(APCs), such as dendritic cells (DCs). Its expression, however, is upregulated in these cells following activation by various immunological stimuli. The release of soluble SEMA4D from immune cells is also increased by cell activation.

[0005] SEMA4D has been implicated in the development of neurodegenerative disorders, autoimmune diseases, demyelinating diseases, and certain cancers. However, the effect of blocking SEMA4D signaling on the organization and function of the central nervous system (CNS) including brain and spinal cord and on behaviors controlled by the CNS remains to be elucidated. This is important because changes in the CNS have a profound influence on a subject's behavior and quality of life. In particular, such changes can impact a subject's neuropsychiatric behavior, cognitive behavior, and motor skills. There remains, therefore, a need for treatments for neurodegenerative disorders that alleviate the symptoms associated with the disorder.

SUMMARY

[0006] Methods for using semaphorin 4D binding molecules to alleviate symptoms in a subject having neurodegenerative disorders are disclosed herein. According to embodiments of the disclosure illustrated herein, there is provided a method for improving symptoms in a subject with a neurodegenerative disorder including administering to the subject an effective amount of an isolated binding molecule which specifically binds to semaphorin 4D (SEMA4D) and inhibits, suppresses, prevents, reverses or slows the effect of SEMA4D.

[0007] According to embodiments illustrated herein, there is provided a method of treating a subject with a neurodegenerative disorder including administering to the subject an effective amount of an isolated binding molecule which specifically binds to semaphorin 4D (SEMA4D), wherein the binding to SEMA4D acts to improve symptoms associated with the disorder.

[0007a] In one aspect, there is provided use of an effective amount of an isolated antibody or antigen-binding fragment thereof that specifically binds to semaphorin-4D (SEMA4D) in the preparation of a medicament for alleviation of symptoms in a subject having Huntington's disease (HD), wherein the antibody or antigen-binding fragment thereof can inhibit SEMA4D interaction with a SEMA4D receptor.

[0008] Provided is use of an effective amount of an isolated binding molecule which specifically binds to semaphorin-4D (SEMA4D) in the preparation of a medicament for alleviating symptoms in a subject having a neurodegenerative disorder. Methods of alleviating symptoms in a subject having a neurodegenerative disorder are also provided, comprising administering to that subject an effective amount of an isolated binding molecule which specifically binds to semaphorin-4D (SEMA4D). In certain embodiments of the uses and methods, the binding molecule inhibits SEMA4D interaction with its receptor or a portion of its receptor. In certain embodiments of the uses and methods, the receptor is selected from the group consisting of Plexin-B1 and Plexin-

WHAT IS CLAIMED IS:

1. Use of an effective amount of an isolated antibody or antigen-binding fragment thereof that specifically binds to semaphorin-4D (SEMA4D) in the preparation of a medicament for alleviation of symptoms in a subject having Huntington's disease (HD), wherein the antibody or antigen-binding fragment thereof can inhibit SEMA4D interaction with a SEMA4D receptor.

2. The use of claim 1, wherein the SEMA4D receptor is selected from the group consisting of Plexin-B1, Plexin-B2, and CD72.

3. The use of claim 1 or claim 2, wherein the antibody or antigen-binding fragment thereof comprises a variable heavy chain (VH) comprising VHCDRs 1-3 comprising SEQ ID NOs: 6, 7, and 8, respectively, and a variable light chain (VL) comprising VLCDRs 1-3 comprising SEQ ID NOs: 14, 15, and 16, respectively.

4. The use of claim 3, wherein the VH and VL comprise, respectively, SEQ ID NO: 9 and SEQ ID NO: 17 or SEQ ID NO: 10 and SEQ ID NO: 18.

5. The use of any one of claims 1 to 4, wherein the symptoms are selected from a group consisting of neuropsychiatric symptoms, cognitive symptoms, motor dysfunction, and any combination thereof.

6. The use of claim 5, wherein the neuropsychiatric symptoms are selected from a group consisting of anxiety-like behavior, reduced spatial memory, impaired locomotion, and any combination thereof.

7. The use of any one of claims 1 to 6, wherein the subject is human.

8. The use of any one of claims 1 to 7, wherein the antibody or antigen-binding fragment thereof is to be administered to the subject in combination with at least one or more other treatments for neurodegenerative disorders, and wherein the other treatment is to be administered prior to, during, or subsequent to administration of the antibody or antigen-binding fragment thereof to the subject.

9. The use of any one of claims 1 to 8, wherein the antibody or antigen-binding fragment thereof can inhibit SEMA4D-mediated Plexin-B1 signal transduction.

10. The use of any one of claims 1 to 9, wherein the antibody or antigen-binding fragment thereof can inhibit SEMA4D-mediated Plexin-B2 signal transduction.