1. No.
   2022G032

2. Title
   Expression of Matrix Metalloproteinase-1 (MMP-1) and microRNA-486-5p in Urinary Exosomes for Detection of Early-Stage Lung Cancer in Never Smokers

3. Period
   2022-2025

4. Summary
   This study was conducted to develop a non-invasive method for the early diagnosis of lung cancer using the MMP-1/CD63 expression ratio and miR-486-5p in urinary exosomes as biomarkers. In lung cancer patients, these biomarkers showed significantly higher levels compared to healthy individuals, demonstrating excellent detection performance (sensitivity 89%, specificity 88%) particularly in early-stage lung cancer and among non-smoking women. Furthermore, associations with EGFR gene mutations and PD-L1 expression were observed, suggesting a correlation with the biological characteristics of the tumor. These findings have been published (Oncology Letters, 2024) and a patent has been obtained for this urine-based lung cancer assessment method. This method is simple, minimally invasive, and highly accurate, and as a novel screening method expected to be applied in workplace and community-based screening programs, it has the potential to serve as a crucial foundation for clinical implementation.