What is claimed is:

1. A cell culture scaffold manufacturing apparatus for manufacturing a cell culture scaffold that is used in regeneration of a tissue, the apparatus comprising:

a plotter that includes a first solution storage portion in which a biopolymer solution is stored, and;

~~a plotter that includes~~ a plotter nozzle for ejecting a solution supplied from the first solution storage portion;

an electrospinning unit that electrospins nanofibers;

a plotting position control portion that controls a plotting position by moving the plotter and the electrospinning unit in an x-y-z axis direction; and

a cylindrical collection portion that has a cylinder shape and is disposed at a lower portion of the plotter so that the solution ejected through the plotter nozzle of the plotter is collected.

wherein the plotting position control portion includes a support bracket that supports the plotter and the electrospinning unit,

the plotter is provided at one side of the support bracket and the electrospinning unit is provided at another side of the support bracket, and

the support bracket includes a rotation means that rotates the electrospinning unit to the position of the plotter.

2. The apparatus of claim 1, further comprising:

~~a plotting position control porting that controls a plotting position by~~

~~moving the plotter in an x-y-z axis direction;~~

a collecting position control portion that controls a position at which the solution is collected by controlling a rotation speed of the cylindrical collection portion; and

a controller controlling the plotting position control portion and the collecting position control portion.

3. The apparatus of claim 2, wherein:

the plotting position control portion includes_

~~a support bracket supporting the plotter and including a z-axis guiderail for moving the plotter in a z-axis direction;~~

a x-axis guiderail and y-axis guiderail moving the support bracket in a x-axis direction and a y-axis direction, respectively, and

the support bracket includes a z-axis guiderail for moving the plotter and the electrospinning unit in a z-axis direction.

4. The apparatus of claim 2, wherein:

the collecting position control portion includes

a fixing shaft fixing the cylindrical collection portion and a driver rotating the fixing shaft.

5. The apparatus of claim 4, wherein:

the cylindrical collection portion is detachably formed in the fixing shaft

by forming a hollow portion into which the fixing shaft is inserted at both ends in a central axis direction.

6. The apparatus of claim 5, wherein:

the fixing shaft includes a position determination protrusion portion in which a portion of an external circumferential surface is protruded to determine a collection position of the cylindrical collection portion,

a hollow region of the hollow portion is extended so that the position determination protrusion portion is inserted thereinto.

7. The apparatus of claim 1, wherein:

~~the solution storage portion is a first solution storage portion~~,

~~the cell culture scaffold manufacturing apparatus further includes~~ the~~an~~ electrospinning unit ~~that~~ includes a second solution storage portion in which a biopolymer solution is stored, an electrospinning nozzle that electrospins a solution supplied from the second solution storage portion, and a voltage generation portion applying a voltage to the electrospinning nozzle and the cylindrical collection portion,

wherein the nanofibers are electrospun between the cell culture scaffolds formed through the plotter by using the electrospinning unit.

8. The apparatus of claim 1, wherein:

the plotter includes a first plotter nozzle and a second plotter nozzle

having divided regions,

the cell culture scaffold manufacturing apparatus further incldues a drug storage portion connected to the first plotter nozzle through a first supply tube, and the solution storage portion connected to the second plotter nozzle through a second supply tube.

9. The apparatus of claim 8, wherein:

the second plotter nozzle surrounds an external side of the first plotter nozzle in a length direction and has a ring-shaped tube.

10. The apparatus of claim 8, further comprising:

an additive storage portion connected to the first plotter nozzle through the third supply tube.

~~11. A cell culture scaffold manufacturing apparatus for manufacturing a cell culture scaffold that is used in regeneration of a tissue, the apparatus comprising:~~

~~a plotter including a first plotter nozzle and a second plotter nozzle having divided regions;~~

~~a drug storage portion connected with the first plotter nozzle through the first supply tube and storing a drug; and~~

~~a solution storage portion connected with the second plotter nozzle through the second supply tube and storing a biopolymer solution.~~

~~12. The apparatus of claim 11, wherein:~~

~~the second plotter nozzle surrounds an external side of the first plotter nozzle in a length direction and has a ring-shaped tube.~~

~~13. The apparatus of claim 11, further comprising:~~

~~an additive storage portion connected with the first plotter nozzle through the third supply tube.~~

~~14. The apparatus of claim 11, further comprising:~~

~~a base frame in which a lower plate and y-axis guiderail supports that are separated from each other at both ends of the lower plate to protrude are provided, and a collection table is installed between the y-axis guiderail supports;~~

~~y-axis guiderails installed on the y-axis guiderail supports;~~

~~an x-axis guiderail support on which an x-axis guiderail is installed and which is mounted on the y-axis guiderails and moved in an y-axis direction;~~

~~a support bracket mounted on the x-axis guiderail and moved in the x-axis direction;~~

~~a z-axis guiderail support which is fixed and installed in the support bracket and on which a z-axis guiderail is installed; and~~

~~a z-axis moving bracket which is mounted on the z-axis guiderail and moved in a z-axis direction and on which the drug storage portion, the solution~~

~~storage portion and the plotter are fixed and installed.~~

~~15. A method for manufacturing a cell culture scaffold, the method comprising:~~

~~supplying a drug that promotes a cell growth to a drug storage portion;~~

~~supplying a biopolymer solution to a solution storage portion;~~

~~supplying a water-soluble or biodegradable material for generating a pore to the solution storage portion; and~~

~~providing the drug through the first supply tube into the first plotter nozzle, providing the biopolymer solution and the water-soluble or biodegradable material through the second supply tube into the second plotter nozzle, and performing plotting by using a plotter.~~

~~16. The method of claim 15, wherein:~~

~~the drug is a growth factor, cytokine, an antibiotic or an antimicrobial.~~

~~17. The method of claim 15, wherein:~~

~~the biopolymer solution is one or more selected from the group consisting of polycaprolactone, polylactide, polyglycolide, and polydioxanone.~~

~~18. The method of claim 15, wherein:~~

~~the water-soluble material is a salt solution, sucrose, polyethylene oxide (PEO) or polyvinyl alcohol (PVA).~~

~~19. The method of claim 15, wherein:~~

~~the biodegradable material is a polyglycolic acid, polycaprolactone, polylactic acid or polydioxanone.~~

~~20. A method for manufacturing a cell culture scaffold, the method comprising:~~

~~supplying a drug that promotes a cell growth to a drug storage portion;~~

~~supplying a biopolymer solution to a solution storage portion;~~

~~supplying a water-soluble or biodegradable material for generating a pore to an additive storage portion; and~~

~~providing the drug through the first supply tube into the first plotter nozzle, providing the biopolymer solution and the water-soluble or biodegradable material through the second supply tube into the second plotter nozzle, providing the water-soluble or biodegradable material through a third supply tube into a third plotter nozzle, and performing plotting by using a plotter.~~

What is claimed is:

1. A cell culture scaffold manufacturing apparatus for manufacturing a cell culture scaffold that is used in regeneration of a tissue, the apparatus comprising:

a plotter that includes a first solution storage portion in which a biopolymer solution is stored, and a plotter nozzle for ejecting a solution supplied from the first solution storage portion;

an electrospinning unit that electrospins nanofibers;

a plotting position control portion that controls a plotting position by moving the plotter and the electrospinning unit in an x-y-z axis direction; and

a cylindrical collection portion that has a cylinder shape and is disposed at a lower portion of the plotter so that the solution ejected through the plotter nozzle of the plotter is collected

wherein the plotting position control portion includes a support bracket that supports the plotter and the electrospinning unit,

the plotter is provided at one side of the support bracket and the electrospinning unit is provided at another side of the support bracket, and

the support bracket includes a rotation means that rotates the electrospinning unit to the position of the plotter.

2. The apparatus of claim 1, further comprising:

a collecting position control portion that controls a position at which the solution is collected by controlling a rotation speed of the cylindrical collection

portion; and

a controller controlling the plotting position control portion and the collecting position control portion.

3. The apparatus of claim 2, wherein:

the plotting position control portion includes a x-axis guiderail and y-axis guiderail moving the support bracket in a x-axis direction and a y-axis direction, respectively, and

the support bracket includes a z-axis guiderail for moving the plotter and the electrospinning unit in a z-axis direction.

4. The apparatus of claim 2, wherein:

the collecting position control portion includes

a fixing shaft fixing the cylindrical collection portion and a driver rotating the fixing shaft.

5. The apparatus of claim 4, wherein:

the cylindrical collection portion is detachably formed in the fixing shaft by forming a hollow portion into which the fixing shaft is inserted at both ends in a central axis direction.

6. The apparatus of claim 5, wherein:

the fixing shaft includes a position determination protrusion portion in

which a portion of an external circumferential surface is protruded to determine a collection position of the cylindrical collection portion,

a hollow region of the hollow portion is extended so that the position determination protrusion portion is inserted thereinto.

7. The apparatus of claim 1, wherein:

the electrospinning unit includes a second solution storage portion in which a biopolymer solution is stored, an electrospinning nozzle that electrospins a solution supplied from the second solution storage portion, and a voltage generation portion applying a voltage to the electrospinning nozzle and the cylindrical collection portion,

wherein the nanofibers are electrospun between the cell culture scaffolds formed through the plotter by using the electrospinning unit.

8. The apparatus of claim 1, wherein:

the plotter includes a first plotter nozzle and a second plotter nozzle having divided regions,

the cell culture scaffold manufacturing apparatus further incldues a drug storage portion connected to the first plotter nozzle through a first supply tube, and the solution storage portion connected to the second plotter nozzle through a second supply tube.

9. The apparatus of claim 8, wherein:

the second plotter nozzle surrounds an external side of the first plotter nozzle in a length direction and has a ring-shaped tube.

10. The apparatus of claim 8, further comprising:

an additive storage portion connected to the first plotter nozzle through the third supply tube.