the 300 million asthma patients globally, with current therapies, including biologics targeting T2 inflammation, providing inconsistent benefits to only a small subset of patients. These innovative compounds represent a major advancement in smooth muscle-targeting therapeutics, offering unique insights into tension transmission pathways and overcoming limitations of traditional actin-myosin therapies. Currently in development, these compounds have potential applications in drug development, prodrug engineering, and personalized asthma treatments, addressing a significant unmet need in the care of severe asthma.

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	11,643,388	05/09/2023	2020-170

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OTHER INFORMATION

KEYWORDS

Severe asthma treatment, Airway smooth muscle therapeutics, Integrin-targeting compounds, Asthma drug development, Personalized asthma therapy

CATEGORIZED AS

- Medical
  - Disease: Respiratory and Pulmonary System
  - Therapeutics

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