

Comparison of gut microbiota between diabetic and non-diabetic obese Mongolian

3 GOOD HEALTH AND WELL-BEING

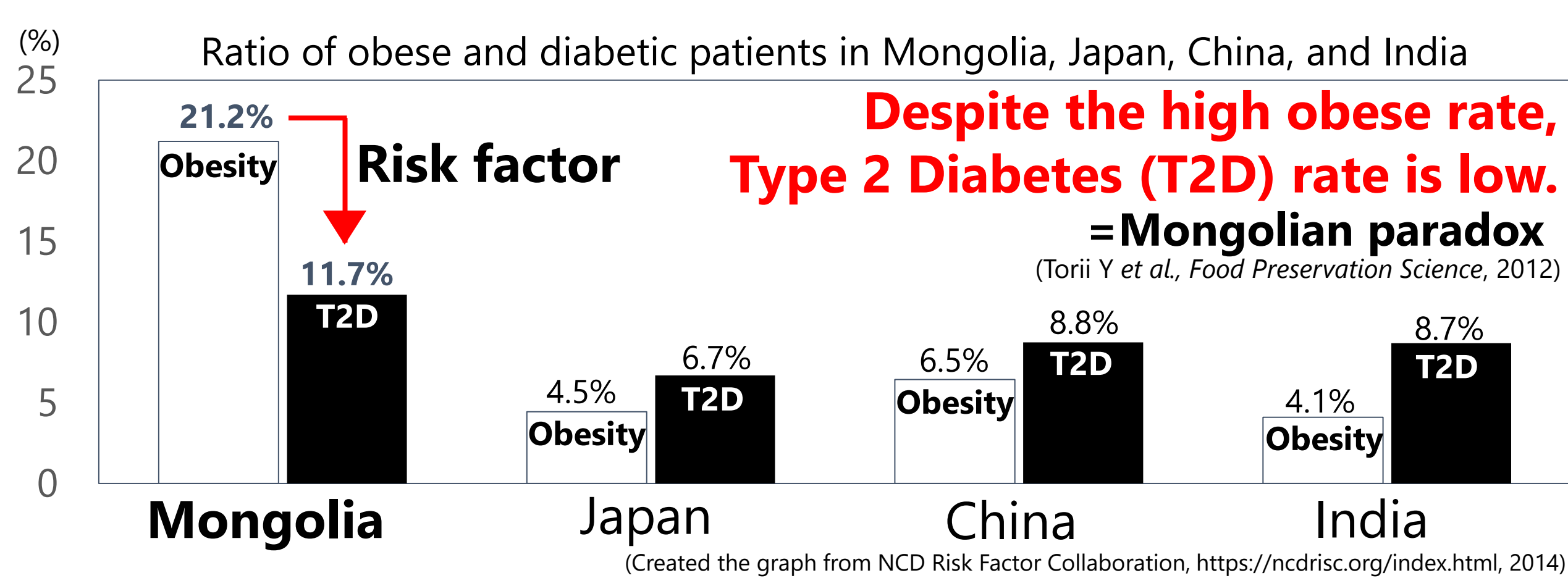
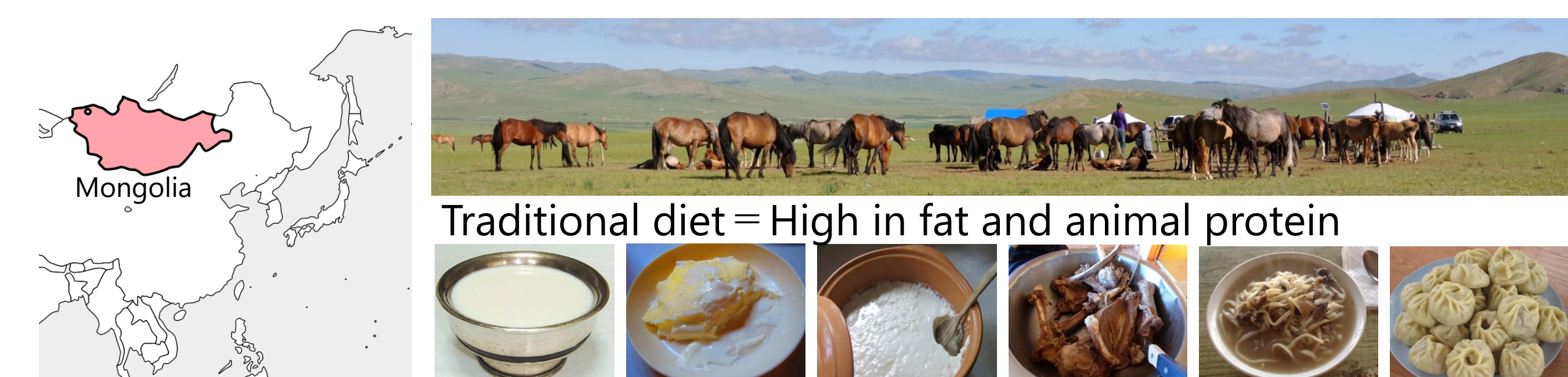


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Abstract

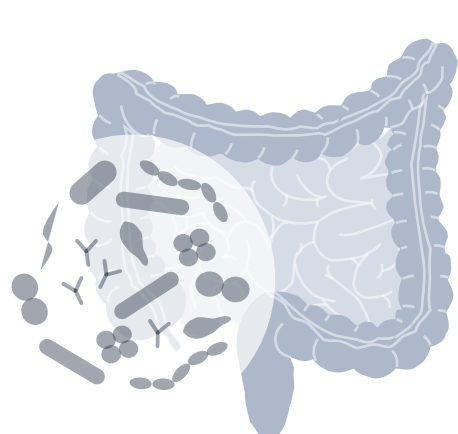
In Mongolia, despite the high obesity rate, the type 2 diabetes mellitus (T2D) rate is relatively small. To answer this paradox, we aimed to elucidate the mechanism how their gut microbiota interacts with host health and suppress the development of T2D. Gut microbiota of healthy obese subjects (n=43) and T2D+obese subjects (n=29) were investigated. As a result, short chain fatty acids producing bacteria were abundant in healthy obese subjects. Also, by measuring the short chain fatty acid (SCFA) amount in stools, healthy obese subjects have significantly higher level of acetic acid than T2D+Obese subjects. SCFA have the protective effects against metabolic diseases such as T2D via hormonal metabolic controls. Based on the above results, it is assumed that the production of SCFA by gut microbiota may contribute to prevention of getting T2D of obese Mongolians.

Background



Hypothesis

Gut microbiota Mongolian paradox

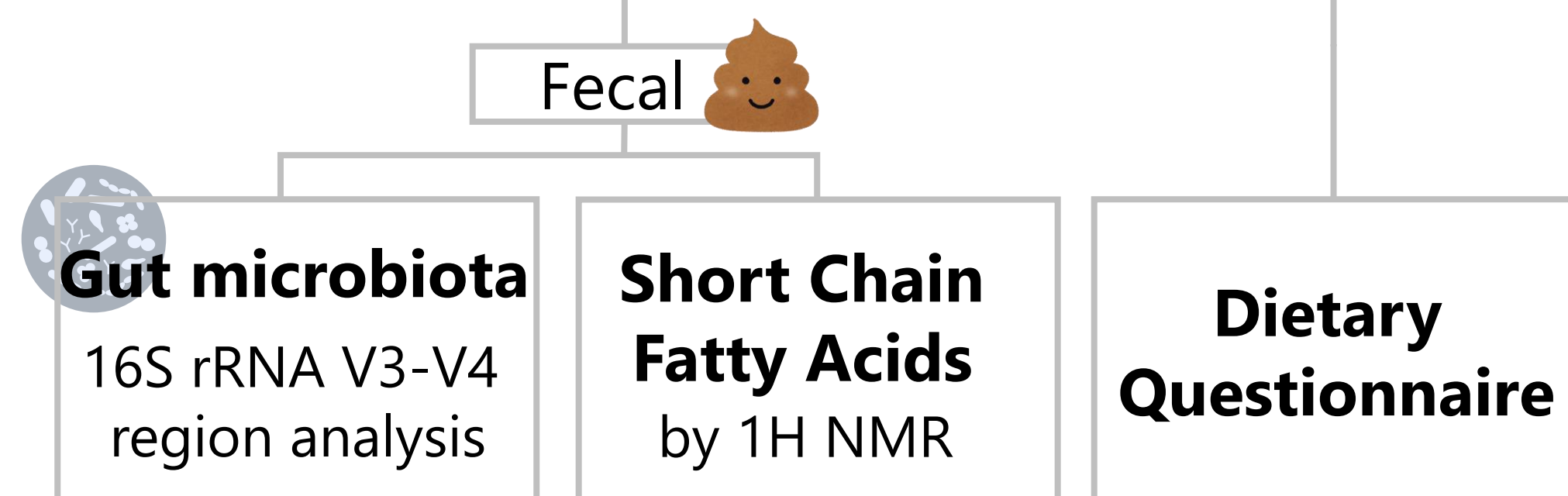


Objective

To elucidate the key gut bacteria and their metabolites inversely correlated with T2D in Mongolian obese subjects

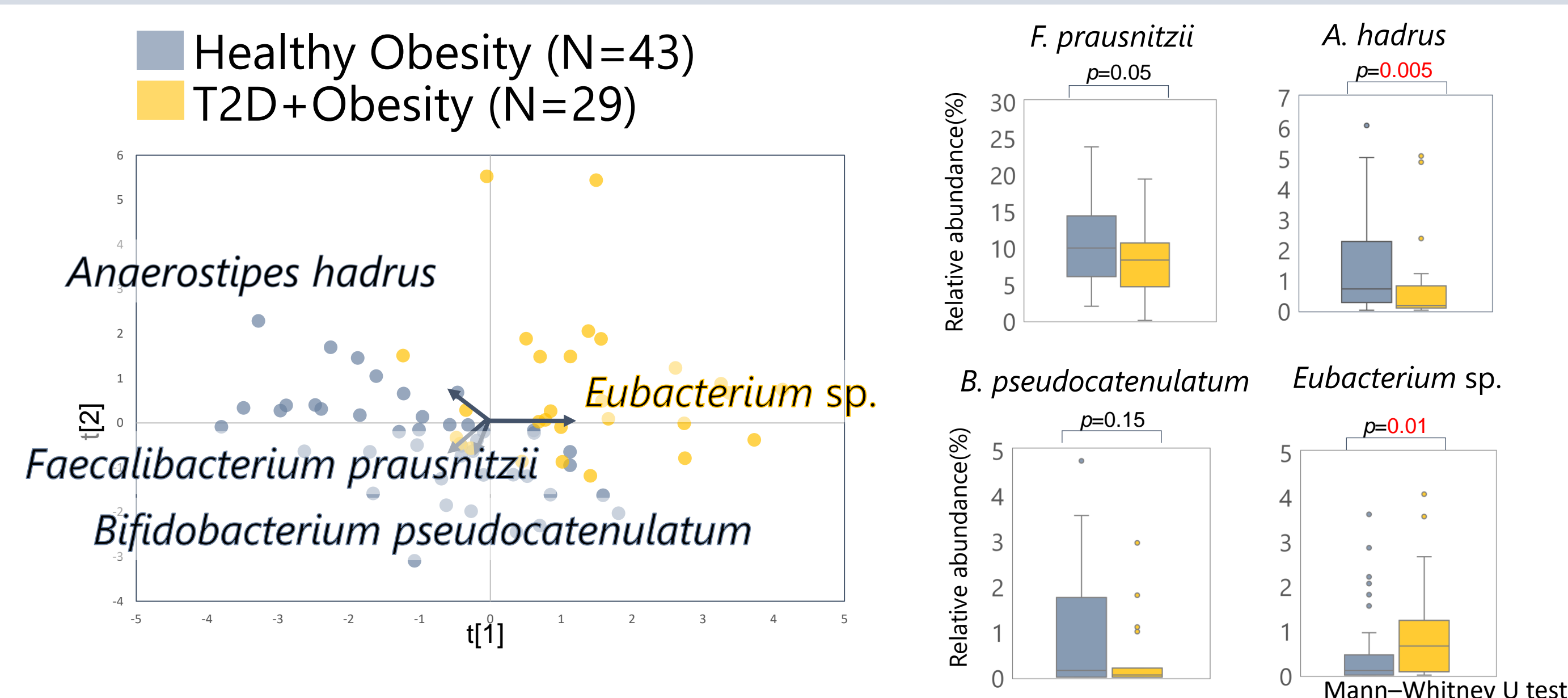
Method

Healthy Obesity (BMI > 30) N = 43 VS T2D+Obesity (BMI > 30) N = 29

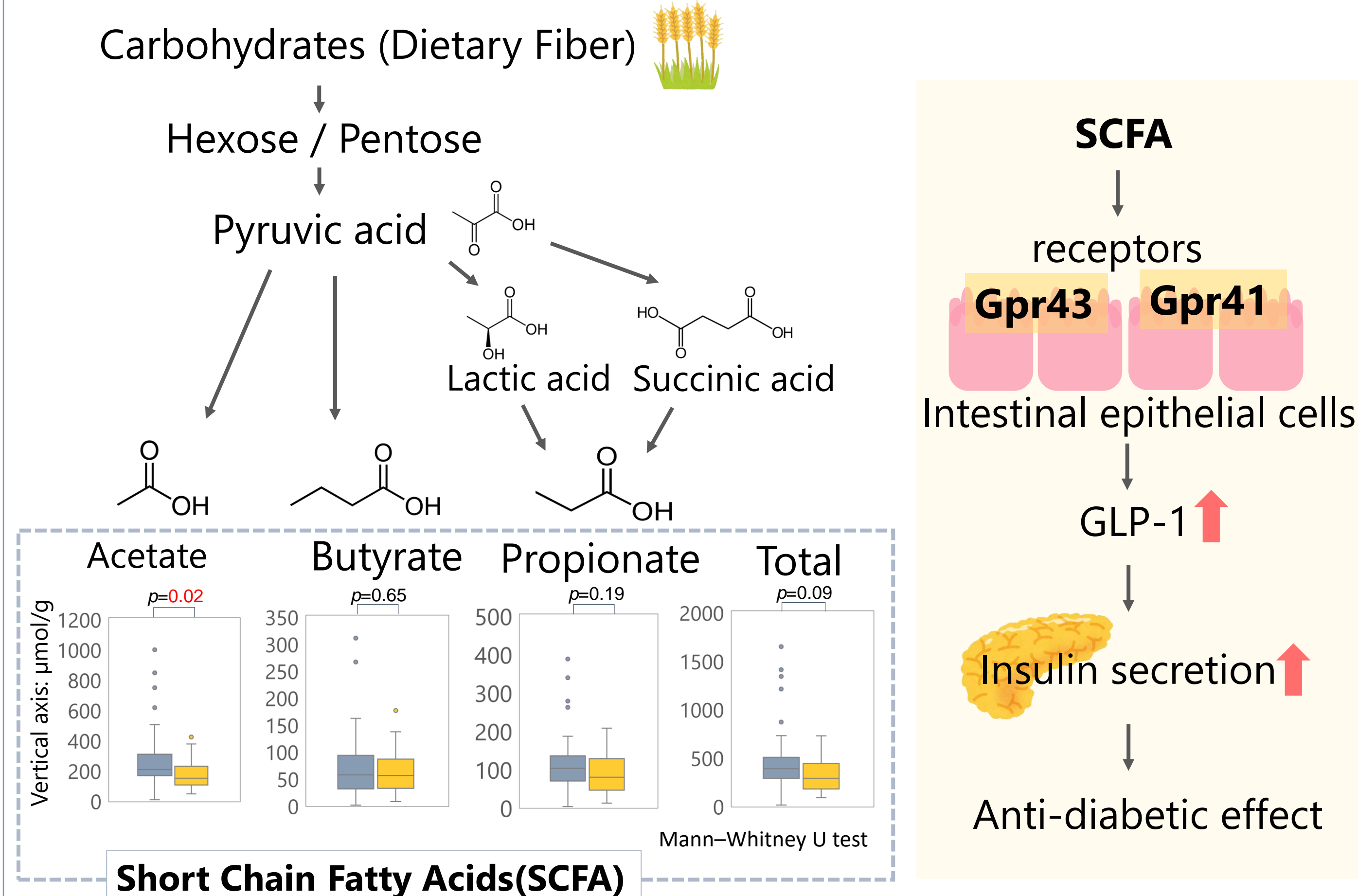


Result & Discussion

The abundant bacteria in healthy obesity and T2D+Obesity



The amount of short chain fatty acids were higher in healthy obesity

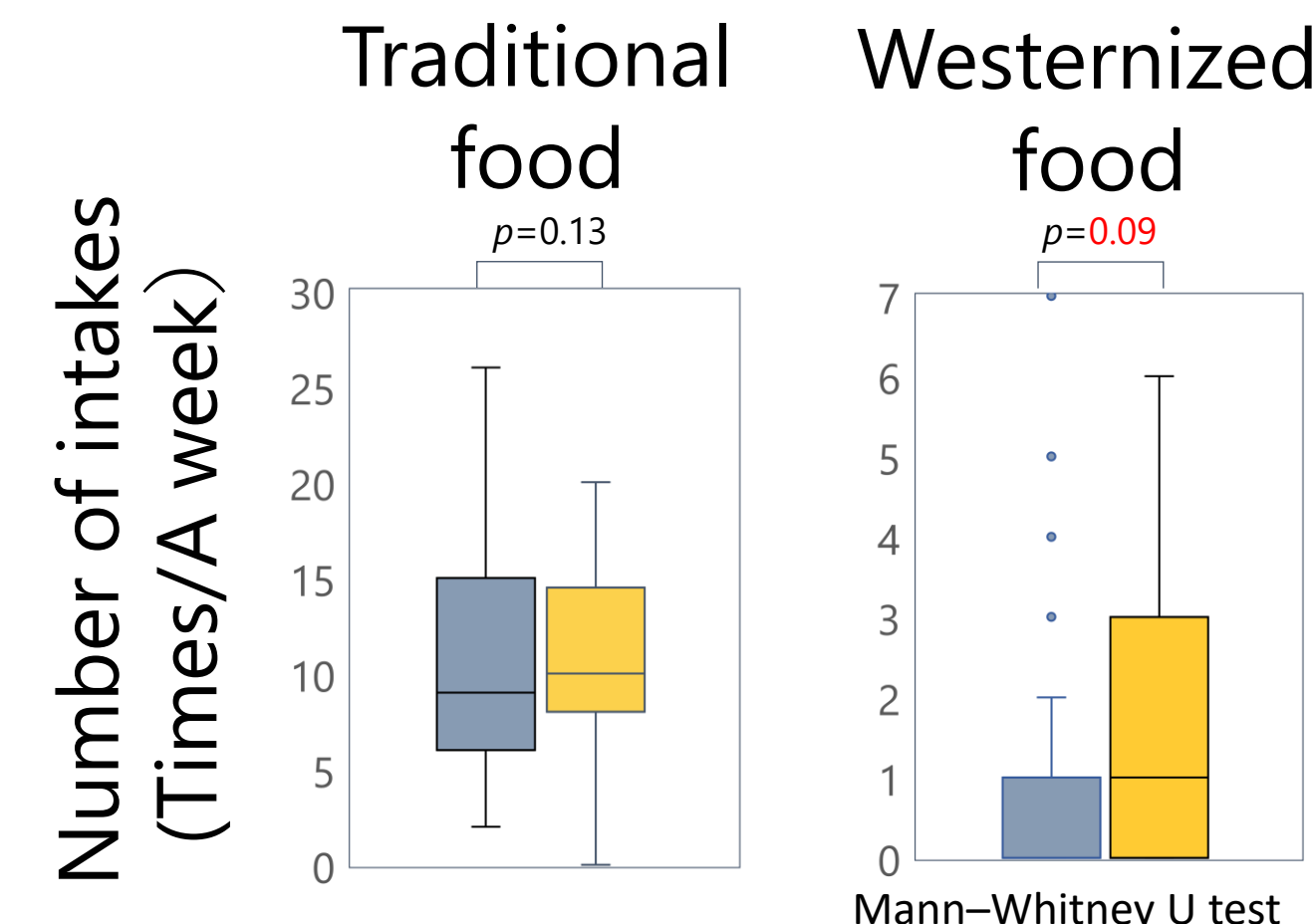


Healthy obesity have less westernized food

Food Categorization

Mongolian traditional food 31 items e.g.) Buuz, Soup, Maha

Westernized food 10 items e.g.) Pizza, Cutlet, Pastry



The correlation between bacteria and metabolism & food

Spearman's rank sum test

	High in Healthy Obesity	High in T2D+Obesity
Fasting blood glucose	* (High)	
Propionate	* (High)	
Butyrate	* (High)	
Acetate		* (High)
Total SCFA	* (High)	
Westernized food	* (High)	
Bacterial characteristic	Butyrate-producing bacteria	Acetate-producing bacteria

Some bacteria in *Eubacterium* genus are known to be pathogenic (Vijja Wang et al., Gut pathogens, 2021)

Decreased by low diet fiber diet for 14 days (Benus R et al., British Journal of Nutrition, 2010)

Conclusion

