【CLAIMS】

【Claim 1】

A cell sheet comprising two or more cell layers which comprise i) somatic cells and ii) cancer cells or stem cells, wherein a gene delivery system is introduced to one or more of the cell layers.

【Claim 2】

The cell sheet of claim 1, wherein the somatic cells are one or more selected from the group consisting of fibroblasts, chondrocytes, epithelial cells, myoepithelial cells, dermal cells, epithelial keratinocytes, Schwann cells, glial cells, osteoblasts, cardiomyocytes, megakaryocytes, adipocytes, stem cells and cancer cells.

【Claim 3】

The cell sheet of claim 1, wherein the gene delivery system is in the form of (i) a naked recombinant DNA molecule, (ii) a plasmid, (iii) a viral vector, and (iv) a liposome or niosome containing the naked recombinant DNA molecule or plasmid.

【Claim 4】

The cell sheet of claim 3, wherein the viral vector is one or more selected from the group consisting of a recombinant adenovirus, an adeno-associated virus (AAV), a retrovirus, a lentivirus, Herpes simplex virus, vaccinia virus, a reovirus, a poxvirus, Semliki forest virus and Measles virus.

【Claim 5】

The cell sheet of claim 1, wherein the gene delivery system is a recombinant adenovirus.

【Claim 6】

The cell sheet of claim 5, wherein the recombinant adenovirus is a replication-incompetent adenovirus or oncolytic adenovirus.

【Claim 7】

The cell sheet of claim 1, wherein the cell layer to which the gene delivery system is introduced includes cancer cells or stem cells.

【Claim 8】

The cell sheet of claim 1, comprising a cell layer containing somatic cells as a support; and a cell layer containing cancer cells or stem cells,

wherein a recombinant adenovirus is introduced to the cell layer containing cancer cells or stem cells.

【Claim 9】

The cell sheet of claim 1, wherein the cell sheet comprises a cell layer containing cancer cells, to which a gene delivery system is introduced,

wherein the cancer cells are irradiated.

【Claim 10】

The cell sheet of claim 3, wherein the viral vector is loaded at a multiplicity of infection (MOI) of 0.1 to 500.

【Claim 11】

A method of preparing a cell sheet according to claim 1, comprising:

forming a cell sheet including two or more cell layers on a temperature-responsive culture dish including a temperature-responsive polymer;

introducing a gene delivery system to one or more of the cell layers, and

separating the cell sheet from the temperature-responsive culture dish.

【Claim 12】

The method of claim 11, wherein the temperature-responsive polymer is one or more selected from the group consisting of poly(N-isopropylacrylamide), poly(N-vinylcaprolactame), polycaprolactone (PCL) and polylactate-co-glycolate (PLGA).

【Claim 13】

A gene therapeutic agent comprising the cell sheet according to claim 1.

【Claim 14】

The gene therapeutic agent of claim 13, which is for prevention or treatment of cancer, or for prevention of cancer recurrence or metastasis.

【Claim 15】

The gene therapeutic agent of claim 14, wherein the cancer is one or more selected from the group consisting of multifocal hepatocellular carcinogenesis, glioma, glioblastoma, laryngeal cancer, pancreatic cancer, lung cancer, non-small cell lung cancer, colon cancer, bone cancer, skin cancer, head and neck cancer, ovarian cancer, uterine cancer, rectal cancer, gastric cancer, anal cancer, colorectal cancer, breast cancer, fallopian cancer, endometrial cancer, cervical cancer, vaginal cancer, vulva cancer, Hodgkin's disease, esophageal cancer, small intestine cancer, endocrine gland tumors, thyroid cancer, parathyroid carcinoma, adrenal cancer, soft tissue sarcoma, urethral cancer, penile cancer, prostate cancer, chronic or acute leukemia, lymphocyte lymphoma, bladder cancer, kidney or urinary tract cancer, renal cell carcinoma, renal pelvic carcinoma, central nervous system (CNS) tumors, primary CNS lymphoma, spinal tumors, liver cancer, bronchial cancer, nasopharyngeal cancer, brainstem glioma and pituitary adenoma.