preventing the transport of maternal antibodies across the placenta. Thus, the methods disclosed herein can be used reduce the risk of a child developing ASD or reduce the symptoms of ASD. The methods disclosed herein can also be used reduce the risk or symptoms of ASD associated with the presence of maternal autoantibodies.

[0004] Thus, disclosed herein are methods of reducing auto-reactive antibodies (e.g., an amount present in blood or sera) in a pregnant individual or an individual trying to become or an individual considering pregnancy, or an individual serving as a surrogate for the pregnancy, comprising administering, to the pregnant individual or individual trying to become pregnant or individual considering pregnancy, or an individual serving as a surrogate for the pregnancy, an inhibitor of neonatal Fc receptor (FcRn) function.

[0004a] In one aspect, provided herein is a use of an inhibitor of neonatal Fc receptor (FcRn) function in the manufacture of a medicament to reduce auto-reactive antibodies in a pregnant individual, an individual trying to become pregnant, an individual considering pregnancy, or an individual serving as a surrogate for a pregnancy.

[0005] In some embodiments, the auto-reactive antibodies comprise antibodies that bind a central nervous system (CNS) target. In certain embodiments, an embryo or fetus expresses the CNS target. In some embodiments, the auto-reactive antibodies bind to a target selected from the group consisting of lactate dehydrogenase A or B (LDH A,B), guanine deaminase (GDA), collapsin response mediator protein 1 or 2 (CRMP1,2)), stress-induced phosphoprotein 1 (STIP1), alpha subunit of the barbed-end actin binding protein Cap Z (CAPZA2), Y Box Binding Protein 1 (YBX1), eukaryotic translation and elongation factor 1A1 (EEF1A1), microtubule-associated protein Tau (MAPT), dihydropyrimidinase-like protein 2 (DPYSL2), dynamin 1-like protein (DNM1L), radixin (RDX), moesin (MSN), non-specific enolase (NSE), Caspr2, KCNAB2, KCNAB1, endothelial integrin ligand (EDIL3), IVD, brain specific sultatransferase (SULT4A1), TNIP2, retinoic acid induced 16 (RAI16), GDP D5, ezrin (EZR), and any combination thereof. In certain embodiments, the auto-reactive antibodies bind to the target LDH-A. In certain embodiments, the auto-reactive antibodies bind to the target LDH-B. In certain embodiments, the auto-reactive antibodies bind to the target GDA. In certain embodiments, the auto-reactive antibodies bind to the target CRMP1. In certain embodiments, the auto-reactive antibodies bind to the target STIP1. In certain embodiments, the auto-reactive antibodies bind to the target DPYSL2. In certain embodiments, the auto-reactive antibodies bind to the target YBX1. In certain embodiments, the auto-reactive antibodies bind to the target NSE. In certain embodiments, the auto-reactive

antibodies bind to the target Caspr2. In certain embodiments, the auto-reactive antibodies bind to the target KCNAB2. In certain embodiments, the auto-reactive antibodies bind to the target KCNAB1. In certain embodiments, the auto-reactive antibodies bind to the target EDIL3. In certain embodiments, the auto-reactive antibodies bind to the target IVD. In

CLAIMS

1. ~~A method of reducing auto-reactive antibodies in a pregnant individual, an individual trying to become pregnant, an individual considering pregnancy, or an individual serving as a surrogate for a pregnancy, comprising administering~~ Use of an inhibitor of neonatal Fc receptor (FcRn) function in the manufacture of a medicament to reduce auto-reactive antibodies in a ~~to the~~ pregnant individual, ~~the~~ an individual trying to become pregnant, ~~the~~ an individual considering pregnancy, or ~~the~~ an individual serving as a surrogate for a pregnancy~~, thereby reducing the auto-reactive antibodies in the pregnant individual~~.

2. The ~~method~~ use of claim 1, wherein the auto-reactive antibodies comprise antibodies that bind a central nervous system (CNS) target, optionally wherein the CNS target is expressed by a fetus.

~~3. The method of claim 2, wherein an embryo or fetus expresses the CNS target.~~

~~4.~~3. The use ~~method~~ of claim 1, wherein the auto-reactive antibodies bind to a target selected from the group consisting of lactate dehydrogenase A or B (LDH A,B), guanine deaminase (GDA), collapsin response mediator protein 1 or 2 (CRMP1,2)), stress-induced phosphoprotein 1 (STIP1), alpha subunit of the barbed-end actin binding protein Cap Z (CAPZA2), Y Box Binding Protein 1 (YBX1), eukaryotic translation and elongation factor 1A1 (EEF1A1), microtubule-associated protein Tau (MAPT), dihydropyrimidinase-like protein 2 (DPYSL2), dynamin 1-like protein (DNM1L), radixin (RDX), moesin (MSN), non-specific enolase (NSE), Caspr2, KCNAB2, KCNAB1, endothelial integrin ligand (EDIL3), IVD, brain specific sultatransferase (SULT4A1), TNIP2, retinoic acid induced 16 (RAI16), GDP D5, ezrin (EZR), and any combination thereof.

~~5.~~4. The use ~~method~~ of claim ~~4~~3, wherein the auto-reactive antibodies bind to a target selected from the group consisting of lactate dehydrogenase A (LDHA), lactate dehydrogenase B (LDHB), collapsin response mediator protein 1 (CRMP1), stress-induced phosphoprotein 1 (STIP1), and any combination thereof.

~~6.~~5. The use ~~method~~ of claim ~~4~~3, wherein the auto-reactive antibodies bind to a target selected from the group consisting of lactate dehydrogenase collapsin response mediator protein

1 (CRMP1), stress-induced phosphoprotein 1 (STIP1), and both collapsin response mediator protein 1 (CRMP1), stress-induced phosphoprotein 1 (STIP1).

~~7. The method of any one of claims 1 to 6, wherein an embryo or fetus express the target.~~

~~8. The method of any one of claims 1 to 7, wherein the auto-reactive antibodies bind a neural antigen expressed by a fetus.~~

~~9.~~6. The use ~~method~~ of any one of claims 1 to ~~8~~5, wherein the inhibitor prevents an interaction between the FcRn and an immunoglobulin G (IgG) molecule.

~~10.~~7. The use ~~method~~ of any one of claims 1 to ~~8~~6, wherein the inhibitor prevents FcRn-mediated rescue of an IgG molecule.

~~11. The method of any one of claims 1 to 8, wherein the inhibitor prevents an interaction between FcRn and a human serum albumin molecule.~~

~~12.~~8. The use ~~method~~ of any one of claims 1 to ~~11~~7, wherein the inhibitor comprises an antibody or a target-binding fragment thereof, a small molecule, a peptide, a polypeptide, or a nucleic acid.

~~13.~~9. The use ~~method~~ of any one of claims 1 to ~~12~~8, wherein the inhibitor is an antibody or an antigen-binding fragment thereof.

~~14. The method of claim 13, wherein the antibody or the target-binding fragment thereof binds FcRn.~~

~~15.~~10. The use ~~method~~ of claim ~~14~~9, wherein the antibody or the ~~target~~antigen-binding fragment thereof is selected from the group consisting of Rozanolixizumab, SYNT001, M281, Argx-113, HL161-11G, HL161-11H, HL161-1A, DX-2504, DX-2507, ABY039,IMVT-1401/RVT1401, and any combination thereof.

~~16. The method of claim 14, wherein the antibody or the target-binding fragment thereof comprises a complementarity-determining region of an antibody selected from the group~~

~~consisting of Rozanolixizumab, SYNT001, M281, Argx-113, HL161-11G, HL161-11H, HL161-1A, DX-2504, DX-2507, ABY039,IMVT-1401/RVT1401, and any combination thereof.~~

~~17.~~11. The use ~~method~~ of any one of claims 1 to ~~12~~10, wherein the inhibitor is an aptamer, oligonucleotide or a small molecule.

~~18.~~12. The use ~~method~~ of claim ~~17~~11, wherein the small molecule is selected from TABLE 1.

~~19.~~13. The use ~~method~~ of any one of claims 1 to ~~12~~8, wherein the inhibitor is a peptide inhibitor.

~~20.~~14. The use ~~method~~ of claim ~~17~~13, wherein the peptide inhibitor is selected from TABLE 2.

~~21.~~15. The use ~~method~~ of any one of claims 1 to ~~12~~8, wherein the inhibitor is a polypeptide.

~~22.~~16. The use ~~method~~ of claim ~~21~~15, wherein the polypeptide comprises a variant Fc molecule, or FcRn-binding fragment thereof, wherein the variant Fc region molecule or FcRn-binding fragment thereof comprise one or more amino acid substitutions that increase binding to FcRn relative to a wildtype immunoglobulin Fc region.

~~23. The method of any one of claims 1 to 21, comprising assaying a biological sample obtained from the pregnant individual, the individual trying to become pregnant, the individual considering pregnancy, or the individual serving as a surrogate for the pregnancy, to detect a maternal antibody that binds to a target selected from the group consisting of lactate dehydrogenase A or B (LDH A,B), guanine deaminase (GDA), collapsin response mediator protein 1 or 2 (CRMP1,2)), stress-induced phosphoprotein 1 (STIP1), alpha subunit of the barbed-end actin binding protein Cap Z (CAPZA2), Y Box Binding Protein 1 (YBX1), eukaryotic translation and elongation factor 1A1 (EEF1A1), microtubule-associated protein Tau (MAPT), dihydropyrimidinase-like protein 2 (DPYSL2), dynamin 1-like protein (DNM1L), radixin (RDX), moesin (MSN), non-specific enolase (NSE), Caspr2, KCNAB2, KCNAB1, endothelial integrin ligand (EDIL3), IVD, brain specific sultatransferase (SULT4A1), TNIP2, retinoic acid induced 16 (RAI16), GDP D5, ezrin (EZR), and any combination thereof.~~

~~24. The method of claim 23, wherein the biological sample is selected from the group consisting of a maternal blood plasma sample, a maternal blood serum sample, saliva, amniotic~~

~~fluid, cord blood plasma, cord blood serum sample, fetal blood plasma, fetal blood serum, or a tissue sample.~~

~~25. The method of any one of claims 23 or 24, wherein a biological sample obtained the pregnant individual, the individual trying to become pregnant, the individual considering pregnancy, or the individual serving as a surrogate for the pregnancy, comprises a maternal antibody that binds to a fetal neural antigen.~~

~~26. The method of claim 24, wherein the biological sample is selected from the group consisting of a blood plasma sample, a blood serum sample, or a tissue sample.~~

~~27.~~17. The use ~~method~~ of any one of claims 1 to ~~26~~16, wherein the pregnant individual, the individual trying to become pregnant, the individual considering pregnancy, or the individual serving as a surrogate for a pregnancy ~~the pregnant individual~~ is greater than 30 years old.

~~28. The method of any one of claims 1 to 26, wherein the pregnant individual is greater than 35 years old.~~

~~29.~~18. The use ~~method~~ of any one of claims 1 to ~~26~~16, wherein the pregnant individual, the individual trying to become pregnant, the individual considering pregnancy, or the individual serving as a surrogate for a pregnancy ~~the pregnant individual~~ is greater than 40 years old.

~~30. The method of any one of claims 1 to 26, wherein the pregnant individual is greater than 45 years old.~~

~~31.~~19. The use ~~method~~ of any one of claims 1 to ~~30~~18, wherein a sperm that fertilized an egg of the pregnant individual~~-~~, the individual trying to become pregnant, the individual considering pregnancy, or the individual serving as a surrogate for a pregnancy is from a person greater than 30 years old.

~~32. The method of any one of claims 1 to 30, wherein a sperm that fertilized an egg of the pregnant individual is from a person greater than 35 years old.~~

~~33. The method of any one of claims 1 to 30, wherein a sperm that fertilized an egg of the pregnant individual is from a person greater than 40 years old.~~

~~34. The method of any one of claims 1 to 30, wherein a sperm that fertilized an egg of the pregnant individual is from a person greater than 45 years old.~~

~~35.~~20. The ~~method~~ use of any one of claims 1 to ~~34~~19, wherein reducing auto-reactive antibodies in the pregnant individual or the individual trying to become pregnant prevents or reduces symptoms associated with autism or an autism spectrum disorder in an offspring of the pregnant individual, the individual trying to become pregnant, the individual considering pregnancy, or the individual serving as a surrogate for a pregnancy.

~~36. The method of any one of claims 1 to 35, wherein administering is at least once over the course of a pregnancy of the pregnant individual.~~

~~37. The method of any one of claims 1 to 36, wherein administering is performed more than once over the course of a pregnancy of the pregnant individual.~~

~~38. The method of any one of claims 1 to 37, wherein administering is performed at least once during each trimester of a pregnancy.~~

~~39. The method of any one of claims 1 to 37, wherein the administering is performed during the first trimester.~~

~~40. The method of any one of claims 1 to 37, wherein the administering is performed during the second trimester.~~

~~41. The method of any one of claims 1 to 37, wherein the administering is performed during the third trimester.~~

~~42. The method of any one of claims 1 to 41, wherein the administering is performed daily.~~

~~43. The method of any one of claims 1 to 41, wherein the administering is performed weekly.~~

~~44. The method of any one of claims 1 to 41, wherein the administering is performed monthly.~~

45. The method of any one of claims 1 to 44, wherein the pregnant individual or individual trying to become pregnant has birthed at least one child diagnosed with autism or an autism spectrum disorder.

46. The method of any one of claims 1 to 45, wherein inhibitor is administered to the pregnant individual before about 30, 60, 90, or 100 days post-conception.

47. The method of any one of claims 1 to 45, wherein the inhibitor is administered to the pregnant individual after about 100, 150, or 200 days post-conception.

48. The method of any one of claims 1 to 45, wherein a gestational age of a fetus of the pregnant individual is less than about 30, 60, 90, or 100 days.

49. The method of any one of claims 1 to 45, wherein a gestational age of a fetus of the pregnant individual is greater than about 100, 150, or 200 days.

50. A method of reducing auto-reactive antibodies in a pregnant individual or an individual trying to become pregnant comprising:

obtaining a biological sample from a pregnant individual or an individual considering or trying to become pregnant;

determining a presence of a maternal antibody that binds to a fetal neural antigen by at least one assay;

administering an inhibitor of neonatal Fc receptor (FcRn) function to the pregnant individual or the individual considering or trying to become pregnant when the presence of the maternal antibody that binds to the fetal neural antigen by the at least one assay is determined.

51. The method of claim 50, wherein the biological sample is selected from the group consisting of a blood plasma sample, a blood serum sample, or a tissue sample.

52. The method of any of claims 50 to 51, wherein the assay is an immunoassay.

~~53. The method of any one of claims 50 to 52, wherein the maternal antibody that binds to a target selected from the group consisting lactate dehydrogenase A or B (LDH A,B), guanine deaminase (GDA), collapsin response mediator protein 1 or 2 (CRMP1,2)), stress-induced phosphoprotein 1 (STIP1), alpha subunit of the barbed-end actin binding protein Cap Z (CAPZA2), Y Box Binding Protein 1 (YBX1), eukaryotic translation and elongation factor 1A1 (EEF1A1), microtubule-associated protein Tau (MAPT), dihydropyrimidinase-like protein 2 (DPYSL2), dynamin 1-like protein (DNM1L), radixin (RDX), moesin (MSN), non-specific enolase (NSE), Caspr2, KCNAB2, KCNAB1, endothelial integrin ligand (EDIL3), IVD, brain specific sultatransferase (SULT4A1), TNIP2, retinoic acid induced 16 (RAI16), GDP D5, ezrin (EZR), and any combination thereof.~~

~~54. The method of any one of claims 50 to 53, wherein the inhibitor prevents an interaction between FcRn and an immunoglobulin G (IgG) molecule.~~

~~55. The method of any one of claims 50 to 53, wherein the inhibitor prevents FcRn-mediated rescue of an IgG molecule.~~

~~56. The method of any one of claims 50 to 53, wherein the inhibitor prevents an interaction between FcRn and a human serum albumin molecule.~~

~~57. The method of any one of claims 50 to 56, wherein the inhibitor comprises an antibody or a target-binding fragment thereof, a small molecule, a peptide, or a polypeptide.~~

~~58. The method of any one of claims 50 to 57, wherein the inhibitor is an antibody.~~

~~59. The method of claim 58, wherein the antibody binds FcRn.~~

~~60. The method of claim 59, wherein the antibody is selected from the group consisting of Rozanolixizumab, SYNT001, M281, Argx-113, HL161-11G, HL161-11H, HL161-1A, DX-2504, DX-2507, ABY039,IMVT-1401/RVT1401, and any combination thereof.~~

~~61. The method of any one of claims 46 to 57, wherein the inhibitor is a small molecule.~~

~~62. The method of claim 59, wherein the small molecule is selected from the group consisting of [table of small molecules to be provided].~~

~~63. The method of any one of claims 50 to 53, wherein the inhibitor is a peptide inhibitor.~~

~~64. The method of any one of claims 50 to 63, wherein the pregnant individual or individual trying to become pregnant has birthed at least one child diagnosed with autism or an autism spectrum disorder.~~

~~65. The method of any one of claims 50 to 64, wherein inhibitor is administered to the pregnant individual less than about 30, 60, 90, or 100 days post-conception.~~

~~66. The method of any one of claims 50 to 64, wherein the inhibitor is administered to the pregnant individual greater than about 100, 150, or 200 days post-conception.~~

~~67. The method of any one of claims 50 to 64, wherein a gestational age of a fetus of the pregnant individual is less than about 30, 60, 90, or 100 days.~~

~~68. The method of any one of claims 50 to 64, wherein a gestational age of a fetus of the pregnant individual is greater than about 100, 150, or 200 days.~~

~~69. The method of any one of claims 50 to 68, wherein the pregnant individual is greater than 30 years old.~~

~~70. The method of any one of claims 50 to 68, wherein the pregnant individual is greater than 35 years old.~~

~~71. The method of any one of claims 50 to 68, wherein the pregnant individual is greater than 40 years old.~~

~~72. The method of any one of claims 50 to 68, wherein the pregnant individual is greater than 45 years old.~~

~~73. The method of any one of claims 50 to 72, wherein a sperm that fertilized an egg of the pregnant individual is from a person greater than 30 years old.~~

~~74. The method of any one of claims 50 to 72, wherein a sperm that fertilized an egg of the pregnant individual is from a person greater than 35 years old.~~

~~75. The method of any one of claims 50 to 72, wherein a sperm that fertilized an egg of the pregnant individual is from a person greater than 40 years old.~~

~~76. The method of any one of claims 50 to 72, wherein a sperm that fertilized an egg of the pregnant individual is from a person greater than 45 years old.~~

~~77. The method of any one of claims 50 to 76, wherein administering is at least once over the course of a pregnancy of the pregnant individual.~~

~~78. The method of any one of claims 50 to 77, wherein administering is performed more than once over the course of a pregnancy of the pregnant individual.~~

~~79. The method of any one of claims 50 to 78, wherein administering is performed at least once during each trimester of a pregnancy.~~

~~80. The method of any one of claims 50 to 78, wherein the administering is performed during the first trimester.~~

~~81. The method of any one of claims 50 to 78, wherein the administering is performed during the second trimester.~~

~~82. The method of any one of claims 50 to 78, wherein the administering is performed during the third trimester.~~

~~83. The method of any one of claims 50 to 82, wherein the administering is performed daily.~~

~~84. The method of any one of claims 50 to 82, wherein the administering is performed weekly.~~

~~85. The method of any one of claims 50 to 82, wherein the administering is performed monthly.~~

~~86. Use of an inhibitor of neonatal Fc receptor (FcRn) function in a method for reducing auto-reactive antibodies in a pregnant individual or an individual considering or trying to become pregnant.~~

87. Use of an inhibitor of neonatal Fc receptor (FcRn) function in the manufacture of a medicament for the treatment of auto-reactive antibodies in a pregnant individual or an individual trying to become pregnant.

88. The use of claim 86 or 87, wherein the auto-reactive antibodies bind to a target selected from the group consisting of lactate dehydrogenase A or B (LDH A,B), guanine deaminase (GDA), collapsin response mediator protein 1 or 2 (CRMP1,2)), stress-induced phosphoprotein 1 (STIP1), alpha subunit of the barbed-end actin binding protein Cap Z (CAPZA2), Y Box Binding Protein 1 (YBX1), eukaryotic translation and elongation factor 1A1 (EEF1A1), microtubule-associated protein Tau (MAPT), dihydropyrimidinase-like protein 2 (DPYSL2), dynamin 1-like protein (DNM1L), radixin (RDX), moesin (MSN), non-specific enolase (NSE), Caspr2, KCNAB2, KCNAB1, endothelial integrin ligand (EDIL3), IVD, brain specific sultatransferase (SULT4A1), TNIP2, retinoic acid induced 16 (RAI16), GDP D5, ezrin (EZR), and any combination thereof.

89. The use of claim 88, wherein the auto-reactive antibodies bind to a target selected from the group consisting of lactate dehydrogenase A (LDHA), lactate dehydrogenase B (LDHB), collapsin response mediator protein 1 (CRMP1), stress-induced phosphoprotein 1 (STIP1), and any combination thereof.

90. The use of claim 88, wherein the auto-reactive antibodies bind to a target selected from the group consisting of lactate dehydrogenase collapsin response mediator protein 1 (CRMP1), stress-induced phosphoprotein 1 (STIP1), and both collapsin response mediator protein 1 (CRMP1), stress-induced phosphoprotein 1 (STIP1).

91. The use of any one of claims 86 to 90, wherein an embryo or fetus expressed the target.

92. The use of any one of claims 86 to 90, wherein the auto-reactive antibodies bind a neural antigen expressed by a fetus.

93. The use of any one of claims 86 to 92, wherein the inhibitor prevents an interaction between FcRn and an immunoglobulin G (IgG) molecule.

94. The use of any one of claims 86 to 92, wherein the inhibitor prevents FcRn-mediated rescue of an IgG molecule.

95. The use of any one of claims 86 to 92, wherein the inhibitor prevents an interaction between FcRn and a human serum albumin molecule.

96. The use of any one of claims 86 to 92, wherein the inhibitor comprises an antibody or a target-binding fragment thereof, a small molecule, a peptide, or a polypeptide, or a nucleic acid.

97. The use of any one of claims 86 to 92, wherein the antibody or the target-binding fragment thereof comprises a complementarity-determining region of an antibody selected from the group consisting of Rozanolixizumab, SYNT001, M281, Argx-113, HL161-11G, HL161-11H, HL161-1A, DX-2504, DX-2507, ABY039,IMVT-1401/RVT1401, and any combination thereof.

98. The use of any one of claims 86 to 92, wherein the inhibitor is an aptamer, oligonucleotide or a small molecule.

99. The use of any one of claims 86 to 92, wherein the small molecule is selected from TABLE 1.

100. The use of any one of claims 86 to 92, wherein the inhibitor is a peptide inhibitor.

101. The use of any one of claims 86 to 92, wherein the peptide inhibitor is selected from TABLE 2.

102. The use of any one of claims 86 to 92, wherein the inhibitor is a polypeptide.

103. The use of claim 102, wherein the polypeptide comprises a variant Fc region, or FcRn-binding fragment thereof, wherein Fc domain of the Fc region or FcRn-binding fragment thereof comprise one or more amino acid substitutions that increase binding to FcRn relative to a wildtype immunoglobulin Fc region

104. A method of reducing auto-reactive antibodies contacting an embryo or fetus in a pregnant individual, an individual trying to become, an individual considering pregnancy or an

~~individual serving as a surrogate for the pregnancy, comprising administering, to the pregnant individual, the individual trying to become pregnant, the individual considering pregnancy or the individual serving as a surrogate for the pregnancy, an inhibitor of neonatal Fc receptor (FcRn) function.~~