Summary ~~of the Invention~~

One embodiment of this ~~invention~~disclosure provides a method for treating a subject afflicted with a tumor comprising introducing into the subject's bloodstream a therapeutically effective number of genetically modified mesenchymal stem cells, wherein each genetically modified mesenchymal stem cell contains an exogenous nucleic acid comprising (i) a cytotoxic protein-encoding region operably linked to (ii) a promoter or promoter/enhancer combination, whereby the cytotoxic protein is selectively expressed when the genetically modified mesenchymal stem cells come into proximity with the tumor's stromal tissue.

In one aspect, there is provided a genetically modified mesenchymal stem cells for the treatment of a subject afflicted with a tumor, wherein each genetically modified mesenchymal stem cell comprises an exogenous nucleic acid comprising (i) a cytotoxic protein-encoding region operably linked to (ii) a promoter or promoter/enhancer combination, whereby the cytotoxic protein is selectively expressed when the genetically modified mesenchymal stem cells come into proximity with the tumor's stromal tissue when a therapeutically effective number of the stem cells is introduced into the subject's bloodstream; and wherein the promoter is the RANTES promoter.

Another embodiment of the ~~invention~~disclosure also provides genetically modified mesenchymal stem cells for use in any of the methods for treating a subject afflicted with a tumor disclosed in this patent application.

This ~~invention~~disclosure also provides a method for treating a human subject afflicted with a pancreatic tumor comprising introducing into the subject's bloodstream from about 1 x 10^5 to about 1 x 10^9 cells/kg body weight of genetically modified $CD34^-$ stem cells, wherein (a) each genetically modified $CD34^-$ stem cell contains an exogenous nucleic acid comprising (i) a Herpes simplex viral thymidine kinase-encoding region operably linked to (ii) a RANTES promoter, (b) the subject is treated with ganciclovir in a manner permitting the Herpes simplex viral thymidine kinase to render the ganciclovir cytotoxic, and (c) the introduction

of the genetically modified mesenchymal stem cells is not preceded, accompanied or followed by myeloablation.

In one aspect, there is provided a genetically modified $CD34^-$ stem cells for treating a human subject afflicted with a pancreatic tumor; wherein the stem cells are to be introduced into the subject's bloodstream from about 5×10^6 to about 2×10^7 cells/kg body weight of the genetically modified $CD34^-$ stem cells, wherein (a) each genetically modified $CD34^-$ stem cell contains an exogenous nucleic acid comprising (i) a Herpes simplex viral thymidine kinase-encoding region operably linked to (ii) a RANTES promoter, (b) the subject is treated with ganciclovir in a manner permitting the Herpes simplex viral thymidine kinase to render the ganciclovir cytotoxic, and (c) the introduction of the genetically modified mesenchymal stem cells is not preceded, accompanied or followed by myeloablation.

This ~~invention~~disclosure further provides a genetically modified mesenchymal stem cell comprising an exogenous nucleic acid comprising (i) a cytotoxic protein-encoding region operably linked to (ii) a promoter or promoter/enhancer combination, whereby the cytotoxic protein is selectively expressed when the genetically modified mesenchymal stem cell comes into proximity with a tumor's stromal tissue.

In one aspect, there is provided a genetically modified mesenchymal stem cell comprising an exogenous nucleic acid comprising (i) a cytotoxic protein-encoding region operably linked to (ii) a promoter or promoter/enhancer combination, whereby the cytotoxic protein is selectively expressed when the genetically modified mesenchymal stem cell comes into proximity with a tumor's stromal tissue; and wherein the promoter is the RANTES promoter.

Yet a further embodiment of the ~~invention~~disclosure is directed to a retroviral packaging cell comprising:

- a retroviral vector including (i) a cytotoxic protein-encoding region operably linked to (ii) a promoter or promoter/enhancer combination, inducible by inflammatory mediators, and
- a gene encoding a viral surface protein providing a tropism for mesenchymal or CD34- stem cells.

In one aspect, there is provided a retroviral packaging cell comprising:

- a retroviral vector including (i) a cytotoxic protein-encoding region operably linked to (ii) a promoter or promoter/enhancer combination, inducible by inflammatory mediators, and
- a gene encoding a viral surface protein providing a tropism for mesenchymal or CD34- stem cells; wherein the promoter is the RANTES promoter.

Further the retroviral packaging cell also comprises genes encoding structural proteins and enzymes for the production of pseudotyped virions from the packaging cell.

In one aspect, there is~~Finally, this invention~~ provides~~d~~ a genetically modified human $CD34^-$ stem cell comprising an exogenous nucleic acid comprising (i) a Herpes simplex viral thymidine kinase-encoding region operably linked to (ii) a RANTES promoter.