

CLAIMS

1. A humanized anti-HLA-A2 antibody, or an antigen-binding fragment thereof, wherein said antibody or antigen-binding fragment thereof comprises a heavy chain variable domain (VH) and a light chain variable domain (VL), wherein the amino acid sequence of the VH comprises SEQ ID NO: 9 and wherein the amino acid sequence of the VL comprises SEQ ID NO: 13.
2. The humanized anti-HLA-A2 antibody or antigen-binding fragment according to claim 1, wherein said antibody or antigen-binding fragment is a whole antibody, a single chain antibody, a dimeric single chain antibody, a Fv, a scFv, a Fab, a F(ab)'₂, a defucosylated antibody, a bi-specific antibody, a diabody, a triabody, a tetrabody, or an antibody fragment selected from the group consisting of a unibody, a domain antibody, and a nanobody.
3. The humanized anti-HLA-A2 antibody or antigen-binding fragment according to claim 1 or 2, wherein said antibody or antigen-binding fragment is a scFv.
4. The humanized anti-HLA-A2 antibody or antigen-binding fragment according to any one of claims 1 to 3, wherein said antibody or antigen-binding fragment is a scFv having the sequence SEQ ID NO: 72.
5. A chimeric antigen receptor (CAR) comprising:
 - a) an extracellular domain comprising the humanized anti-HLA-A2 antibody or antigen-binding fragment according to any one of claims 1 to 4,
 - b) a transmembrane domain, and
 - c) a cytoplasmic domain comprising an intracellular signaling domain.
6. The CAR according to claim 5, wherein the humanized anti-HLA-A2 antibody or antigen-binding fragment is an scFv comprising the amino acid sequence of SEQ ID NO: 72.

7. The CAR according to claim 5 or claim 6, wherein the transmembrane domain is a CD8 transmembrane domain and the intracellular signaling domain comprises a 4-1BB costimulatory domain and a CD3 zeta primary signaling domain.
8. A nucleic acid molecule encoding the CAR according to any one of claims 5 to 7.
- 5 9. An immune cell comprising the CAR according to any one of claims 5 to 7 or the nucleic acid sequence according to claim 8.
10. The immune cell according to claim 9, wherein said immune cell is a regulatory T cell.
11. A pharmaceutical composition comprising immune cells according to claim 9 or
10 claim 10 and a pharmaceutically acceptable excipient.
12. Use of the immune cell according to claim 9 or claim 10 for the manufacture of a medicament for inducing immune tolerance and/or for treating organ or tissue transplant rejection or graft versus host disease (GVHD) in a subject in need thereof.
13. Use of the immune cell according to claim 9 or claim 10 for the manufacture of a
15 medicament for inducing immune tolerance and/or for treating organ or tissue transplant rejection or graft versus host disease (GVHD) in a subject in need thereof, wherein the medicament is to be administered with at least one immunosuppressive agent.
14. A kit of part comprising, in a first part, an immune cell according to claim 9 or
20 claim 10 or a pharmaceutical composition according to claim 11 and in a second part at least one immunosuppressive agent.