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HUMAN NATURAL KILLER CELLS EXPANSION AND ACTIVATION *EX VIVO* IN THE PRESENCE OF TRANSGENIC FEEDER CELL LINES

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The most promising results of clinical trials on adoptive immunotherapy with expanded and activated *ex vivo* natural killer (NK) cells were obtained for acute myeloid leukemia, as well as solid tumors when combined with targeted antibodies treatment. Widespread clinical implementation of this approach is limited by the possibility of obtaining a sufficient amount of an NK cells' product of required quality. In our study, we generated transgenic feeder cells based on the immortalized K-562 line expressing the recombinant membrane-bound variant of interleukin (IL)-21 and 4-1BBL protein. Co-cultivation of peripheral blood mononuclear cells from 10 healthy donors with that genetically modified feeder cells resulted in notable expansion of NK cells (median—21589 times, min—3150 times, max—304328 times) with a minimum content of T-cells (median—0.5%, min—0.06%, max—4.7%). The expanded NK cell product did not contain *BCR-ABL1* contamination from feeder cells and had a lower expression of *c-MYC* proto-oncogene as compared to the initial PBMC level.

Keywords: natural killer cells, expansion and activation *ex vivo*, adoptive antitumor immunotherapy, genetically-engineered feeder cells