1. No.
   2022G007

2. Title
   Elucidation of Molecular Basis Governing Stemness of Lung Cancer Cells

3. Period
   2022-2024

4. Summary
   To investigate the undifferentiated nature of lung cancer cells, we focused on DNA topoisomerase IIa (TOP2A), which is known to be upregulated in undifferentiated cells and cancer cells, and examined its role in lung cancer cells. The results suggest that TOP2A suppression may be dependent on the p53 background. Next, we found that forced TOP2A expression in lung cancer cells enhanced cell proliferation, as well as their migration and invasive ability. In addition, we found that TOP2A enhanced transformation of NIH-3T3 cells, mediated by RasV12, a constitutively active mutant form of Ras. Since we observed that intermittent treatment with cigarette smoke extract (CSE) enhanced cancerous migration, the relationship between CSE and TOP2A was examined. CSE did not affect the expression of TOP2A, suggesting that the effect of TOP2A on cancer progression may be due to a different mechanism than that of tobacco-induced cancer progression. In the future, we plan to analyze by what mechanism TOP2A and CSE are involved in cancer progression from the viewpoint of epigenomic regulation.