CLAIMS

What is claimed is:

1. A method for identifying a neurogenesis-modulating compound, comprising:

culturing adipose-derived stem cells (ADSCs) in the presence of a candidate compound; and

determining the extent of neurogenesis in the ADSCs.

2. The method of claim 1, further comprising:

culturing ADSCs in the absence of the candidate compound,

determining the extent of neurogenesis in the ADSCs cultured in the absence of the candidate compound, and

comparing the extent of neurogenesis in the ADSCs cultured in the presence of the candidate compound to the extent of neurogenesis of the ADSCs cultured in the absence of the candidate compound.

3. The method of claim 2, wherein an increase in the extent of neurogenesis in the ADSCs cultured in the presence of the candidate compound compared to the extent of neurogenesis in the ADSCs cultured in the absence of the candidate compound indicates that the candidate compound is a neurogenesis-promoting compound.

4. The method of claim 2, wherein a decrease in the extent of neurogenesis in the ADSCs cultured in the presence of the candidate compound compared to the extent of neurogenesis in the ADSCs cultured in the absence of the candidate compound indicates that the candidate compound is a neurogenesis-inhibiting compound.

5. The method of claim 1, further comprising:

culturing ADSCs in the presence of docosahexaenoic acid (DHA),

determining the extent of neurogenesis of the ADSCs cultured in the presence of DHA; and

comparing the extent of neurogenesis in the ADSCs cultured in the presence of the candidate compound to the extent of neurogenesis in the ADSCs cultured in the presence of DHA, wherein an increase in the extent of neurogenesis in the ADSCs cultured in the presence of the candidate compound compared to the extent of neurogenesis in the ADSCs cultured in the presence of DHA indicates that the candidate compound is a neurogenesis-promoting compound.

6. The method of claim 1, wherein the extent of neurogenesis is determined by observing a change in cell morphology of the ADSCs.

7. The method of claim 6, wherein the change in cell morphology is shrinkage of cell cytoplasm, formation of a neurite, formation a dendrite-like projection, formation of an axon, or a combination thereof.

8. The method of claim 6, wherein the change in cell morphology is observed by microscopy.

9. The method of claim 8, where the change in cell morphology is observed by contrast microscopy.

10. The method of claim 1, wherein the adipose-derived stem cells are human adipose-derived stem cells (hADSCs).

11. The method of claim 1, wherein the ADSCs are cultured in the presence of the candidate compound for about 1 to about 5 days.

12. The method of claim 1, wherein the ADSCs are cultured in a medium comprising a neural basal medium, EGF, b-FGF, N2 supplement, and L-glutamine.

13. The method of claim 1, further comprising priming the ADSCs for about 1 to about 5 days in a priming medium prior to culturing the cells in the presence of the candidate compound.

14. The method of claim 13, wherein the priming medium comprises a neural basal medium, EGF, b-FGF, and N2 supplement.

15. The method of claim 13, wherein the ADSCs are cultured in the presence of the candidate compound for about 1 to about 5 days.

16. The method of claim 15, wherein the ADSCs are cultured in a medium comprising MesenPRO Complete.

17. The method of claim 1, wherein the cells are cultured in culture ware coated with poly-L-ornithine and bovine plasma fibronectin.

18. A method of promoting neurogenesis in ADSCs, comprising:

culturing ADSCs in the presence of a neurogenesis promoting compound.

19. A system for culturing stem cells, comprising:

stem cells;

cultureware for stem cells, the cultureware having coated thereon a coating comprising poly-L-ornithine and bovine fibronectin; and

a culture medium.

20. The system of claim 19, further comprising a priming medium.

CLAIMS

What is claimed is:

1. A method for identifying a neurogenesis-modulating compound, comprising:

a) priming first and second populations of adipose-derived stem cells (ADSCs) for about 1 to about 5 days in a priming medium comprising a neural basal medium, EGF, b-FGF, and N2 supplement;

b) culturing the first population of ADSCs in the presence of a candidate compound and a culture medium comprising a neural basal medium, EGF, b-FGF, N2 supplement, and L-glutamine for about 1 to 5 days; and determining the extent of neurogenesis in the first population of ADSCs;

c) culturing the second population of ADSCs in the presence of docosahexaenoic acid (DHA) and a culture medium comprising a neural basal medium, EGF, b-FGF, N2 supplement, and L-glutamine for about 1 to 5 days, and in the absence of the candidate compound, and determining the extent of neurogenesis in the ADSCs cultured in the presence of DHA;

d) comparing the extent of neurogenesis in the first population of ADSCs to the extent of neurogenesis in the second population of ADSCs; and

e) determining the extent of neurogenesis by observing a change in cell morphology of the ADSCs, wherein shrinkage of cell cytoplasm, formation of a neurite, formation of a dendrite-like projection, formation of an axon, or a combination thereof indicates neurogenesis,

wherein an increase in the extent of neurogenesis in the first population of ADSCs compared to the second population of ADSCs indicates that the candidate compound is a neurogenesis-promoting compound.

2. The method of claim 1, wherein the change in cell morphology is observed by microscopy.

3. The method of claim 1, where the change in cell morphology is observed by phase contrast microscopy.

4. The method of claim 1, wherein the adipose-derived stem cells are human adipose-derived stem cells (hADSCs).

5. The method of claim 1, wherein the cells are cultured in culture ware coated with poly-L-ornithine and bovine plasma fibronectin.