

WHAT IS CLAIMED IS:

1. A ~~non-human obesity animal model~~ mouse obesity model whose gut microbiota population comprises at least an *Enterobacter cloacae* B29 having a 16S rRNA gene, wherein the sequence of the 16S rRNA gene is at least 95% similar to SEQ ID NO.1.
2. ~~The non-human obesity animal model of Claim 1, wherein the non-human obesity animal model is a mouse, a rat, a Guinea pig, a pig, a rabbit, or a Monkey.~~
32. A method for establishing a ~~non-human obesity animal model~~ mouse obesity model, comprising,

inoculating a germ-free ~~mouse~~ animal with an *Enterobacter cloacae* B29 having a 16S rRNA gene while feeding the germ-free ~~animal~~ mouse with a diet having at least ~~534.9%~~ of fat content for a period of time to provide a ~~non-human obesity animal model~~ mouse obesity model, wherein the sequence of the 16S rRNA gene is at least 95% similar to SEQ ID NO.1.
43. The method of Claim 32, wherein the ~~non-human obesity animal model~~ mouse obesity model manifests a metabolic syndrome.
54. The method of Claim 43, wherein the metabolic syndrome comprises obesity, insulin resistance, chronic inflammation, or a combination thereof.
6. ~~The method of Claim 3, wherein the non-human obesity animal model is a mouse, a rat, a rabbit, a monkey, a pig, or a Guinean pig.~~
75. The method of Claim 32, wherein the period of time is at least 4 weeks.
86. The method of Claim 32, wherein the ~~inoculating the germ-free animal~~ mouse comprises intragastric administration, topical administration, oral administration, or a combination thereof.
97. The method of Claim 32, wherein the ~~inoculating the germ-free animal~~ mouse comprises inoculating the germ-free ~~animal~~ mouse with at least 10^2 bacteria cells.

- ~~10. The method of Claim 3, wherein the diet has at least 20% of fat content.~~
- ~~11. The method of Claim 3, wherein the diet has at least 10% of fat content.~~
- ~~12. The method of Claim 3, wherein the diet comprises at least 4.5 kcal per gram.~~
- ~~13. A method for establishing a non-human obesity animal model, comprising,

inoculating a germ-free animal with an *Enterobacter cloacae* having a 16S rRNA gene while feeding the germ-free animal with a diet having at least 5% of fat content for a period of time to provide a non-human obesity animal model, wherein the sequence of the 16S rRNA gene is at least 95% similar to SEQ ID NO.1, and wherein the non-human obesity animal model manifests at least one metabolic syndrome.~~
- ~~14. The method of Claim 13, wherein the *Enterobacter cloacae* B29 is capable of colonizing in the germ-free animal's gut.~~
- ~~15. A method for screening a material that has a preventive or therapeutic effect on the symptom of metabolic or immune system disorders, comprising,

using a non-human animal model exhibiting at least one symptom of metabolic or immune system disorders, wherein the gut microbiota population of the non-human animal model comprises at least an *Enterobacter cloacae* having a 16S rRNA gene, and wherein the sequence of the 16S rRNA gene is at least 95% similar to SEQ ID NO.1, and

administering the material to the animal model, if the animal exhibits improvement on at least one symptom of metabolic or immune system disorders, it is indicative of that the material have a preventive or therapeutic effect on the symptom of metabolic or immune system disorders.~~
- ~~16. The method of Claim 15, wherein the material is a food or a drug.~~
- ~~17. The method of Claim 15, wherein the improvement may include weight loss, decreased insulin resistance, or reduced chronic inflammation.~~

18. ~~The method of Claim 15, wherein the metabolic syndrome comprises weight gain, obesity, insulin resistance, chronic inflammation, or a combination thereof.~~

19. ~~A method for screening a microorganism or a combination thereof that has a preventive or therapeutic effect on the symptom of metabolic or immune system disorder, comprising,~~

~~using a non-human animal model that exhibits at least one symptom of metabolic or immune system disorders, wherein the gut microbiota population of the non-human animal model comprises at least an *Enterobacter cloacae* having a 16S rRNA gene, and wherein the sequence of the 16S rRNA gene is at least 95% similar to SEQ ID NO.1, and~~

~~administering a test microorganism or a combination thereof to the non-human animal model, if the animal model exhibits improvement in at least one symptom of metabolic or immune system disorders, it is indicative that the microorganism or a combination thereof has a preventive or therapeutic effect on the symptom of metabolic or immune system disorders.~~

20. ~~The method of Claim 19, wherein the improvement in at least one symptom of metabolic or immune system disorders includes amelioration of symptom of obesity, insulin resistance, or chronic inflammation.~~

21. ~~The method of Claim 19, wherein the improvement in at least one symptom of metabolic or immune system disorders includes one or more of weight loss, reduced fat, decreased blood lipids, improved insulin resistance, reduced level of serum lipopolysaccharide binding protein, decreased leptin resistance, decreased serum level of inflammation, or decreased inflammatory factor expression levels.~~

22. ~~The method of Claim 19, wherein the metabolic syndrome comprises weight gain, obesity, insulin resistance, chronic inflammation, or a combination thereof.~~

2310. A method for screening an obesity causing bacterium, comprising,

inoculating a germ-free animal~~mouse~~ with an *Enterobacter cloacae* B29 having a 16S rRNA gene while feeding the germ-free animal~~mouse~~ with a high-fat

diet having 34.9% of fat content for a period of time to provide a ~~non-human obesity animal model~~mouse obesity model, wherein the sequence of the 16S rRNA gene is at least 95% similar to SEQ ID NO.1 and the *Enterobacter cloacae* B29 is capable of colonizing the gut of a germ-free ~~animal~~mouse, and the ~~non-human obesity animal model~~mouse obesity model exhibits at least one type of metabolic or immune system disorders, and

comparing a test microorganism or combination thereof with the *Enterobacter cloacae* B29, if the test microorganism or a combination thereof exhibits similar effect as the *Enterobacter cloacae* B29, it is indicative that the test microorganism or combination thereof may cause obesity.

2411. The method of Claim ~~23~~10, wherein the metabolic syndrome comprises weight gain, obesity, insulin resistance, chronic inflammation, or a combination thereof.

WHAT IS CLAIMED IS:

1. A mouse obesity model whose gut microbiota population comprises at least an *Enterobacter cloacae* B29 having a 16S rRNA gene, wherein the sequence of the 16S rRNA gene is at least 95% similar to SEQ ID NO.1.
2. A method for establishing a mouse obesity model, comprising,

inoculating a germ-free mouse with an *Enterobacter cloacae* B29 having a 16S rRNA gene while feeding the germ-free mouse with a diet having 34.9% of fat content for a period of time to provide a mouse obesity model, wherein the sequence of the 16S rRNA gene is at least 95% similar to SEQ ID NO.1.
3. The method of Claim 2, wherein the mouse obesity model manifests a metabolic syndrome.
4. The method of Claim 3, wherein the metabolic syndrome comprises obesity, insulin resistance, chronic inflammation, or a combination thereof.
5. The method of Claim 2, wherein the period of time is at least 4 weeks.
6. The method of Claim 2, wherein inoculating the germ-free mouse comprises intragastric administration, topical administration, oral administration, or a combination thereof.
7. The method of Claim 2, wherein inoculating the germ-free mouse comprises inoculating the germ-free mouse with at least 10^2 bacteria cells.
8. The method of Claim 2, wherein the diet comprises at least 4.5 kcal per gram.
9. The method of Claim 2 wherein the *Enterobacter cloacae* B29 is capable of colonizing in the germ-free mouse's gut.
10. A method for screening an obesity causing bacterium, comprising,

inoculating a germ-free mouse with an *Enterobacter cloacae* B29 having a 16S rRNA gene while feeding the germ-free mouse with a high-fat diet having 34.9%

of fat content for a period of time to provide a mouse obesity model, wherein the sequence of the 16S rRNA gene is at least 95% similar to SEQ ID NO.1 and the *Enterobacter cloacae* B29 is capable of colonizing the gut of a germ-free mouse, and the mouse obesity model exhibits at least one type of metabolic or immune system disorders, and

comparing a test microorganism or combination thereof with the *Enterobacter cloacae* B29, if the test microorganism or a combination thereof exhibits similar effect as the *Enterobacter cloacae* B29, it is indicative that the test microorganism or combination thereof may cause obesity.

11. The method of Claim 10, wherein the metabolic syndrome comprises weight gain, obesity, insulin resistance, chronic inflammation, or a combination thereof.