CELL CULTURE MANAGEMENT SYSTEM

Technical field

[0001]

The present invention relates to cell culture management systems.

Background art

[0002]

Various kinds of culture devices and culture methods have been developed to grow internal organs or maintain their functions for a long time. For example, WO2017/191691 discloses growth induction systems, growth induction control devices, growth induction control methods, and growth induction control programs with which growth can be induced without the need to add cytokines for each of different stages of growth.

Problems to be solved by the invention

[0003]

Nevertheless, no management system for the cell culture systems as a whole when they are individually installed has ever existed.

[0004]

Therefore, an object of the present invention is to provide novel cell culture management systems.

Means to solve the problems

Summary

[0005]

An aspect of the present disclosure is a cell culture management system including: a data management device; an output data server provided in a first culture device for culturing a first kind of cells; a customer server provided in a second culture device for culturing a second kind of cells; and a cell management server provided in a cell management compartment where the second kind of cells are stored, in which: the data management device is connected in bidirectional communication with each of the output data server, the customer server, and the cell management server; the output data server has: a transmitter for transmitting a first protocol for culturing the first kind of cells to the data management device; the customer server has: one or more transmitters for transmitting order information for obtaining the second kind of cells and location information of the second culture device to the data management device; and a receiver for receiving a second protocol for culturing the second kind of cells from the data management device; the data management device has: a receiver for receiving the first protocol from the output data server; and a receiver for receiving the order information and the location information of the second culture device from the customer server; and one or more memorizing units for memorizing the first protocol received from the output data server, the second protocol, and the order information and the location information of the second culture device received from the customer server; and the cell management server has: a receiver for receiving the order information and the location information of the second culture device from the data management device. The output data server may have a receiver for receiving a third protocol for culturing a third kind of cells from the data management device. The customer server may have a transmitter for transmitting a measured culture data obtained

from a cell sensor disposed in the second culture device to the data management device; and the data management device may have a receiver for receiving the measured culture data transmitted from the customer server; and a memorizing unit for memorizing the measured culture data received from the customer server. The cell management server may have a memorizing unit for memorizing inventory information for cells present in the cell management compartment; and a transmitter for transmitting the inventory information to the data management device; and the data management device may have a receiver for receiving the inventory information transmitted from the cell management server; and a memorizing unit for memorizing the received inventory information.

[0006]

Another aspect of the present disclosure is a cell culture management system including: an output data server provided in a first culture device for culturing a first kind of cells; a customer server provided in a second culture device for culturing a second kind of cells; and a cell management server provided in a cell management compartment where the second kind of cells are stored, in which: the output data server, the customer server, and the cell management server are each connected in bidirectional communication with a data management device; the output data server has: a transmitter for transmitting a first protocol for culturing the first kind of cells to the data management device; the customer server has: one or more transmitters for transmitting order information for obtaining the second kind of cells and location information of the second culture device to the data management device; and a receiver for receiving a second protocol for culturing the second kind of cells from the data management device; and the cell management server has: a receiver for receiving the order information and the location information of the second culture device from the data management device. The output data server may have a receiver for receiving a third protocol for culturing a third kind of cells from the data management device. The customer server may have a transmitter for transmitting an measured culture data obtained from a cell sensor disposed in the second culture device to the data management device; and the data management device may have a receiver for receiving the measured culture data transmitted from the customer server; and a memorizing unit for memorizing the measured culture data received from the customer server. The cell management server may have a memorizing unit for memorizing inventory information for cells present in the cell management compartment; and a transmitter for transmitting the inventory information to the data management device; and the data management device may have a receiver for receiving the inventory information transmitted from the cell management server; and a memorizing unit for memorizing the received inventory information.

Brief description of the drawings

[0007]

Fig. 1 is a flow chart showing an operation of a cell culture system in a basic process, which is an embodiment according to the present invention.

Fig. 2 is a schematic diagram of a cell culture system in the basic process, which is an embodiment according to the present invention. The broken lines indicate flows of information, and the solid lines indicate flows of objects;

Fig. 3 is a schematic diagram of a cell culture system in novel protocol development, which is another embodiment according to the present invention. The broken lines indicate flows of information, and the solid lines indicate flows of objects.