

CLAIMS

1. A method for producing a glioblastoma mouse model, comprising the steps of:

(a) dividing a glioblastoma tissue, isolated from a patient, into 4 or more sections, and collecting one or more pieces from each of the sections;

(b) dissociating a mixture of the collected pieces into glioblastoma cells as single cells; and

(c) orthotopically transplanting a graft sample, which contains the glioblastoma cells obtained in step (b), into the brain of an immunodeficient mouse.

2. The method of claim 1, wherein one or more pieces, each having a volume of 1-8 mm³, is collected from 4 or more sections of the glioblastoma tissue in step (a).

3. The method of claim 1, wherein the volume of the mixture of the pieces collected in step (b) is 30-100% of the volume of the glioblastoma tissue isolated from the patient.

4. The method of claim 1, further comprising, between steps (b) and (c), a step of removing erythrocytes from a graft sample, which contains the glioblastoma cells as single cells obtained in step (b).

5. The method of claim 4, wherein the removal of erythrocytes is performed by Percoll gradient centrifugation.

6. The method of claim 1, wherein the graft sample
5 orthotopically transplanted into the brain of the immunodeficient mouse in step (c) contains 1×10^5 - 5×10^5 glioblastoma cells.

7. The method of claim 6, wherein the graft sample has a
10 volume of 5-15 μl .

8. The method of claim 1, wherein in step (b), the mixture of the collected pieces is dissociated into single cells by sequentially performing mechanical dissociation and enzymatic
15 dissociation of the mixture.

9. The method of claim 8, wherein the enzymatic dissociation is performed using an enzyme mixture including protease and DNase.

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10. The method of claim 1, wherein the orthotopical transplantation of the graft sample into the immunodeficient mouse brain is performed by injecting the sample into the

mouse brain at the location of 1.5-2.5 mm left and 0.5-1.5 mm anterior to the bregma and 1.8-2.2 mm deep from the dura.

11. The method of claim 1, wherein the immunodeficient mouse
5 is NOG (NOD/Shi-scid, IL-2R γ KO) mouse.

12. The method of claim 1, wherein the glioblastoma mouse model shows the same genetic and morphological characteristics as those of glioblastoma of the patient.

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13. A glioblastoma mouse model produced by the method of claim 1.

14. A method for screening a glioblastoma therapeutic agent,
15 the method comprising a step of treating the glioblastoma mouse model claim 13 or glioblastoma cells derived therefrom with a candidate therapeutic agent.

15. The method of claim 14, further comprising a step of
20 examining the therapeutic effect of the candidate therapeutic agent against the mouse model or glioblastoma cells derived therefrom.

16. The method of claim 14, further comprising a step of

determining the prognosis of the mouse model treated with the candidate therapeutic agent.

17. A method for providing information for selection of a patient-specific glioblastoma therapy, the method comprising the steps of:

(a) subjecting the glioblastoma mouse model of claim 13 to a candidate glioblastoma therapy; and

(b) examining a therapeutic effect of the mouse model subjected to the candidate therapy.

18. The method of claim 17, wherein the candidate therapy is chemotherapy, radiotherapy, surgical therapy, immune cell therapy, or a combination thereof.

19. The method of claim 17, wherein step (b) further comprises a step of examining the prognosis of the mouse model subjected to the candidate therapy.

20. The method of claim 18, wherein the chemotherapy is performed by treating the mouse model with a candidate therapeutic agent against glioblastoma.

21. The method of claim 18, wherein the immune cell therapy is a dendritic cell therapy.

CLAIMS

1. A method for producing a glioblastoma mouse model, comprising the steps of:

5 (a) dividing a glioblastoma tissue, isolated from a patient, into 4 or more sections, collecting one or more pieces from each of the sections and mixing the collected pieces to prepare evenly mixed glioblastoma tissue pieces from each of 4 or more sections of whole glioblastoma
10 tissue;

 (b) dissociating a mixture of the collected pieces into glioblastoma cells as single cells; and

 (c) orthotopically transplanting a graft sample, which contains the glioblastoma cells obtained in step (b), into
15 the brain of an immunodeficient mouse.

2. The method of claim 1, wherein one or more pieces, each having a volume of 1-8 mm³, is collected from 4 or more sections of the glioblastoma tissue in step (a).

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3. The method of claim 1, wherein the volume of the mixture of the pieces collected in step (b) is 30-100% of the volume of the glioblastoma tissue isolated from the patient.

25 4. The method of claim 1, further comprising, between steps (b) and (c), a step of removing erythrocytes from a graft

sample, which contains the glioblastoma cells as single cells obtained in step (b).

5. The method of claim 4, wherein the removal of erythrocytes is performed by Percoll gradient centrifugation.

6. The method of claim 1, wherein the graft sample orthotopically transplanted into the brain of the immunodeficient mouse in step (c) contains 1×10^5 - 5×10^5 glioblastoma cells.

7. The method of claim 6, wherein the graft sample has a volume of 5-15 μ l.

8. The method of claim 1, wherein in step (b), the mixture of the collected pieces is dissociated into single cells by sequentially performing mechanical dissociation and enzymatic dissociation of the mixture.

9. The method of claim 8, wherein the enzymatic dissociation is performed using an enzyme mixture including protease and DNase.

10. The method of claim 1, wherein the orthotopical transplantation of the graft sample into the immunodeficient mouse brain is performed by injecting the

sample into the mouse brain at the location of 1.5-2.5 mm left and 0.5-1.5 mm anterior to the bregma and 1.8-2.2 mm deep from the dura.

5 11. The method of claim 1, wherein the immunodeficient mouse is NOG (NOD/Shi-scid, IL-2R γ KO) mouse.

12. The method of claim 1, wherein the glioblastoma mouse model shows the same genetic and morphological
10 characteristics as those of glioblastoma of the patient.

13. A glioblastoma mouse model produced by the method of any one of claims 1 to 12.

15 14. A method for screening a glioblastoma therapeutic agent, the method comprising a step of treating the glioblastoma mouse model claim 13 or glioblastoma cells derived therefrom with a candidate therapeutic agent.

20 15. The method of claim 14, further comprising a step of examining the therapeutic effect of the candidate therapeutic agent against the mouse model or glioblastoma cells derived therefrom.

25 16. The method of claim 14, further comprising a step of determining the prognosis of the mouse model treated with the candidate therapeutic agent.

17. A method for providing information for selection of a patient-specific glioblastoma therapy, the method comprising the steps of:

(A) subjecting the glioblastoma mouse model of claim 5 13 to a candidate glioblastoma therapy; and

(B) examining a therapeutic effect of the mouse model subjected to the candidate therapy.

18. The method of claim 17, wherein the candidate therapy 10 is chemotherapy, radiotherapy, surgical therapy, immune cell therapy, or a combination thereof.

19. The method of claim 17, wherein step (B) further comprises a step of examining the prognosis of the mouse 15 model subjected to the candidate therapy.

20. The method of claim 18, wherein the chemotherapy is performed by treating the mouse model with a candidate therapeutic agent against glioblastoma.

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21. The method of claim 18, wherein the immune cell therapy is a dendritic cell therapy.