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[Continued on next page]

(54) Title: HUMAN ANTI-ALPHA-SYNUCLEIN AUTOANTIBODIES

A

NI-202.3G12-VHB1 (variable heavy chain sequence VHB1; SEQ ID NO: 3)

```
FR1----------CDR1-FR2----------CDR2---------
EVQLVQSGAEVKKPGASVRLSCRASGYNFIDFHIHWVRQAPGEGLEWMGWSNPQSGNSSSAQ

----FR3----------CDR3--------JH---------
RFQGRVTMTTDTSMSAAYMDLNWLTLDDTAVYYCTRPHDGAGNYRFDTWGQGTLVTVSS
```

NI-202.3G12-VHB1-GL (variable heavy chain sequence VHB1, aligned to the Germ Line Sequence; SEQ ID NO: 4)

```
FR1----------CDR1-FR2----------CDR2---------
QVQLVQSGAEVKKPGASVRLSCRASGYNFIDFHIHWVRQAPGEGLEWMGWSNPQSGNSSSAQ

----FR3----------CDR3--------JH---------
RFQGRVTMTTDTSMSAAYMDLNWLTLDDTAVYYCTRPHDGAGNYRFDTWGQGTLVTVSS
```

NI-202.3G12-VLc1 (variable light chain sequence VLc1, SEQ ID NO: 6)

```
FR1----------CDR1-------FR2----------CDR2---FR3----
QSVLTQPPSVSVAPGQTARITCSGDALPKHYAHWYQQKPGQVPIVVIYKDTERPSGIPERFS

----------CDR3-------JK--------
GSTSGTTVTLTISGVQAEDEAHYYCQSADVSSTYVVFGGGTKLTVL
```

NI-202.3G12-VLc1-GL (variable light chain sequence VLc1, aligned to the Germ Line Sequence; SEQ ID NO: 7)

```
FR1----------CDR1-------FR2----------CDR2---FR3----
SYELTQPPSVSVAPGQTARITCSGDALPKHYAHWYQQKPGQVPIVVIYKDTERPSGIPERFS

----------CDR3-------JK--------
GSTSGTTVTLTISGVQAEDEAHYYCQSADVSSTYVVFGGGTKLTVL
```

Fig. 1

(57) Abstract: Provided are human alpha-synuclein-specific autoantibodies as well as fragments, derivatives and variants thereof as well as methods related thereto. Assays, kits, and solid supports related to antibodies specific for α-synuclein are also disclosed. The antibody, immunoglobulin chain(s), as well as binding fragments, derivatives and variants thereof can be used in pharmaceutical and diagnostic compositions for α-synuclein targeted immunotherapy and diagnosis, respectively.

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