1. No.
   2019T003

2. Title
   Smoking and host metabolic regulation via gut microbiota

3. Period
   2019-2023

4. Summary
   Nicotine, the primary component of tobacco smoke, plays a critical role in regulating the body's energy balance and metabolic homeostasis through multiple and complex biological processes, including reducing appetite by acting on hypothalamic neurons in the brain and promoting fat breakdown in the body, resulting in increased energy expenditure. However, the detailed mechanisms underlying the effect of nicotine intake on the gut microbiota and its association with host metabolic control remain unclear. This study shows that the weight suppressive effect of nicotine administration is dependent on the nutritional environment in the body. The proposed mechanism involves the potential influence of gut bacteria belonging to the genus *Lactobacillus* and the gut bacteria-derived fatty acid metabolite KetoB. In addition, an increase in the ratio of secondary bile acids also suggests their potential involvement in host metabolic control functions. In the future, it will be important to investigate in detail the molecular mechanisms of metabolic control by host receptors for these gut bacterial metabolites. Understanding the variation in gut microbiota and these metabolites that fluctuate with dietary habits and smoking, and elucidating their interactions with the host, is considered crucial to contribute to our safe and prosperous lifestyles.