previously demonstrated that CADM1, a member of the immunoglobulin superfamily cell adhesion molecules, is highly expressed in around 75% of SCLC. In addition, SCLC expresses a splicing variant, CADMv8/9, which is observed specifically in normal testis. Here, we report that the extracellular fragment of CADMv8/9 is digested by ADM17 and released into cell medium or human serum. Then, we generated specific monoclonal antibody against CADMv8/9 using Cadm1-deficient mice and developed a serum diagnostic marker for SCLC. Preliminary study shows that CADMv8/9 detects 47% of SCLC, which is independent of and partly overlaps with the cases detected by ProGRP. CADMv8/9 can also detect a significant portion of patients with limited disease of SCLC. Furthermore, the amount of CADMv8/9 fragments correlates well with the disease activity of SCLC before and after the chemotherapy. These findings indicate that detection of CADMv8/9 in serum from patients is a novel and promising approach to detect and follow up SCLC patients. CADM1 would also provide a promising target for the treatment of SCLC.

B24
The Role of Cigarette Smoke and miR520a in Pulmonary Frizzled 9 Expression
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Lung cancer is the deadliest cancer, and for this reason treatment is highly researched. Alternatively, chemoprevention can be used to combat lung cancer in individuals who are at high risk of diagnosis, such as cigarette smokers. Frizzled 9 (Fzd9) is required in vitro for chemopreventive effects of iloprost, a prostacyclin analogue, in the lung. In non-small cell lung cancer (NSCLC) cell lines, Fzd9 activates PPARγ, leading to inhibited transformation. Cigarette smoke exposure decreases Fzd9 expression. The goal of this study is to elucidate the relationship between cigarette smoke and miRNA regulation of Fzd9 expression. NSCLC cells exposed to cigarette smoke condensate (CSC) showed decreased Fzd9 3' UTR activity, suggesting CSC regulates Fzd9 expression through miRNA. miRNA database analysis suggested miR-95, miR-106b, and miR-520a as potential regulators of Fzd9. Immortalized human bronchial epithelial cells (HBEC) and an Fzd9-positive NSCLC cell line (A549) transfected with miR-520a oligonucleotide mimic showed decreased Fzd9 3' UTR lucerase activity, suggesting miR-520a expression increased in HBEC and NSCLC cells after CSC exposure. We have tested a miR-520a inhibitor to use for future rescue experiments in an Fzd9-negative cell line (H322). Transient overexpression of miR-520a in HBEC and A549 did not affect cell viability or proliferation, so we made a stable miR-520a expressing HBEC line that we will use for longer-duration cell assays. miR-520a may play an important role in the regulation of Fzd9 by cigarette smoke, and future experiments will characterize this relationship and potentially impact the application of iloprost chemoprevention.

B25
Mapping the SOX2 Functional Network in Small-Cell Lung Cancer
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Small-cell lung cancer (SCLC) is a devastating and often recurring disease for which there has been little change in standard-of-care treatment over the last decade. Despite the advancement of cancer therapeutics, SCLC still has a five-year survival rate of less than 7%. By elucidating the genes and protein networks that drive SCLC tumor formation and growth, new avenues for treatment can be discovered. The transcription factor, SOX2, maintains stem cell pluripotency and is required for embryonic development. We have shown that SOX2 is a driver of SCLC. The SOX2 interactome has been studied in stem cells; however, in SCLC, the network of genes and proteins that SOX2 interacts with is still unknown. Here we present SOX2 chromatin targets as determined by chromatin immunoprecipitation (ChIP-seq) and CUT&RUN and compared binding to various epigenetic marks. The identification of SOX2 post-translational modifications suggests that they may impact its function in SCLC. Furthermore, the detection of SOX2 proximal proteins through BioID shows that SOX2 interacts with known regulators of lung cancer. As transcription factors are notoriously difficult to target therapeutically, our description of the SOX2 network presents novel targets for therapeutic development in SCLC.