CLAIMS

What is claimed is:

1. Use of a plurality of human mesenchymal stem cells (hMSCs) and at least one type of inhibitory oligonucleotide in the manufacture of a medicament for treating cancer *in vivo*, wherein the at least one type of inhibitory oligonucleotide is introduced into the plurality of hMSCs *in vitro*, and

wherein the plurality of hMSCs is to be contacted with a tumor tissue comprising a plurality of syncytial cancer cells *in vivo* under conditions permitting a hMSC of the plurality of hMSCs to form a gap junction channel with a first syncytial cancer cell of the tumor tissue, whereby the at least one type of inhibitory oligonucleotide is to be delivered into the first syncytial cancer cell by traversing the gap junction channel and the at least one type inhibitory oligonucleotide is to be delivered into a second syncytial cancer cell of the tumor tissue by traversing a gap junction channel between the first syncytial cancer cell and the second syncytial cancer cell.

2. The use as recited in claim 1, wherein the at least one type of inhibitory oligonucleotide does not kill the hMSC before the hMSC can deliver the at least one type of inhibitory oligonucleotide to the first syncytial cancer cell.

3. The use as recited in claim 1, wherein the plurality of hMSCs comprises about 10^5 hMSCs.

4. The use as recited in claim 1, wherein the at least one type of inhibitory oligonucleotide is selected from a group comprising miR-16, miR-34a, siRNA that mimics miR-16, siRNA that mimics miR-34a; siRNA that interferes with translation of Cortactin, siRNA that interferes with translation of Akt, siRNA that interferes with translation of Gelsolin, siRNA that interferes with translation of a-Tubulin, siRNA that interferes with translation of GAPDH, and siRNA that interferes with translation of $Kras^{GAT}$.

5. The use as recited in claim 1, wherein the tumor tissue is a member of a group comprising cervical cancer tissue, colorectal cancer tissue, melanoma tissue, pancreatic cancer tissue, prostate cancer tissue, non-small cell lung cancers, and rat Giloma.

6. The use as recited in claim 1, wherein the tumor tissue is prostate cancer tissue and the at least one type of inhibitory oligonucleotide is siRNA that mimics miR-16.

7. The use as recited in claim 1, wherein the plurality of human mesenchymal stem cells (hMSCs) introduced *in vitro* with at least one type of inhibitory oligonucleotide is further cultured in a 20 nanoMole solution of the at least one type of inhibitory oligonucleotide that codes for the at least one type of inhibitory oligonucleotide.

8. The use as recited in claim 1, wherein the plurality of human mesenchymal stem cells (hMSCs) introduced in vitro with at least one type of inhibitory oligonucleotide is further cultured in a solution of a transfection reagent and the at least one type of inhibitory oligonucleotide that codes for the at least one type of inhibitory oligonucleotide.

9. A plurality of human mesenchymal stem cells (hMSCs) and at least one type of inhibitory oligonucleotide for use in treating cancer,

wherein the at least one type of inhibitory oligonucleotide is introduced into the plurality of hMSCs *in vitro*, and

wherein the plurality of hMSCs is to be contacted with a tumor tissue comprising a plurality of syncytial cancer cells *in vivo* under conditions permitting a hMSC of the plurality of hMSCs to form a gap junction channel with a first syncytial cancer cell of the tumor tissue, whereby the at least one type of inhibitory oligonucleotide is to be delivered into the first syncytial cancer cell by traversing the gap junction channel and the at least one type inhibitory oligonucleotide is to be delivered into a second syncytial cancer cell of the tumor tissue by traversing a gap junction channel between the first syncytial cancer cell and the second syncytial cancer cell.

10. The plurality of hMSCs and at least one type of inhibitory oligonucleotide as recited in claim 9, wherein the at least one type of inhibitory oligonucleotide does not kill the hMSC before the hMSC can deliver the at least one type of inhibitory oligonucleotide to the first syncytial cancer cell.

11. The plurality of hMSCs and at least one type of inhibitory oligonucleotide as recited in claim 9, wherein the plurality of hMSCs comprises about 10^5 hMSCs.

12. The plurality of hMSCs and at least one type of inhibitory oligonucleotide as recited in claim 9, wherein the at least one type of inhibitory oligonucleotide is selected from a group comprising miR-16, miR-34a, siRNA that mimics miR-16, siRNA that mimics miR-34a; siRNA that interferes with translation of Cortactin, siRNA that interferes with translation of Akt, siRNA that interferes with translation of Gelsolin, siRNA that interferes with translation of a-Tubulin, siRNA that interferes with translation of GAPDH, and siRNA that interferes with translation of $Kras^{GAT}$.

13. The plurality of hMSCs and at least one type of inhibitory oligonucleotide as recited in claim 9, wherein the tumor tissue is a member of a group comprising cervical cancer tissue, colorectal cancer tissue, melanoma tissue, pancreatic cancer tissue, prostate cancer tissue, non-small cell lung cancers, and rat Giloma.

14. The plurality of hMSCs and at least one type of inhibitory oligonucleotide as recited in claim 9, wherein the tumor tissue is prostate cancer tissue and the at least one type of inhibitory oligonucleotide is siRNA that mimics miR-16.

15. The plurality of hMSCs and at least one type of inhibitory oligonucleotide as recited in claim 9, wherein the plurality of human mesenchymal stem cells (hMSCs) introduced *in vitro* with at least one type of inhibitory oligonucleotide is further cultured in a 20 nanoMole solution of the at least one type of inhibitory oligonucleotide that codes for the at least one type of inhibitory oligonucleotide.

16. The plurality of hMSCs and at least one type of inhibitory oligonucleotide as recited in claim 9, wherein the plurality of human mesenchymal stem cells (hMSCs) introduced in vitro with at least one type of inhibitory oligonucleotide is further cultured in a solution of a transfection reagent and the at least one type of inhibitory oligonucleotide that codes for the at least one type of inhibitory oligonucleotide.