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(71) Applicant: **WORLD BIOTECH REGENERATIVE MEDICAL GROUP LIMITED** [CN/CN]; 3/F, Victoria Mall, 188 Canton Rd, Tsim Sha Tsui, Hong Kong (CN).

(72) Inventors: **MAN, Wing Yin Cornelia**; 3/F, Victoria Mall, 188 Canton Rd., Tsim Sha Tsui, Hong Kong (CN). **MA, Wei**; 3/F, Victoria Mall, 188 Canton Rd., Tsim Sha Tsui, Hong Kong (CN). **GAO, Quanguai**; 3/F, Victoria Mall, 188 Canton Rd., Tsim Sha Tsui, Hong Kong (CN).

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(54) Title: METHODS AND COMPOSITIONS OF CAR-EXPRESSING NATURAL KILLER CELLS WITH BISPECIFIC ANTI-GEN-BINDING MOLECULES AS CANCER THERAPEUTIC AGENTS

(57) Abstract: Provided are a cancer-antigen-specific Natural Killer (NK) cell including a non-viral expression plasmid encoding a chimeric antigen receptor, wherein the chimeric antigen receptor comprises a cancer-antigen-specific single-chain variable fragment (scFv), a hinge region, a transmembrane domain, and intracellular domains; methods of generating said cancer-antigen-specific NK cell; a bispecific antigen-binding molecule comprising a first antigen-binding molecular and a second antigen-binding molecular, wherein the first antigen-binding molecular is an scFv specific to a cancer antigen, and the second antigen-binding molecule is specific to a second cancer antigen and an NK cell receptor, and comprises at least one of an scFv and an aptamer-based molecule; pharmaceutical compositions comprising at least one of the cancer-antigen-specific NK cell and the bispecific antigen-binding molecule; and methods of treating cancer patients using the pharmaceutical compositions.



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