CLAIMS

1. Use of at least one natural killer (NK) cell in the manufacture of a medicament for treating cancer in a subject, wherein:

(1) an alternating electric field is to be applied to a target region of the subject for a period of time in a first step; and

(2) the at least one NK cell is to be administered to the subject in a second step.

2. The use according to claim 1, wherein at least one of:

the alternating electric field is to be applied at a frequency in a range of from about 50 kHz to about 1 MHz;

the alternating electric field has a field strength of at least about 1 V/cm in at least a portion of the target region of the subject;

the alternating electric field is induced by an applied voltage of at least 50 V p2p; and

the period of time that the alternating electric field is to be applied is at least about 50% of at least about a 24 consecutive hour time period.

3. The use according to claim 1, wherein the alternating electric field is to be applied to the target region of the subject for a period of time sufficient to reduce MHC Class I expression in cancer cells in the target region compared to control cancer cells that have not been exposed to alternating electric fields.

4. The use according to claim 1, wherein the at least one NK cell comprises at least one autologous NK cell.

5. The use according to claim 1, wherein the at least one NK cell comprises at least one allogeneic NK cell.

6. The use according to claim 1, wherein at least one of:

the at least one NK cell is derived from *ex vivo* differentiation of pluripotent stem cells;

the at least one NK cell is derived from an interleukin-2 (IL-2) dependent cell line; and/or

the at least one NK cell comprises a chimeric antigen receptor-engineered NK (CAR-NK) cell.

7. The use according to claim 1, wherein the first and second steps are performed wholly or partially sequentially, and wherein the at least one NK cell is to be administered after the application of the alternating electric field has begun.

8. The use according to claim 1, wherein the first and second steps are repeated one or more times.

9. The use according to claim 1, wherein the cancer is selected from the group consisting of hepatocellular carcinoma, glioblastoma, pleural mesothelioma, differentiated thyroid cancer, advanced renal cell carcinoma, ovarian cancer, pancreatic cancer, lung cancer cell, breast cancer, and combinations thereof.

10. Use of at least one natural killer (NK) cell in the manufacture of a medicament for reducing a volume of a tumor and/or preventing an increase of volume of the tumor, wherein the tumor is present in a body of a living subject and includes a plurality of cancer cells, wherein:

(1) an alternating electric field is to be applied to a target region of the subject for a period of time in a first step; and

(2) the at least one NK cell is to be administered to the subject in a second step.

11. The use according to claim 10, wherein at least one of:

the alternating electric field is to be applied at a frequency in a range of from about 50 kHz to about 1 MHz;

the alternating electric field has a field strength of at least about 1 V/cm in at least a portion of the target region of the subject;

the alternating electric field is induced by an applied voltage of at least 50 V p2p; and

the period of time that the alternating electric field is to be applied is at least about 50% of at least about a 24 consecutive hour time period.

12. The use according to claim 10, wherein the alternating electric field is to be applied to the target region of the subject for a period of time sufficient to reduce MHC Class I expression in the cancer cells compared to control cancer cells that have not been exposed to alternating electric fields.

13. The use according to claim 10, wherein the at least one NK cell comprises at least one autologous NK cell.

14. The use according to claim 10, wherein the at least one NK cell comprises at least one allogeneic NK cell.

15. The use according to claim 10, wherein at least one of:

the at least one NK cell is derived from *ex vivo* differentiation of pluripotent stem cells;

the at least one NK cell is derived from an interleukin-2 (IL-2) dependent cell line; and/or

the at least one NK cell comprises a chimeric antigen receptor-engineered NK (CAR-NK) cell.

16. The use according to claim 10, wherein the first and second steps are performed wholly or partially sequentially, and wherein the at least one NK cell is to be administered after the application of the alternating electric field has begun.

17. The use according to claim 10, wherein the first and second steps are repeated one or more times.

18. The use according to claim 10, wherein the cancer is selected from the group consisting of hepatocellular carcinoma, glioblastoma, pleural mesothelioma, differentiated thyroid cancer, advanced renal cell carcinoma, ovarian cancer, pancreatic cancer, lung cancer cell, breast cancer, and combinations thereof.

19. Use of at least one natural killer (NK) cell in the manufacture of a medicament for treating cancer in a subject, wherein:

(1) an alternating electric field is to be applied to a target region of the subject for a period of time in a first step; and

(2) the at least one NK cell is to be administered to the subject in a second step; and

wherein administration of the alternating electric field increases the cytotoxicity of the NK cells against cancer cells in the subject when compared to the administration of NK cells to the subject in the absence of alternating electric field application.

20. The use according to claim 19, wherein at least one of:

the alternating electric field is to be applied at a frequency in a range of from about 50 kHz to about 1 MHz;

the alternating electric field has a field strength of at least about 1 V/cm in at least a portion of the target region of the subject;

the alternating electric field is induced by an applied voltage of at least 50 V p2p; and

the period of time that the alternating electric field is to be applied is at least about 50% of at least about a 24 consecutive hour time period.