COMPOSITIONS AND METHODS FOR TARGETING INFLAMMATORY OR ACTIVATED CELLS AND TREATING OR AMELIORATING INFLAMMATORY CONDITIONS AND PAIN

RELATED APPLICATIONS

This Patent Convention Treaty (PCT) International Application claims the benefit of priority under 35 U.S.C. § 119(e) of U.S. Provisional Application Serial No. (USSN) 63/162,714, filed March 18, 2021. The aforementioned application is expressly incorporated herein by reference in its entirety and for all purposes. All publications, patents, patent applications cited herein are hereby expressly incorporated by reference for all purposes.

GOVERNMENT RIGHTS

This invention was made with government support under grants NS102432, NS104769, HL135737, AI147879 and HL136275, awarded by the National Institutes of Health (NIH). The government has certain rights in the invention.

TECHNICAL FIELD

This invention generally relates to medicine, inflammation, pain control and cell biology. In particular, in alternative embodiments, provided are methods for modification of structure and increasing levels of expression of ApoA-I Binding Protein (APOA1BP, AIBP, or AI-BP, also known as NAD(P)HX Epimerase or NAXE) to treat, ameliorate, prevent, reverse, decrease the severity and/or duration of: a neuropathic pain, a CNS inflammation, an allodynia, a post nerve injury pain, a post-surgical pain, a chemotherapeutic-induced peripheral neuropathy (CIPN) (for example, cisplatin-induced allodynia), a neurodegeneration, including for example, a neurodegenerative disease or condition such as Alzheimer's disease, a hyperalgesia, primary headaches such as migraines and cluster headaches, glaucoma, lung inflammation and asthma, HIV infection and its comorbidities, and/or vascular inflammation and cardiovascular disease. In alternative embodiments, provided are methods comprising structural modifications and administering formulations and pharmaceutical compositions comprising an recombinantly modified APOA1BP polypeptide or protein that is a human or a mammalian APOA1BP, or a peptidomimetic or a synthetic APOA1BP, or a bioisostere thereof, to treat, ameliorate prevent, reverse, decrease the severity of a neuropathic pain, an allodynia, a hyperalgesia, a neurodegenerative disease or condition such as