1. No.
   2024G003

2. Title
   Genomic Effect of Smoking on Liver Cancer

3. Period
   2024-2024

4. Summary
   Our previous studies for liver cancer genomes suggested that smoking may be one of the factors that contribute to liver cancer development. In this study, we performed whole genome sequencing analysis of HCCs arising from patients without hepatitis virus infection (Non-B Non-C: NBNC) to comprehensively detect somatic mutations. Based on the clinical and liver pathology information, 23 out of the 70 NBNC liver cancers were defined as “unexplained” HCC because no obvious carcinogenic factors were known. For 13 of these cases, smoking-related mutational signatures (SBS4, 29, or 92) were detected, suggesting that smoking is associated with liver development, even when other liver carcinogenic factors are excluded. Smoking-related signatures were detected in about 50% of all liver cancer genomes in Japan, and their frequency slightly correlated with Brinkman Index in men.