resuspension in FACS buffer. The cells were analyzed on a BD FACSCalibur. Appropriate controls and staining with other antibodies (isotype control, GM1, asialo GM1, GD1a, GT1b) and lectins (Peanut Agglutinin (PNA), Sambucus Nigra Lectin (SNA), Maackia Amurensis Lectin II (Mal II)) where necessary. In some cases cells were pretreated with α2-3 neuraminidase, α 2-3,6 neuraminidase, or PNGaseF to alter their cell surface suger structures.

The foregoing written specification is considered to be sufficient to enable one skilled in the art to practice the invention. The present invention is not to be limited in scope by examples provided, since the examples are intended as a single illustration of one aspect of the invention and other functionally equivalent embodiments are within the scope of the invention. Various modifications of the invention in addition to those shown and described herein will become apparent to those skilled in the art from the foregoing description and fall within the scope of the appended claims. The advantages and objects of the invention are not necessarily encompassed by each embodiment of the invention.

The contents of all references, patents and published patent applications cited throughout this application are incorporated herein by reference in their entirety.

Claims

1. A method comprising:

assaying a biological sample obtained from a subject for the presence or absence of a serum antibody that binds to a variant John Cunningham polyomavirus (JCV) viral protein 1 (VP1) capsid protein that has arginine at a position corresponding to amino acid 122 of SEQ ID NO: 1.

2. The method of claim 1, wherein the biological sample is a blood sample.

3. The method of claim 1, wherein the biological sample is a serum sample.

4. The method of claim 1, wherein the biological sample is a cerebrospinal fluid (CSF) sample.

5. The method of claim 1, wherein the subject is known to have been previously infected with a wild-type JCV.

6. The method of claim 5, wherein a biological sample obtained from the subject is assayed at least twice each year for the presence or absence of the serum antibody.

7. The method of claim 1, wherein the assaying step comprises performing an enzyme-linked immunosorbent assay (ELISA) on the biological sample to detect the presence or absence of the antibody.

8. The method of claim 1, further comprising identifying the subject as inappropriate for an immunosuppressive treatment based on the presence or absence of the serum antibody.

9. The method of claim 1, further comprising assaying the biological sample obtained from the subject for the presence or absence of the variant JCV VP1 capsid protein.

10. The method of claim 9, where the biological sample is assayed for the presence or absence of a nucleic acid encoding the variant JCV VP1 capsid protein.

11. The method of claim 1, wherein the subject has the variant JCV VP1 capsid protein.

12. A method comprising:

providing a biological sample from a subject, wherein the subject has a variant John Cunningham polyomavirus (JCV) viral protein 1 (VP1) capsid protein that has arginine at a position corresponding to amino acid 122 of SEQ ID NO: 1;

assaying the biological sample for the presence or absence of a serum antibody that binds to the variant JCV VP1 capsid protein; and

identifying the subject as inappropriate for an immunosuppressive treatment based on the presence or absence of the serum antibody.

13. The method of claim 12, wherein the biological sample is a blood sample.

14. The method of claim 12, wherein the biological sample is a serum sample.

15. The method of claim 12, wherein the biological sample is a cerebrospinal fluid (CSF) sample.

16. The method of claim 12, wherein the assaying step comprises performing an enzyme-linked immunosorbent assay (ELISA) on the biological sample to detect the presence or absence of the antibody.