1. No.
   2021Y012

2. Title
   The effect of C-type natriuretic peptide on bone and cartilagevitamin D metabolism caused by smoking (nicotine)

3. Period
   2021-2023

4. Summary
   The aim of this study was to investigate the interrelationship of both nicotine and C-type natriuretic peptide in cartilage growth (endochondral ossification) and vitamin D metabolism. Nicotine has been reported to have negative effects of smoking (nicotine) on bone and cartilage metabolism and vitamin D metabolism according to previous reports. For example, nicotine was shown to suppress cartilage matrix production in in vitro experiments on chondrocytes. Nicotine has also been shown to inhibit fetal skeletal growth in wild-type rats. In contrast, C-type natriuretic peptide (CNP) has been shown to play an important role in endochondral ossification. Clinical application of CNP analogs has been initiated in the U.S. and Europe, including Japan. We will continue this study to investigate the interrelationship of both nicotine and C-type natriuretic peptide in cartilage growth (endochondral ossification) and vitamin D metabolism, including experiments in which nicotine is administered to pregnant mice and CNP is given to low-birth weight mice born with nicotine.