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Is Gm22068 a novel epitranscriptomic marker for thirdhand vaping exposure?

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Thirdhand smoke (THS) consists of chemicals that adhere to surfaces during active smoking and can be released back into the air, undergo chemical transformations, and/or accumulate. Hence THS is not strictly smoke. THS exposure can be a potential health threat to children, partners of smokers, and workers in environments with current or past smoking, and needs to be investigated. THS from traditional cigarette smoking is a public health hazard, however, the pulmonary health effects of THS from vaping products are not well characterized. We hypothesized that thirdhand vape exposures adversely alter pulmonary function and expression of genes involved in inflammation. To test our hypothesis, we exposed C57BL/6J mice to cotton towels contaminated with vape aerosols from unflavored vape fluid (6 mg nicotine in 50/50 propylene glycol/vegetable glycerin) for 1h/day, five days/week, for three weeks, or to room air (controls).

We characterized lung gene expression signatures of inflammation after thirdhand ENDS exposure in the mice by performing total RNA-sequencing (NextSeq 75 high PE). Lung weights did not differ between exposed and control mice. However, *Gm22068*, a small nucleolar RNA (snoRNA) was differentially expressed in the lung tissue of exposed mice compared to control mice (false discovery rate (FDR) = 0.012). Altered snoRNAs expression has been reported in patients with lung diseases and play significant role in lung degeneration. Given that snoRNAs have biomarker and therapeutic potential for lung disease, further research on emerging role and mechanisms of snoRNAs in vape product lung disease pathogenesis are needed.