CLAIMS

1. A chimeric protein comprising a fibrinogen fragment capable of binding to fibrinogen upon thrombin treatment and a laminin fragment having integrin-binding activity, wherein the laminin fragment is in the form of a heterotrimer comprising C-terminal regions of laminin α, β, and γ chains, wherein the fibrinogen fragment is in the form of a heterotrimer comprising N-terminal regions of fibrinogen Aα, Bβ, and γ chains, and wherein each of the Aα, Bβ, and γ chains of the fibrinogen fragment is fused to any one of the α, β, and γ chains of the laminin fragment in any one of the following combinations (1) to (3):
(1) the fibrinogen Aα chain is fused to the laminin β chain, the fibrinogen Bβ chain is fused to the laminin α chain, and the fibrinogen γ chain is fused to the laminin γ chain;
(2) the fibrinogen Aα chain is fused to the laminin α chain, the fibrinogen Bβ chain is fused to the laminin γ chain, and the fibrinogen γ chain is fused to the laminin β chain; and
(3) the fibrinogen Aα chain is fused to the laminin γ chain, the fibrinogen Bβ chain is fused to the laminin β chain, and the fibrinogen γ chain is fused to the laminin α chain.

2. The chimeric protein according to claim 1, wherein the fibrinogen fragment comprises two fibrinogen fragments, and wherein the two fibrinogen fragments are each in the form of a heterotrimer and associate with each other through their N-terminal regions to form a hexamer.

3. The chimeric protein according to any one of claim 1 or 2, further comprising a protein having growth factor-binding activity.

4. The chimeric protein according to claim 3, wherein the protein having growth factor-binding activity is a heparan sulfate proteoglycan.

5. A gel formed of fibrin and a molecule generated by thrombin treatment of the chimeric protein according to any one of claims 1 to 4.

6. A method for producing the gel according to claim 5, comprising the step of preparing a mixture of the chimeric protein according to any one of claims 1 to 4, fibrinogen, and thrombin.

7. The method according to claim 6, wherein the molar ratio of the chimeric protein to the fibrinogen in the mixture is 1:5 to 1:20,000.

8. A composition for gel preparation comprising the chimeric protein according to any one of claims 1 to 4 and fibrinogen.

9. A kit for preparing the gel according to claim 5, the kit comprising the chimeric protein according to any one of claims 1 to 4, fibrinogen, and thrombin.

10. A method for three-dimensional culture of cells or tissue fragments using the gel according to claim 5.

11. A method for producing cells or organoids for transplantation medicine using the method according to claim 10.

12. Use of the chimeric protein according to any one of claims 1 to 4, the gel according to claim 5 or the composition according to claim 8, in the preparation of cells or organoids for transplantation medicine.

13. The method according to claim 11 or the use according to claim 12, wherein the cells for transplantation medicine are: cardiomyocytes, vascular endothelial cells, adipocytes, fibroblasts, myoblasts, hepatocytes, pancreatic cells, intestinal epithelial cells, alveolar epithelial cells, airway epithelial cells, kidney cells, hematopoietic cells, immune cells, nerve cells, eye tissue cells, and/or epidermal cells.

14. The method according to claim 11 or the use according to claim 12, wherein the organoids for transplantation medicine are: kidney, liver, gastrointestinal tract (stomach, intestines, esophagus, etc.), lung and trachea, cerebrum, and/or blood vessels.