

CLAIMS

What is claimed is:

1. A Galectin-9 (GAL9) antigen binding molecule, comprising a first antigen binding site (ABS) specific for a first epitope of a first GAL9 antigen, wherein the first antigen binding site comprises all three VH CDRs and all three VL CDRs from any one of the ABS clones selected from P9-28, P9-15, P9-18, and P9-21.
2. A Galectin-9 (GAL9) antigen binding molecule, comprising a first antigen binding site (ABS) specific for a first epitope of a first GAL9 antigen, wherein the first antigen binding site comprises the VL sequence and the VH sequence from any one of the ABS clones selected from P9-28, P9-15, P9-18, and P9-21.
3. The GAL9 antigen binding molecule of claim 1 or claim 2 wherein the first antigen binding site (ABS) further comprises a first IgG heavy chain polypeptide and a first IgG light chain polypeptide.
4. The GAL9 antigen binding molecule of any one of claims 1-3, wherein the GAL9 antigen is a human GAL9 antigen.
5. A GAL9 antigen binding molecule of any one of claims 1-4, wherein the GAL9 antigen binding molecule increases TNF- α secretion by activated immune cells, wherein the increase is greater than an 80-fold increase relative to activated immune cells treated with a control agent.
6. A GAL9 antigen binding molecule of any one of claims 1-5, wherein the GAL9 antigen binding molecule increases IFN γ secretion by activated immune cells, wherein the increase is greater than an 1.2-fold increase relative to activated immune cells treated with a control agent.
7. A GAL9 antigen binding molecule of any one of claims 1-6, wherein the GAL9 antigen binding molecule increases CD40L surface expression of Activated CD8 $^{+}$ T-cells, wherein the increase is greater than a 2-fold increase relative to activated CD8 $^{+}$ T-cells treated with a control agent.
8. A GAL9 antigen binding molecule of any one of claims 1-7, wherein the GAL9 antigen binding molecule increases OX40 surface expression of Activated CD8 $^{+}$ T-cells, wherein the increase is greater than a 2-fold increase relative to activated CD8 $^{+}$ T-cells treated with a control agent.
9. A GAL9 antigen binding molecule of any one of claims 1-8, wherein the GAL9 antigen binding molecule increases IL-12 production of activated dendritic cells (DCs), wherein the increase is greater than an 20-fold increase relative to activated DCs treated with a control agent.

10. A GAL9 antigen binding molecule of any one of claims 1-9, wherein the GAL9 antigen binding molecule increases PD-L2 surface expression on activated dendritic cells (DCs), wherein the increase is greater than an 4-fold increase relative to activated DCs treated with a control agent.
11. A GAL9 antigen binding molecule of any one of claims 1-10, wherein the GAL9 antigen binding molecule demonstrates one or more of the following properties:
 - A) increases TNF- α secretion by activated immune cells, wherein the increase is greater than an 80-fold increase relative to activated immune cells treated with a control agent,
 - B) increases IFN- γ secretion by activated immune cells, wherein the increase is greater than an 1.2-fold increase relative to activated immune cells treated with a control agent,
 - C) increases CD40L surface expression of activated CD8 $^{+}$ T-cells, wherein the increase is greater than a 2-fold increase relative to activated CD8 $^{+}$ T-cells treated with a control agent,
 - D) increases OX40 surface expression of activated CD8 $^{+}$ T-cells, wherein the increase is greater than a 2-fold increase relative to activated CD8 $^{+}$ T-cells treated with a control agent,
 - E) increases IL-12 production of activated dendritic cells (DCs), wherein the increase is greater than an 20-fold increase relative to activated DCs treated with a control agent,
 - F) increases PD-L2 surface expression on activated dendritic cells (DCs), wherein the increase is greater than an 4-fold increase relative to activated DCs treated with a control agent.
12. The GAL9 antigen binding molecule of any one of claims 5-11, wherein the control agent is a negative control agent or positive control agent.
13. The GAL9 antigen binding molecule of claim 12, wherein the control agent is a control antibody.
14. The GAL9 antigen binding molecule of claim 13, wherein the control antibody is selected from the group consisting of: an ECA42 clone anti-GAL9 antibody, an RG9.1 clone anti- GAL9 antibody, an RG9.35 clone anti-GAL9 antibody, an anti-PD1 antibody, and an non-GAL9 binding isotype control antibody.