rector.

The presently disclosed subject matter also provides isolated immunoresponsive cells comprising the above-described CARs. In certain embodiments, the isolated immunoresponsive cell is transduced with the CAR, for example, the CAR is constitutively expressed on the surface of the immunoresponsive cell. In certain embodiments, the isolated immunoresponsive cell is further transduced with at least one co-stimulatory ligand such that the immunoresponsive cell expresses the at least one co-stimulatory ligand. In certain embodiments, the at least one co-stimulatory ligand is selected from the group consisting of 4-1BBL, CD80, CD86, CD70, OX40L, CD48, TNFRSF14, and combinations thereof. In certain embodiments, the isolated immunoresponsive cell is further transduced with at least one cytokine such that the immunoresponsive cell secrets the at least one cytokine. In certain embodiments, the at least one cytokine is selected from the group consisting of IL-2, IL-3, IL-6, IL-7, IL-11, IL-12, IL-15, IL-17, IL-21, and combinations thereof. In certain embodiments, the isolated immunoresponsive cell is selected from the group consisting of a T cell, a Natural Killer (NK) cell, a cytotoxic T lymphocyte (CTL), a regulatory T cell, a human embryonic stem cell, a lymphoid progenitor cell, a T cell-precursor cell, and a pluripotent stem cell from which lymphoid cells may be differentiated. In certain embodiments, the immunoresponsive cell is a T cell.

The presently disclosed subject matter further provides nucleic acid molecules encoding the presently disclosed CARs, vectors comprising the nucleic acid molecules, and host cells expressing such nucleic acid molecules. In certain embodiments, the nucleic acid molecule comprises nucleic acids having the sequence set forth in SEQ ID NO:951. In certain embodiments, the nucleic acid molecule comprises nucleic acids having the sequence set forth in SEQ ID NO:952. In certain embodiments, the vector is a γ-retroviral vector. In certain embodiments, the host cell is a T cell.

Furthermore, the presently disclosed subject matter provides use of an effective amount of the immunoresponsive cell as described herein, in the manufacture of a medicament for reducing tumor burden in a subject.

Furthermore, the presently disclosed subject matter provides use of an effective amount of the immunoresponsive cell as described herein to the subject, in the manufacture of a medicament for increasing or lengthening survival of a subject having

neoplasia.

Furthermore, the presently disclosed subject matter provides methods of using the above-described immunoresponsive cell for reducing tumor burden in a subject. For example, the presently disclosed subject matter provides methods of reducing tumor burden in a subject, where the method comprises administering an effective amount of the presently disclosed immunoresponsive cell to the subject, thereby

99. The host cell of claim 98, wherein the host cell is a T cell.

100. Use of an effective amount of the immunoresponsive cell of any one of claims 76-84, in the manufacture of a medicament for reducing tumor burden in a subject.

101. The use of claim 100, wherein the method reduces the number of tumor cells.

102. The use of claim 100, wherein the method reduces tumor size.

103. The use of claim 100, wherein the method eradicates the tumor in the subject.

104. The use of any one of claims 100-103, wherein the tumor is selected from the group consisting of multiple myeloma, Non-Hodgkin Lymphoma (especially Mantle Cell), Hodgkin Lymphoma, Chronic Lymphocytic Leukemia (CLL), Acute lymphocytic leukemia (ALL), Hairy Cell Leukemia, Burketts Lymphoma, and Waldenstrom's Macroglobulinemia.

105. The use of any one of claims 100-104, wherein the tumor is multiple myeloma.

106. The use of any one of claims 100-105, wherein the subject is a human.

107. The use of any one of claims 100-106, wherein the immunoresponsive cell is a T cell.

108. Use of an effective amount of the immunoresponsive cell of any one of claims 76-84 to the subject, in the manufacture of a medicament for increasing or lengthening survival of a subject having neoplasia.

109. The use of claim 108, wherein the neoplasia is selected from the group consisting of multiple myeloma, Non-Hodgkin Lymphoma (especially Mantle Cell), Hodgkin Lymphoma, Chronic Lymphocytic Leukemia (CLL), Acute lymphocytic leukemia (ALL), Hairy Cell Leukemia, Burketts Lymphoma, and Waldenstrom's Macroglobulinemia.

110. The use of claim 108 or 109, wherein the neoplasia is multiple myeloma.

111. The use of any one of claims 108-110, wherein the method reduces or eradicates tumor burden in the subject.

112. A method for producing an immunoresponsive cell that binds to Fc Receptor-like 5 (FcRL5), comprising introducing into the immunoresponsive cell a nucleic acid sequence that encodes a chimeric antigen receptor (CAR) comprising an extracellular