1. No.
   2022G005

2. Title
   Accurate Mass Spectrometry of Smoking-Induced Protein Nitration Modification and Its Application to Prediction of Cancer Immunotherapy Efficacy

3. Period
   2022-2025

4. Summary
   This research consists of three components: identification of smoking-related nitrated protein antigens, development of sequence method for nitrated antigen epitopes that form antigenicity, characterization of the three-dimensional structure and selective quantification of the sequences, and investigation of their relationship to therapeutic effects. These components have been conducted in parallel throughout the research period. In the development of epitope sequencing, the level of sequencing improved by alternately targeting framework regions with high conservation across organisms and individuals as the analysis targets for the antibodies. However, at present, smoking-related nitrated protein antigens have not been identified. Since the technological foundation for three-dimensional structure characterization and selective quantification of epitope sequences is in place, if nitrated antigens can be identified, these technologies can be used to seamlessly connect to the final objective. In the next years, we will continue protein identification research as much as possible and aim to complete the research.