CLAIMS

1. A system for detecting an inhibitory circuit of a brain, the system comprising:

a detection device that detects a brain activity;

a trigger output device that applies a first trigger that is a stimulus or a task for a living body, and a second trigger that can change a first brain activity induced by an application of the first trigger;

means for acquiring first brain activity information on the first brain activity;

means for acquiring second brain activity information on a second brain activity induced by the application of the first trigger which is accompanied by the application of the second trigger;

means for detecting a response in the first brain activity induced by the application of the second trigger based on the first brain activity information and the second brain activity information; and

means for selecting a type of the inhibitory circuit to be inputted according to a timing of the application of the second trigger in advance of the application of the first trigger to evaluate the response as an indicator of an action of the inhibitory circuit.

2. The system according to claim 1, wherein the inhibitory circuit is one or both of a GABA-A mediating inhibitory circuit and a GABA-B mediating inhibitory circuit.

3. The system according to claim 1 or 2, wherein the inhibitory circuit is one or both of a GABA-A-ergic inhibitory interneuron and a GABA-B-ergic inhibitory interneuron.

4. The system according to claim 3, wherein the GABA-A-ergic inhibitory interneuron is one or both of an inhibitory circuit formed by a basket cell and an inhibitory circuit formed by a Martinotti cell.

5. The system according to any one of claims 1 to 4, wherein a receptor related to the inhibitory circuit is one or two or more of a GABA-A receptor, a GABA-B receptor, and a GABA receptor.

6. The system according to any one of claims 1 to 5, wherein the first brain activity information is information on a response circuit for a change in the trigger.

7. The system according to any one of claims 1 to 6, wherein the first brain activity information is information on a response circuit related to one or two or more selected from the group consisting of a sense of touch, a sense of temperature, a sense of pain and deep sensibility, which are somatic sensations, a sense of vision, a sense of hearing, a sense of taste, and a sense of smell.

8. The system according to any one of claims 1 to 7, wherein the first brain activity information is information on a response circuit related to a sense of hearing.

9. The system according to claim 8, wherein the first brain activity information is information on a response circuit for a sound pressure change.

10. The system according to any one of claims 1 to 9, wherein the application of the second trigger is implemented in any one or both of a range of 20 ms or more and 30 ms or less and a range of 40 ms or more and 60 ms or less in advance of the application of the first trigger.

11. The system according to any one of claims 1 to 10, wherein the application of the second trigger is implemented in a range of 500 ms or more and 700 ms or less in advance of the application of the first trigger.

12. The system according to any one of claims 1 to 11, wherein the response in the brain activity is a change of the brain activity induced by the input of the inhibitory circuit, and one or two selected from the group consisting of a change of a time (latency) in which the brain activity occurs and a change of a location (movement) where the brain activity occurs.

13. The system according to any one of claims 1 to 12, wherein the response in the brain activity is a change of the brain activity induced by the input of the inhibitory circuit, and a change of a rhythm of the brain activity.

14. The system according to any one of claims 1 to 13, further comprising means for executing output processing of information on the inhibitory circuit.

15. The system according to any one of claims 1 to 14, wherein the system detects a type of an inhibitory interneuron and/or receptor related to the inhibitory circuit.

16. The system according to any one of claims 1 to 15, wherein the detection device detects the brain activity by electrical activity based on the brain activity.

17. The system according to any one of claims 1 to 16, wherein the detection device detects the brain activity by using an electroencephalogram or a magnetoencephalogram.

18. A method of operating a system for detecting an inhibitory circuit of a brain, the system comprising: a detection device that detects a brain activity; and a trigger output device that applies a first trigger that is a stimulus or a task for a living body, and a second trigger that can change a first brain activity induced by an application of the first trigger,

the method comprising:

acquiring first brain activity information on the first brain activity;

acquiring second brain activity information on a second brain activity induced by the application of the first trigger which is accompanied by the application of the second trigger;

detecting a response in the first brain activity induced by the application of the second trigger based on the first brain activity information and the second brain activity information; and

selecting a type of the inhibitory circuit to be inputted according to a timing of the application of the second trigger in advance of the application of the first trigger to detect the response as an indicator of an action of the inhibitory circuit.

19. A detecting method for assisting in analysis of an inhibitory circuit of a brain, the method using:

second brain activity information on a second brain activity acquired by application of a first trigger which is accompanied by application of a second trigger to a subject, wherein the

first trigger is a stimulus or a task for a living body and the second trigger can change the first brain activity induced by the application of the first trigger; and

a response in the first brain activity acquired by the application of the second trigger based on the first brain activity information on the first brain activity and the second brain activity information;

the method comprising:

selecting a type of the inhibitory circuit to be inputted according to a timing of application of the second trigger in advance of the application of the first trigger to detect the response as an indicator of an action of the inhibitory circuit.

20. A detecting method for assisting in diagnosis of disease related to an inhibitory circuit of a brain, the method using:

a response in first brain activity acquired by application of a first trigger which is accompanied by application of a second trigger to a subject, wherein the first trigger is a stimulus or a task for a living body and the second trigger can change the first brain activity induced by the application of the first trigger;

the method comprising:

selecting a type of the inhibitory circuit to be inputted according to a timing of application of the second trigger in advance of the application of the first trigger to detect the response as an indicator of an action of the inhibitory circuit.

21. A detecting method for assisting in evaluation of a drug to be used for a disease related to an inhibitory circuit of a brain, the method using:

a response in a first brain activity acquired by application of a first trigger which is accompanied by application of a second trigger, to a subject to whom the drug has not been administered, wherein the first trigger is a stimulus or a task for a living body and the second trigger can change the first brain activity induced by the application of the first trigger; and

a response in a first brain activity acquired by application of the first trigger which is accompanied by application of the second trigger, to the subject to whom the drug has been administered,;

the method comprising:

selecting a type of the inhibitory circuit to be inputted according to a timing of applications of the second triggers in advance of the application of the first trigger, in each of the subject to whom the drug has not been administered and the subject to whom the drug has been administered to detect the responses as an indicator of an action of the inhibitory circuit.

22. A detecting method for assisting in screening a drug to be used for a disease related to an inhibitory circuit of a brain, the method comprising:

acquiring a response of a first brain activity by application of a first trigger which is accompanied by application of a second trigger, to a subject to whom the drug has not been administered, wherein the first trigger is a stimulus or a task for a living body and the second trigger can change the first brain activity induced by the application of the first trigger;

acquiring a response of the first brain activity by application of a first trigger which is accompanied by application of a second trigger, to the subject to whom the drug has been administered, wherein the first trigger is stimulus or a task for a living body and the second trigger can change the first brain activity induced by the application of the first trigger;

selecting a type of the inhibitory circuit to be inputted according to a timing of the application of the second trigger in advance of the first trigger, in each of the subject to whom the drug has not been administered and the subject to whom the drug has been administered;

detecting the responses as an indicator of an action of the inhibitory circuit; and

detecting a change in the action of the inhibitory circuit by the drug.

23. A system for selecting a drug candidate to be used for a disease related to an inhibitory circuit, the system comprising:

a detection device that detects a brain activity;

a trigger output device that applies a first trigger that is a stimulus or a task for a living body, and a second trigger that can change a first brain activity induced by an application of the first trigger,

means for acquiring first brain activity information on the first brain activity;

means for acquiring second brain activity information on a second brain activity induced by the application of the first trigger which is accompanied by the application of the second trigger;

means for acquiring a response in the first brain activity induced by the application of the second trigger based on the first brain activity information and the second brain activity information;

means for selecting a type of the inhibitory circuit to be inputted according to a timing of application of the second trigger in advance of the first trigger to detect the response as an indicator of an action of the inhibitory circuit; and

wherein the system selects drug candidate that is applied to a subject based on the action of the inhibitory circuit.

24. A method of operating a system for selecting a drug candidate to be used for a disease related to an inhibitory circuit of a brain, the system comprising:

a detection device that detects a brain activity and a trigger output device that applies a first trigger that is a stimulus or a task for a living body, and a second trigger that can change a first brain activity induced by an application of the first trigger;

the method comprising:

acquiring second brain activity information on a second brain activity by the application of the first trigger which is accompanied by the application of the second trigger, wherein the first trigger is a stimulus or a task for a living body and the second trigger can change the first brain activity induced by the application of the first trigger; and

acquiring a response in the first brain activity by the application of the second trigger based on the first brain activity information and the second brain activity information; and

selecting a type of the inhibitory circuit to be inputted according to a timing of application of the second trigger in advance of the application of the first trigger to detect the response as an indicator of an action of the inhibitory circuit; and

wherein the system selects the drug candidate that is applied to a subject based on the action of the inhibitory circuit.

25. A system for producing a product that uses a characteristic of an inhibitory circuit of a brain, the system comprising:

a detection device that detects a brain activity;

a trigger output device that applies a first trigger that is a stimulus or a task for a living body, and a second trigger that can change a first brain activity induced by an application of the first trigger;

means for acquiring first brain activity information on the first brain activity;

means for acquiring second brain activity information on a second brain activity induced by the application of the first trigger which is accompanied by the application of the second trigger;

means for acquiring a response in the first brain activity induced by the application of the second trigger based on the first brain activity information and the second brain activity information;

means for acquiring a response in the first brain activity induced by the application of the second trigger based on the first brain activity information and the second brain activity information; and

means for selecting a type of the inhibitory circuit to be inputted according to a timing of application of the second trigger in advance of the first trigger to detect the response as an indicator of an action of the inhibitory circuit; and

wherein the system is configured to produce the product having a function that can adapt to, improve, mitigate or enhance an action of the inhibitory circuit.

26. The system of claim 25, wherein the product is a product related to human's sensory action.

27. The system of claim 25 or 26, wherein the product has a sensory action that can adapt to, improve, mitigate or enhance an action of an inhibitory circuit related to a subject's vision.

28. The system of claim 27, wherein the product is a spectacle lens.