47. The method of any one of claims 38-46, wherein the intracellular signaling domain of said antigen recognizing receptor is the CD3 -chain signaling domain.

48. The method of any one of claims 38-47, wherein the intracellular signaling domain of the chimeric co-stimulating receptor (CCR) is a CD97, CD11a-CD18, CD2, ICOS, CD27, CD154, CD5, OX40, 4-1 BB or CD28 signaling domain.

49. A method of treating prostate cancer in a subject in need thereof, the method comprising administering to the subject a therapeutically effective amount of a T cell comprising an antigen recognizing receptor that binds PSCA or CD19 with low affinity, wherein the binding activates the immunoresponsive cell, and a chimeric co-stimulating receptor (CCR) that binds PSMA and stimulates the immunoresponsive cell, thereby treating prostate cancer in the subject.

50. A pharmaceutical composition comprising an immunoresponsive cell of any one of claims 1-18 and a pharmaceutically acceptable excipient.

51 . An immunoresponsive cell of any of claims 1-18 for use in the treatment of a neoplasia or tumor disease.

52 . A T cell comprising an antigen recognizing receptor that binds PSCA or CD19 with low affinity, wherein the binding activates the immunoresponsive cell, and a chimeric co-stimulating receptor (CCR) that binds PSMA and stimulates the immunoresponsive cell for use in the treatment of prostate cancer.

53 . A kit comprising an immunoresponsive cell comprising an antigen recognizing receptor that binds a first antigen and activates the immunoresponsive cell, and a chimeric co-stimulating receptor (CCR) that binds a second viral antigen and stimulates the immunoresponsive cell.