

[CLAIMS]

[Claim 1]

A method for screening personalized anticancer agents, the method comprising the steps of:

(a) obtaining clinical information of a patient with cancer and the cancer's genetic information and extracting candidate anticancer agents based on the clinical and genetic information;

(b) obtaining cancer cells from the patient with cancer, treating cancer cells, which are single cancer cells obtained from a patient or cultured single cancer cells, with candidate anticancer agents in vitro, measuring the anticancer activity of the treated candidate anticancer agents, and selecting a group of personalized anticancer agent candidates having anticancer activity in vitro, from the candidate anticancer agents; wherein the single cancer cells are obtained through the following steps:

(i) homogenizing cancer tissue isolated from the cancer patient, and collecting a cell fraction from the homogenized tissue; and

(ii) allowing the collected cell fraction to react with protease, and filtering and centrifuging the reaction product; and

(b) wherein the selected candidate group of personalized anticancer agent candidates of step (b) are suitable for being provided to ~~treating~~ a xenograft animal model containing cancer cells from the patient ~~with the selected candidate group to~~ verify the anticancer effect of the candidate group in vivo.

[Claim 2]

The method of claim 1, wherein the candidate anticancer agents in step (a) are screened based on the genetic information of cancer.

[Claim 3]

The method of claim 2, wherein the genetic information of cancer is at least one

information selected from the results of analysis of a cancer-specific SNP, a cancer-specific haplotype, a cancer-specific mutation.

[Claim 4]

The method of claim 1, wherein the culturing is performed in a culture system comprising a medium reservoir, a cell dispenser, a medium exchanger, an incubator, a stirrer, and a waste discharge unit.

[Claim 5]

The method of claim 4, wherein the culture system is a means for seed-culturing cancer cells.

[Claim 6]

The method of claim 4, wherein the culture system is a means for expansion-culturing cancer cells.

[Claim 7]

The method of claim 1, wherein step (ab) is performed by treating the cancer cells from the patient with the candidate anticancer agents, examining whether each of the treated candidate anticancer agents shows anticancer activity, and selecting a group of personalized anticancer agent candidates having anticancer activity from the candidate anticancer agents.

[Claim 8]

The method of claim 1, wherein ~~step (b) is performed using a~~the xenograft animal model is constructed by transplanting the cancer cells from the patient into an immunodeficient animal.

[Claim 9]

The method of claim 8, wherein the immunodeficient animal is an

immunodeficient mouse.

[Claim 10]

The method of claim 9, wherein the immunodeficient mouse includes a nude mouse, a NOD (non-obese diabetic) mouse, a SCID (severe combined immunodeficiency) mouse, a NOD-SCID mouse, or a NOG (NOD/SCID Il2rg^{-/-}) mouse.

[Claim 11]

The method of claim 1, further comprising, before step (a_b) of treating the cancer cells with the candidate anticancer agents, a step of cryopreserving a portion of the cancer cells.

[Claim 12]

The method of claim 1, wherein the cancer is solid cancer.

[Claim 13]

The method of claim 12, wherein the cancer is selected from the group consisting of liver cancer, glioblastoma, ovarian cancer, colorectal cancer, head and neck cancer, bladder cancer, hypernephroma, stomach cancer, breast cancer, metastatic cancer, pancreatic cancer, and lung cancer.

[Claim 14]

~~A system for screening personalized anticancer agents comprise:~~

~~—— (a) a means for culturing cancer cells from a patient, comprising a medium reservoir, a cell dispenser, a medium exchanger, an incubator, a stirrer, a waste discharge unit, a tissue homogenizer, a centrifuge, a protease reservoir, a cell filtration unit, an incubator, a cancer cell culture means, a medium reservoir, and a waste discharge unit; and~~

~~—— (b) a means for treating cultured cancer cells from the patient with the candidate anticancer agents, measuring the anticancer activity of the treated candidate anticancer agents and selecting personalized anticancer agents showing an anticancer effect, the~~

~~means comprising a candidate anticancer agent reservoir, a candidate anticancer agent dispenser, a cell surviving rate measuring device, a data storage unit and a data analysis unit.~~

~~[Claim 15]~~

~~—— The system of claim 14, wherein the means (b) further comprises at least one selected from among a peeler, a washer, and a plate incubator.~~

~~[Claim 16]~~

~~—— The system of claim 14, wherein the data analysis unit is selected from among a qPCR machine, a plate reader, a confocal microscope, and a multiplex reader.~~

~~[Claim 17]~~

~~—— The system of claim 14, wherein the means (a) for culturing cancer cells cultures cancer cells by providing temperature, time and medium, which are suitable for the culture of cancer cells.~~

~~[Claim 18]~~

~~—— The system of claim 14, wherein the means (a) for culturing cancer cells is a means for seed culturing cancer cells.~~

~~[Claim 19]~~

~~—— The system of claim 14, wherein the means (a) for culturing cancer cells is a means for expansion culturing cancer cells.~~

~~[Claim 20]~~

~~—— The system of claim 14, further comprising a cancer cryopreservation means is configured to perform a process of treating the cancer cells cultured by the means (a) with a cryoprotective agent and cryopreserving the treated cancer cells.~~

[Claim 21]

~~—The system of claim 20, wherein the cancer cryopreservation means comprises a freezer, a quick freezer, a cryoprotective agent reservoir, a cryoprotective agent disperser, and a thawing device.~~