CLAIMS

1. A conjugate comprising a first agent that binds to an immunoglobulin and a second agent that binds to a target on the surface of a cell or a pathogen, wherein the first agent and the second agent are covalently conjugated via a linker.

2. The conjugate of claim 1, wherein

(i) the first agent is an antibody fragment comprising a variable region that is capable of binding to an antigen, optionally wherein the antibody fragment comprises a heavy chain variable region, and/or optionally wherein the first agent is a single domain antibody fragment; and/or

(ii) the immunoglobulin bound by the first agent comprises an immunoglobulin kappa light chain or an immunoglobulin lambda light chain, optionally wherein the immunoglobulin kappa light chain is a human immunoglobulin kappa light chain, and the immunoglobulin lambda light chain is a human immunoglobulin lambda light chain, optionally wherein the first agent binds to the human immunoglobulin kappa light chain; and/or

(iii) the second agent:

(a) comprises a small molecule, a peptide, a protein, a carbohydrate, a lipid, a nucleotide, a nucleic acid, an oligonucleotide, an aptamer, or an antibody, optionally wherein the antibody is a single domain antibody; and/or

(b) has a therapeutic effect when administered to a subject; and/or

(iv) the linker comprises a cleavable or a non-cleavable linker, optionally wherein the linker comprises a cleavable linker, optionally wherein the cleavable linker is a peptide, disulfide, or hydrazone linker; and/or

(v) the cell is a cell infected by a pathogen, a cancer cell, a transformed cell, a healthy cell, a cell that is undergoing or has undergone a phenotypic change in response to cellular stress; and/or

(vi) the pathogen is a virus, a bacterium, a parasite, or a fungus; optionally wherein:

(a) the pathogen is a virus selected from an influenza virus, a coronavirus, an adenovirus, an enterovirus, a rotavirus, a norovirus, a herpesvirus, a lentivirus, a poxvirus, a paramyxovirus, a rhabdovirus, an arenavirus, a flavivirus, a togavirus, a hantavirus, a pneumovirus, or an ebolavirus, optionally wherein:

(A) the influenza virus is an influenza A virus or an influenza B virus; or

(B) the coronavirus is a beta coronavirus, optionally wherein the beta coronavirus is a Middle East Respiratory Syndrome coronavirus (MERS-CoV), a Severe Acute Respiratory Syndrome (SARS)-associated coronavirus (SARS-CoV)-1, or a SARS-CoV-2, optionally wherein the second agent binds to a MERS-CoV spike

protein, a SARS-CoV-1 spike protein, or a SARS-CoV-2 spike protein, or optionally wherein the second agent binds to a MERS-CoV spike protein receptor binding domain (RBD), a SARS-CoV-1 spike protein RBD, or a SARS-CoV-2 spike protein RBD; or

(C) the lentivirus is a human immunodeficiency virus (HIV), optionally wherein the second agent binds to a HIV envelope glycoprotein gp120; or

(D) the pneumovirus is a human respiratory syncytial virus (RSV), optionally wherein the second agent binds to a RSV fusion (F) protein; or

(b) the pathogen is a bacterium selected from a *Pasteurella* species, a *Staphylococcus* species, a *Streptococcus* species, a *Bacillus* species, a *Corynebacterium* species, a *Diphtheroids* species, a *Listeria* species, an *Erysipelothrix* species, a *Clostridium* species, a *Neisseria* species, a *Branhamella* species, an *Escherichia* species, an *Enterobacter* species, a *Proteus* species, a *Pseudomonas* species, a *Klebsiella* species, a *Salmonella* species, a *Shigella* species, a *Serratia* species, an *Acinetobacter* species, a *Haemophilus* species, a *Brucella* species, a *Yersinia* species, a *Francisella* species, a *Pasturella* species, a *Vibrio* species, a *Flavobacterium* species, a *Pseudomonas* species, a *Campylobacter* species, a *Bacteroides* species, a *Fusobacterium* species, a *Calymmatobacterium* species, a *Streptobacillus* species, or a *Legionella* species; or

(c) the pathogen is a parasite selected from a *Plasmodium* species, a *Trypanosoma* species, a *Toxoplasma* species, a *Leishmania* species, or a *Cryptosporidium* species, optionally wherein the *Plasmodium* is *Plasmodium falciparum*, *Plasmodium malariae*, *Plasmodium vivax*, *Plasmodium knowlesi*, *Plasmodium ovale curtisi*, or *Plasmodium ovale wallikeri*, optionally wherein the second agent binds a *Plasmodium* surface protein, optionally wherein the plasmodium surface protein is a merozoite surface protein 1 (MSP-1), optionally wherein the second agent is an antibody that binds to MSP-1, optionally wherein the antibody is a nanobody, optionally wherein the antibody comprises a CDR-H1, a CDR-H2, and a CDR-H3 of any one of the antibodies listed in Table 1, optionally wherein the antibody comprises the amino acid sequence of any one of SEQ ID NOs: 6-17.

3. The conjugate of claim 2, wherein

(a) the cancer cell is a hematological cancer cell, a lung cancer cell, a breast cancer cell, a brain cancer cell, a gastrointestinal cancer cell, a liver cancer cell, a kidney cancer cell, a bladder cancer cell, a pancreatic cancer cell, an ovarian cancer cell, a testicular cancer cell, a prostate cancer cell, an endometrial cancer cell, a muscle cancer cell, a bone cancer cell, a

neuroendocrine cancer cell, a connective tissue cancer cell, a head or neck cancer cell, or a skin cancer cell; or

(b) the cell is a cancerous or healthy bone marrow cell, optionally wherein the second agent binds to a bone marrow-associated antigen, optionally wherein the bone marrow-associated antigen is cluster of differentiation antigen 45 (CD45); or

(c) the cell is a cancerous or healthy immune cell, optionally wherein:

(i) the cell is a cancerous or healthy T cell or B cell; and/or

(ii) the second agent binds to an immune cell-associated antigen, optionally wherein the immune cell-associated antigen is a cluster of differentiation antigen 4 (CD4), a cluster of differentiation antigen 8 (CD8), a T cell receptor (TCR), or a B cell receptor (BCR).

4. The conjugate of any one of claims 1-3, wherein the second agent binds to

(a) an influenza virus neuraminidase or an influenza virus hemagglutinin, optionally wherein:

(i) the second agent comprises a small molecule that binds to an influenza virus neuraminidase, optionally wherein the second agent comprises zanamivir or an analog thereof, optionally wherein the linker is a triglycine dibenzylcyclooctyne (DBCO) linker; or

(ii) the second agent comprises an antibody or antibody fragment that binds to an influenza virus neuraminidase; or

(b) a tumor-associated antigen, optionally wherein the tumor-associated antigen comprises a MHC class I polypeptide-related sequence A (MICA) protein, a MHC class I polypeptide-related sequence B (MICB) protein, a folate receptor, a fibronectin splice variant, epidermal growth factor receptor (EGFR), human epidermal growth factor receptor 2 (HER2), hepatocyte growth factor receptor (HGFR), vascular endothelial growth factor receptor 2 (VEGFR-2), C-X-C chemokine receptor type 4 (CXCR4), urokinase plasminogen activator surface receptor (uPAR), follicle-stimulating hormone receptor (FSHR), epithelial cell adhesion molecule (EpCAM), epithelial cadherin (ECAD), carcinoembryonic antigen (CEA), or mesothelin (MSLN), optionally wherein the second agent is an antibody that binds to MICA, optionally wherein the antibody is a nanobody, optionally wherein the antibody comprises a CDR-H1, a CDR-H2, and a CDR-H3 of any one of the antibodies listed in Table 2, optionally wherein the antibody comprises the amino acid sequence of any one of SEQ ID NOs: 19-27.

5. The conjugate of any one of claims 1-4, wherein:

(i) the conjugate provides a therapeutic effect when administered to a subject; or

(ii) the conjugate enhances association between one or more immune cells expressing a fragment crystallizable (Fc) receptor and the cell or pathogen when administered to a subject; or

(iii) the conjugate results in killing of the cell or pathogen when administered to a subject; and/or

(iv) the conjugate results in inactivation of the cell or pathogen when administered to a subject;

optionally wherein the subject is a mammal; and/or wherein the subject is a human.

6. A composition comprising the conjugate of any one of claims 1-5, optionally wherein the composition further comprises a pharmacologically acceptable excipient.

7. The conjugate of any one of claims 1-5 or the composition of claim 6 for use in enhancing an immune response to a cell or a pathogen in a subject, wherein the subject is to be administered an effective amount of said conjugate or said composition.

8. The conjugate or the composition for use according to claim 7, wherein:

(i) the cell is a cell infected by a pathogen, a cancer cell, a transformed cell, a healthy cell, a cell that is undergoing or has undergone a phenotypic change in response to cellular stress; and/or

(ii) the pathogen is a virus, a bacterium, a parasite, or a fungus; and/or

(iii) the cell is a cell of the subject; and/or

(iv) the pathogen is a virus selected from an influenza virus, a coronavirus, an adenovirus, an enterovirus, a rotavirus, a norovirus, a herpesvirus, a lentivirus, a poxvirus, a paramyxovirus, a rhabdovirus, an arenavirus, a flavivirus, a togavirus, a hantavirus, a pneumovirus, or an ebolavirus, optionally wherein:

(a) the virus is an influenza A virus or an influenza B virus; or

(b) the virus is a Middle East Respiratory Syndrome coronavirus (MERS-CoV), a Severe Acute Respiratory Syndrome (SARS)-associated coronavirus (SARS-CoV)-1, or a SARS-CoV-2; or

(c) the virus is a human immunodeficiency virus (HIV); or

(d) the virus is a human respiratory syncytial virus (RSV); or

(v) the pathogen is a bacterium selected from a *Pasteurella* species, a *Staphylococcus* species, a *Streptococcus* species, a *Bacillus* species, a *Corynebacterium* species, a *Diphtheroids* species, a *Listeria* species, an *Erysipelothrix* species, a *Clostridium* species, a *Neisseria* species, a *Branhamella* species, an *Escherichia* species, an *Enterobacter* species, a *Proteus* species, a

Pseudomonas species, a *Klebsiella* species, a *Salmonella* species, a *Shigella* species, a *Serratia* species, an *Acinetobacter* species, a *Haemophilus* species, a *Brucella* species, a *Yersinia* species, a *Francisella* species, a *Pasturella* species, a *Vibrio cholera* species, a *Flavobacterium* species, a *Pseudomonas* species, a *Campylobacter* species, a *Bacteroides* species, a *Fusobacterium* species, a *Calymmatobacterium* species, a *Streptobacillus* species, or a *Legionella* species; or

(vi) the pathogen is a parasite selected from a *Plasmodium* species, a *Trypanosoma* species, a *Toxoplasma* species, a *Leishmania* species, or a *Cryptosporidium* species, optionally wherein the parasite is *Plasmodium falciparum*, *Plasmodium malariae*, *Plasmodium vivax*, *Plasmodium knowlesi*, *Plasmodium ovale curtisi*, or *Plasmodium ovale wallikeri*.

9. The conjugate or the composition for use according to claim 8, wherein the cancer cell is a hematological cancer cell, a lung cancer cell, a breast cancer cell, a brain cancer cell, a gastrointestinal cancer cell, a liver cancer cell, a kidney cancer cell, a bladder cancer cell, a pancreatic cancer cell, an ovarian cancer cell, a testicular cancer cell, a prostate cancer cell, an endometrial cancer cell, a muscle cancer cell, a bone cancer cell, a neuroendocrine cancer cell, a connective tissue cancer cell, a head or neck cancer cell, or a skin cancer cell.

10. The conjugate or the composition for use according to claim 7 or claim 8, wherein the cell is a cancerous or healthy bone marrow cell; or wherein the cell is a cancerous or healthy immune cell, optionally wherein the cell is a cancerous or healthy T cell or B cell, and/or wherein the immune response comprises an innate immune response.

11. The conjugate or the composition for use according to claim 7 or claim 8, wherein

(a) the conjugate binds to the cell or pathogen and to an immunoglobulin of the subject, wherein the immunoglobulin further binds to an immune cell of the subject which expresses a fragment crystallizable (Fc) receptor on its surface, optionally wherein the immunoglobulin of the subject comprises an immunoglobulin kappa light chain or an immunoglobulin lambda light chain, optionally wherein the immunoglobulin of the subject comprises an immunoglobulin kappa light chain;

optionally wherein:

(i) the immune cell is a macrophage, a dendritic cell, a natural killer cell, a neutrophil, a basophil, an eosinophil, or a mast cell; and/or

(ii) the administration induces the production of one or more cytokines or chemokines by the immune cell, optionally wherein the one or more cytokines or chemokines are proinflammatory cytokines or chemokines; and/or

(iii) the administration induces phagocytosis of the cell or pathogen by the immune cell; or

(iv) the administration results in killing of the cell or pathogen; or

(v) the administration results in inactivation of the cell or pathogen; and/or

(b) the subject is:

(i) a subject that has or is at risk of developing a viral infection, or wherein the subject is a subject that has or is at risk of developing cancer, optionally wherein the cancer is metastatic cancer; and/or

(ii) a mammal, and/or wherein the subject is a human, optionally wherein the subject is a human neonate, a human infant, a human adult, or an elderly human, or wherein the subject is a companion animal, a research animal, or a domesticated animal; and/or

(c) the administration is intravenous, intramuscular, intradermal, subcutaneous, or inhaled, and/or wherein the administration occurs more than once, and/or wherein the administration is prophylactic.

12. The conjugate of any one of claims 1-5 or the composition of claim 6 for use in treating a disease or reducing the risk of a disease in a subject in need thereof, wherein the subject is to be administered an effective amount of said conjugate or said composition.

13. The conjugate or the composition for use according to claim 12, wherein the disease is a disease caused by a virus, a bacterium, a parasite, a fungus, or a cancer; optionally wherein the cancer is metastatic cancer, optionally wherein:

(a) the virus is an influenza virus, a coronavirus, an adenovirus, an enterovirus, a rotavirus, a norovirus, a herpesvirus, a lentivirus, a poxvirus, a paramyxovirus, a rhabdovirus, an arenavirus, a flavivirus, a togavirus, a hantavirus, a pneumovirus, or an ebolavirus;

optionally wherein:

(i) the virus is an influenza A virus or an influenza B virus; or

(ii) the virus is a Middle East Respiratory Syndrome coronavirus (MERS-CoV), a Severe Acute Respiratory Syndrome (SARS)-associated coronavirus (SARS-CoV)-1, or a SARS-CoV-2; or

(iii) the virus is a human immunodeficiency virus (HIV); or

(iv) the virus is a human respiratory syncytial virus (RSV); or
(b) the bacterium is a *Pasteurella* species, a *Staphylococcus* species, a *Streptococcus* species, a *Bacillus* species, a *Corynebacterium* species, a *Diphtheroids* species, a *Listeria* species, an *Erysipelothrix* species, a *Clostridium* species, a *Neisseria* species, a *Branhamella* species, an *Escherichia* species, an *Enterobacter* species, a *Proteus* species, a *Pseudomonas* species, a *Klebsiella* species, a *Salmonella* species, a *Shigella* species, a *Serratia* species, an *Acinetobacter* species, a *Haemophilus* species, a *Brucella* species, a *Yersinia* species, a *Francisella* species, a *Pasturella* species, a *Vibrio cholera* species, a *Flavobacterium* species, a *Pseudomonas* species, a *Campylobacter* species, a *Bacteroides* species, a *Fusobacterium* species, a *Calymmatobacterium* species, a *Streptobacillus* species, or a *Legionella* species; or
(c) the parasite is a *Plasmodium* species, a *Trypanosoma* species, a *Toxoplasma* species, a *Leishmania* species, or a *Cryptosporidium* species, optionally wherein the parasite is *Plasmodium falciparum*, *Plasmodium malariae*, *Plasmodium vivax*, *Plasmodium knowlesi*, *Plasmodium ovale curtisi*, or *Plasmodium ovale wallikeri*; or
(d) the cancer is a hematological cancer, a lung cancer, a breast cancer, a brain cancer, a gastrointestinal cancer, a liver cancer, a kidney cancer, a bladder cancer, a pancreatic cancer, an ovarian cancer, a testicular cancer, a prostate cancer, an endometrial cancer, a muscle cancer, a bone cancer, a neuroendocrine cancer, a connective tissue cancer, a head or neck cancer, or a skin cancer, optionally wherein the cancer is metastatic cancer.

14. The conjugate or composition for use according to claim 12 or claim 13, wherein:
(i) the subject is a mammal; and/or
(ii) the subject is a human, optionally wherein the subject is a human neonate, a human infant, a human adult, or an elderly human; or
(iii) the subject is a companion animal, a research animal, or a domesticated animal; and/or
(iv) the administration is intravenous, intramuscular, intradermal, subcutaneous, or inhaled; and/or
(v) the administration occurs more than once; and/or
(vi) the administration is prophylactic.

15. An antibody
(i) comprising a CDR-H1, a CDR-H2, and a CDR-H3 of any one of the antibodies listed in Table 1, optionally wherein the antibody comprises the amino acid sequence of any one of SEQ ID NOs: 6-17; or

(ii) comprising a CDR-H1, a CDR-H2, and a CDR-H3 of any one of the antibodies listed in Table 2, optionally wherein the antibody comprises the amino acid sequence of any one of SEQ ID NOs: 19-27; or
(iii) comprising the amino acid sequence of SEQ ID NO: 38.