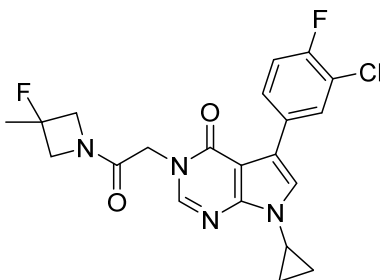


[0005] The study of the molecular basis of NMDA receptor function continues to be an area of importance. As glutamate is the major excitatory neurotransmitter, dysfunction of glutamate neurotransmission and NMDA receptor-dependent mechanisms of synaptic transmission, plasticity, and neuronal network connectivity are broadly implicated in diseases of the nervous system. Accordingly, compounds that are capable of modulating NMDA receptors may be useful for the treatment of nervous system disorders and diseases, for example, schizophrenia, Alzheimer's disease, attention deficit and hyperactivity disorder, and autism.

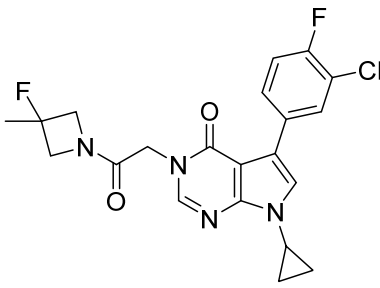
SUMMARY

[0006] Provided herein is Compound **1**, 5-(3-chloro-4-fluorophenyl)-7-cyclopropyl-3-(2-(3-fluoro-3-methylazetidin-1-yl)-2-oxoethyl)-3,7-dihydro-4H-pyrrolo[2,3-d]pyrimidin-4-one, having the following structure:



[0007] Compound **1** is a heterocyclic pyrrolopyrimidinone analogue which modulates NMDA receptors (e.g., positive allosteric modulation of NMDA receptors) and may be used for treating psychiatric, neurological, and neurodevelopmental disorders, as well as diseases of the nervous system.

[0007a] In a first aspect of the present disclosure, there is provided a compound of the formula:



or a pharmaceutically acceptable salt thereof.

[0007b] In a second aspect of the present disclosure, there is provided a pharmaceutical composition comprising the compound of the first aspect, or a pharmaceutically acceptable salt thereof; and a pharmaceutically acceptable carrier.

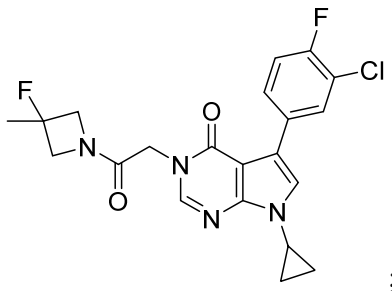
[0007c] In a third aspect of the present disclosure, there is provided the compound of the first aspect, or a pharmaceutically acceptable salt thereof, for use in treating a neuropsychiatric, neurodevelopmental, or neurological disorder in a subject.

[0007d] In another aspect of the present disclosure, there is provided a use of the compound of the first aspect, or a pharmaceutically acceptable salt thereof, in the manufacture of a medicament for treating a neuropsychiatric, neurodevelopmental, or neurological disorder in a subject.

[0008] Heterocyclic NMDA receptor modulators have been previously described in e.g., WO 2017/100591. In WO 2017/100591, a wide range of heterocyclic cores including pyrrolopyrazinones, thienopyridinones, imidazopyrazinones, pyrrolopyridinones, and pyrrolopyrimidinones are disclosed. The potency of the compounds in WO 2017/100591 was evaluated on the basis of the compounds' ability to reverse the suppression of the Ca^{2+} response mediated by Ro 25-6981, a potent and selective antagonist of NMDA glutamate receptors containing the NR2B subunit, and 5,7-dichlorokynurenic acid (DCKA), a selective NMDA receptor antagonist acting at the glycine site of the NMDA receptor complex. Potency in the Ro 25-6981/DCKA assay was quantified by % response recovered (as shown e.g., in Table 49 of WO 2017/100591) and/or by % maximum measured potentiation. Of the most potent twenty-one analogs exemplified in WO 2017/100591 in the Ro 25-6981/DCKA

Listing of Claims:

1. A compound of the formula:



or a pharmaceutically acceptable salt thereof.

2. A pharmaceutical composition comprising a compound of Claim 1, or a pharmaceutically acceptable salt thereof; and a pharmaceutically acceptable carrier.
3. A compound of Claim 1, or a pharmaceutically acceptable salt thereof, for use in treating a neuropsychiatric, neurodevelopmental, or neurological disorder in a subject.
4. Use of a compound of Claim 1, or a pharmaceutically acceptable salt thereof, in the manufacture of a medicament for treating a neuropsychiatric, neurodevelopmental, or neurological disorder in a subject.
5. The compound or pharmaceutically acceptable salt thereof for use of claim 3, or use of claim 4, wherein the neuropsychiatric disorder is schizophrenia, schizoaffective disorder, bipolar disorder or depression.
6. The compound or pharmaceutically acceptable salt thereof for use of claim 3, or use of claim 4, wherein the neurodevelopmental disorder is Attention Deficit Hyperactivity Disorder, an autism spectrum disorder or an intellectual disability.
7. The compound or pharmaceutically acceptable salt thereof for use, or use of claim 6, wherein the disability is Phelan McDermid Syndrome, Smith-Lemli-Opitz Syndrome, Fragile X Syndrome or Rett syndrome.

8. The compound or pharmaceutically acceptable salt thereof for use of claim 3, for use of claim 4, wherein the neurological disorder is a seizure or epileptic disorder, a neurodegenerative disorder, an aphasia, or an encephalitis.
9. The compound or pharmaceutically acceptable salt thereof for use, or use of claim 8, wherein the neurological disorder is Alzheimer's disease or anti-NMDA receptor encephalitis (ANRE).