Claims

1. A method of treating non-alcoholic steatohepatitis (NASH) in a subject in need thereof, comprising administering LGALS4 protein or a vector encoding LGALS4 to increase expression or activity of LGALS4 in hepatocytes of the subject.
2. Use of LGALS4 protein or a vector encoding LGALS4 in the manufacture of a medicament for treating non-alcoholic steatohepatitis (NASH) in a subject in need thereof, wherein the medicament increases expression or activity of LGALS4 in hepatocytes of the subject.
3. The method of claim 1 or the use of claim 2, wherein the LGALS4 protein is to be administered as an intravenous, subcutaneous, oral, intramuscular, sublingual, intrarectal, transdermal, or intranasal protein infusion therapy.
4. The method of claim 1 or the use of claim 2, wherein the vector encoding LGALS4 is a viral or non-viral vector.
5. The method or the use of claim 4, wherein the viral vector is selected from a group consisting of a Retroviral vector, an Adenoviral vector, an Adeno-Associated Virus (AAV) vector, a Herpes simplex virus (HSV) vector, a Lentiviral vector, a Poxvirus vector, a bovine papilloma virus vector, and an Epstein-Bar virus (EBV) vector.
6. The method or the use of claim 4, wherein the non-viral vector is selected from a group consisting of a cationic lipid, a cationic polymer, and a lipid-polymer hybrid.
7. The method or the use of claim 4, wherein the viral or non-viral vector encoding LGALS4 is to be administered via a route selected from the group consisting of intravenous administration, subcutaneous administration, intramuscular administration, intrahepatic administration, and intraperitoneal administration.
8. The method of claim 1 or the use of claim 2, wherein the subject is human.
9. The method of claim 1 or the use of claim 2, wherein the administration of the LGALS4 protein or the vector encoding LGALS4 results in an effect selected from the group

consisting of reduction in secretion of an apoptosis marker such as CK18-M30; reduction in mitochondrial stress; reduction in cellular reactive oxygen species (ROS) levels; reduction in lipid peroxidation-induced stress; and reduction in the secretion of an inflammatory marker selected from the group consisting of IL-6, IL-8, and TNF-α.

10. The method of claim 1 or the use of claim 2, wherein the LGALS4 protein or the vector encoding LGALS4 is to be administered with an additional therapy.
11. The method or the use of claim 10, wherein the additional therapy is selected from the group consisting of obeticholic acid (an FXR agonist), lanifibranor (a pan-PPAR agonist), semaglutide (a GLP1-R agonist), and resmetirom (a THR-β agonist).
12. The method or the use of claim 11, wherein the LGALS4 protein or the vector encoding LGALS4 is to be administered before, at the same time, or after the additional therapy.
13. The method of claim 1 or the use of claim 2, wherein the subject is receiving or has received a NASH intervention selected from the group consisting of reducing alcohol intake, reducing caloric intake, increasing exercise, gastric bypass surgery, reducing cholesterol level, reducing inflammation and improving insulin sensitivity.
14. A pharmaceutical composition for treating NASH, comprising a LGALS4 protein or a vector encoding LGALS4, and a pharmaceutically acceptable carrier.
15. A method of diagnosing a subject with NASH or at risk of developing NASH, or monitoring the progression of NASH in a subject, by measuring protein level of LGALS4 in a biological sample obtained from the subject, wherein a threshold protein level of LGALS4 in the biological sample indicates the presence or progression of NASH.
16. The method of claim 15, wherein the threshold protein level of LGALS4 in the biological sample is substantially greater than that of at least one reference subject that does not have NASH.

17. The method of claim 15, wherein the biological sample is selected from the group consisting of a blood sample, a serum sample, a plasma sample, and a liver biopsy sample.
18. A diagnostic kit for NASH in a subject for use in the method of any one of claims 15-17, comprising reagents for detecting protein level of LGALS4 in a biological sample obtained from the subject.
19. The diagnostic kit of claim 18, wherein the biological sample is plasma.
20. The diagnostic kit of claim 18, wherein the reagents are for ELISA, comprising antibodies against LGALS4, wherein the antibodies are enzyme-conjugated antibodies.
21. The diagnostic kit of claim 18, optionally further comprises instructions for use, a buffer, an enzyme substrate, and/or control samples.