ABSTRACT NUMBER: 3349 **Poster Board Number**: P319
TITLE: Malignant Mesothelioma Mortality in Women, by Industry and Occupation—United States, 1999-2014

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KEYWORDS: Carcinogenesis; Mesothelioma; Asbestos

ABSTRACT: Malignant mesothelioma is a cancer of the mesothelium, the thin layer of tissues surrounding the internal organs, and is most often caused by occupational exposure to asbestiform fibers. Disease latency from first exposure to asbestiform fibers to malignant mesothelioma diagnosis usually is considered to range from 20-40 years. Despite actions that regulate occupational exposure, potential exposures of workers' family members may still exist in the United States, especially in the construction industry, during maintenance operations and remediation of buildings containing asbestos. Overall malignant mesotheliomas in women that are attributable to work-related exposure is wide (23-90%, AJIM 43:461-482). To examine industry and occupation associated with malignant mesothelioma mortality among women, we analyzed multiple cause-of-death records for 1999-2014 for persons aged 25 years and older. Malignant mesothelioma deaths were identified using International Classification of Diseases, 10th Revision codes C45.0-C45.2, C45.7, and C45.9. During 1999-2014, 8,579 cases of malignant mesothelioma occurred among women. Industry and occupation information was available from 367 death certificates for decedents reported from 23 states for 1999, 2003, 2004, and 2007. Most frequently reported deaths were among unemployed or non-paid workers (n=116). Malignant mesothelioma deaths among women were most frequently associated with educational services (n=35) and health care (n=33) industries. By industry, the significant proportional mortality ratios were for legal services (3.8; CI=1.5-7.8), insurance carriers and related activities (2.4; CI=1.1-4.5), and elementary and secondary schools (1.5; 1.0-2.2). By occupation, the significant proportional mortality ratios were for accountants and auditors (2.9, CI=1.2-5.9), sewing machine operators (2.3, CI=1.1-4.3), and elementary and middle school teachers only (2.0, CI=1.3-3.0). These results are consistent with previous findings that most women with malignant mesothelioma had an indirect exposure to asbestiform fibers at work or through household contact with asbestos workers.

ABSTRACT NUMBER: 3350 **Poster Board Number**: P320
TITLE: Benzo(a)pyrene Regulates Line-1 Expression in Lung Bronchial Epithelial Cells via AhR/TGFb1/Snail1 Signaling

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KEYWORDS: Lung; Pulmonary or Respiratory System; Mechanisms; Signal Transduction; Undergraduate Student

ABSTRACT: Non-small cell lung cancer (NSCLC) is the predominant form of lung cancer in the United States, with only limited options available for patients diagnosed late in their disease process. This laboratory has identified aberrant expression of the Long interspersed nuclear element-1 (L1) as a critical event in the acquisition of malignancy. L1 is an abundant genetic element that mobilizes via retrotransposition using L1-encoded ORF1p and ORF2p proteins. Its activity is typically silenced in somatic tissues with reactivation serving as a powerful oncogenic stimulus via insertion mutagenesis and changes in chromatin structure gene expression. The cellular mechanisms that promote aberrant L1 expression in lung cancer are unclear. Here, using RT-PCR and immunoblotting analysis, we show that the tobacco carcinogen benzo(a)pyrene (B[a]P) increases expression levels of L1, TGF-β1 and Snail 1 in non-malignant BEAS-2B cells and in lung cancer cell lines NCI-H460, NCI-H520, and NCI-H1993. BaP-mediated L1 expression was inhibited by siRNA knock down of transforming growth factor-β1 receptor 1 (TGFBR1/ALK5) and Snail 1. These data suggest that BaP regulates L1 expression via activation of the TGF-β1/Snail1 signaling pathway. Because L1 may contribute to lung cancer initiation and progression, identification of this novel regulatory control mechanism may be targeted pharmacologically for therapeutic intervention.

ABSTRACT NUMBER: 3351 **Poster Board Number**: P321
TITLE: How Well Can Carcinogenicity Be Predicted by High-Throughput "Characteristics of Carcinogens" Mechanistic Data?

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KEYWORDS: Carcinogenesis; Computational Toxicology

ABSTRACT: Mechanistic results (particularly high throughput screening (HTS) data) for key characteristics of chemical carcinogens (Smith et. al Env Health Perspect 124:713-721, 2016) are increasingly being used in expert judgement-based hazard evaluations. The objective of this investigation was to determine whether HTS results for key characteristics of carcinogens can distinguish

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