



**Natalia Achtar-Zadeh, M.S.**  
**Associate Toxicologist**

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### **Academic and Professional Profile**

Natalia Achtar-Zadeh is a scientific consultant focused on toxicology, epidemiology, health and environmental risk assessment, pharmacology, ecotoxicology, and pathophysiology. Natalia has work experience in the histopathologic examination of human lungs and the molecular mechanisms of fibrotic and hypersensitive reactions involved in the development of pulmonary disorders and is a published author in peer reviewed manuscripts. Her work is currently focused on topics involving exposure assessments, environmental toxicology, e-cigarettes (vaping), radionuclides, heavy metals, pharmaceuticals, and asbestos. Her current projects involve scientific work related to litigation, assessing mathematical models for dose-response curves, interpreting toxicological studies, and characterizing the health effects posed by exposure to chemicals in the environment and workplace. She has a M.S. in Toxicology from Colorado State University.

### **Education and Degrees Earned**

- M.S. Toxicology, Colorado State University (2020)
- B.S. Biochemistry, San Francisco State University (2015)
- A.A. Social Sciences, College of San Mateo (2013)

### **Membership to Professional Societies**

- Society of Toxicology (SOT)
- American Society of Biochemistry and Molecular Biology
- American Thoracic Society

### **Experience Summary (Professional Career)**

#### **Paustenbach and Associates**

#### **Associate Toxicologist**

#### **Boulder, Colorado Office**

#### **November 2020-Present**

- Consultant in toxicology, epidemiology, health and environmental risk assessment, ecotoxicology, occupational health, and industrial hygiene
- Specialized in exposure assessment, environmental toxicology, e-cigarettes, radionuclides, heavy metals, and asbestos
- Involved in litigation work, assessing mathematical models for dose-response curves, interpreting toxicological studies, and characterizing risks posed by chemicals in the environment and workplace.

Natalia Achtar-Zadeh, M.S.

April 20, 2022

Page 1 of 4

**University of California, San Francisco; Department of Medicine | Pulmonary and Critical Care**  
**Staff Research Associate**  
**San Francisco, California**  
**May 2016- Feb 2019**

- Evaluated the role of telomeres, aging, and senescence in the alveolar epithelium of human lungs using advanced fluorescence techniques directly related to the pathogenesis of idiopathic pulmonary fibrosis.
- Significantly contributed original data related to the histopathological effects of anti-fibrotic drugs in human lungs, which were published in a highly regarded, peer-reviewed journals.
- Conducted high throughput qPCR assays to genotype the DNA of hundreds of patients involved in research studies and established the role of a mutation in the mucin gene MUC5B as a risk factor for developing IPF
- Performed and analyzed ELISA experiments to target blood biomarkers of interest and showed the significance of specific molecular proteins in the mechanism of fibrosis signaling.
- Wrote original, successful histopathological protocols which set the standard for our lab to provide high-quality staining and images.
- Served on a research team that revolutionized the role of cellular senescence and fibroblast development as being the initial event in the pathogenesis of IPF, which is now recognized as the accepted concept by the American Thoracic Society.

**Medical Lab Assistant**  
**Ascend Clinical**  
**Redwood City, California**  
**Oct 2015-March 2016**

- Batched and processed thousands of human blood samples from ESRD patients nationwide.
- Oversaw quality control of biological samples and provided solutions promptly.

**Stanford Health Career Opportunity Program**  
**Stanford University**  
**Stanford, California**  
**June 2013-August 2013**

- Intensive summer program for students in medicine.
- Instruction of the chemical foundations of medicine, anatomy, cadaver lab, public health disparities research, civic engagement, and leadership.

### **Volunteer**

**Graduate Researcher**  
**Colorado State University**

- Developed and optimized flow cytometry protocols to examine abnormal calcium influx, mitochondrial disturbances, cell death, and established markers of apoptosis in neuroblastoma cells exposed to metronidazole.

**Research Bronchoscopy Assistant**  
**University of California, San Francisco | Medical Center**

- Assisted physicians during live patient bronchoscopies.
- Preserved high-quality brushings and bronchoalveolar lavage fluid.

**Undergraduate Researcher**  
**San Francisco State University**

- Exploited cell culture, electrophoresis, and high-pressure liquid chromatography techniques to create a bank of purified protein.
- Determined rates of protein folding in the presence of NADH and various flavins which contributed to a critical understanding of the folding activity and nucleation of the enzyme, styrene monooxygenase (SMO).
- Utilized molecular software to assess the structure of the active site of SMO and identified crucial interacting residues which contributed to elucidating the biological mechanism involved in the oxygenation of the toxin, styrene.
- Completed an undergraduate thesis manuscript and presented a prize-winning poster at the SFSU Annual Research Symposium.

**Key Projects**

1. **Evaluation of nitrosamines in pharmaceuticals.** Conducted a health risk assessment regarding Canadian consumers who ingested drugs which contained trace amounts of nitrosodimethylamine (NDMA) and/or nitrosodiethylamine (NDEA) for up to three years during which the contamination was present.
2. **Review of soil samples at a former Naval site.** Reviewed all the available information and assembled a scope of work to conduct a sensitivity analysis and risk assessment.
3. **Assessment of the potential adverse effects of vaping products** containing nicotine and various flavorings with consideration of national concerns about whether e-cigarettes are a public health problem or a benefit to those who are trying to quit smoking (or both).
4. **Evaluation of claims that airborne dust from a former Naval site posed a cancer hazard to the community.** It was claimed that hundreds of persons who lived within ¼ mile of a former Naval base had been exposed to airborne dust (soil) from the facility and that it had entered their homes and was causing adverse health effects. We evaluated the air and dust data; then conducted an assessment.

**Research**

1. **N. Achtar-Zadeh**, S. Brown, E. Wu, DJ Paustenbach. 2022. Current Thoughts on Risk Assessment Methodologies Used to Assess the Carcinogenic Risk of N-Nitrosodimethylamine (NDMA). Abstract #3172. March 27-31, 2022. San Diego, CA.
2. S. Matson, J.S. Lee, W. Ren, H.R. Collard, M.A. Matthay, **N. Achtar-Zadeh**, P.J. Wolters, K. Hansen, O. Eickelberg. 2019. Common and Distinct Transcriptome and Proteome Expression Patterns from Lungs in Idiopathic Pulmonary Fibrosis (IPF) and Rheumatoid Arthritis-Associated Interstitial Lung Disease (RA-  
Natalia Achtar-Zadeh, M.S.  
April 20, 2022  
Page 3 of 4

ILD). American Journal of Respiratory and Critical Care Medicine.  
doi:10.1164/ajrccmconference.2019.199.1\_meetingabstracts.A5258.

3. S. Matson, D. Dvorkin, A. Fischer, **N. Achtar-Zadeh**, P.J. Wolters, J.S. Lee. 2019. Biomarkers in Systemic Sclerosis Associated Interstitial Lung Disease. American Journal of Respiratory and Critical Care Medicine. doi:10.1164/ajrccmconference.2019.199.1\_meetingabstracts.A1432
4. **N. Achtar-Zadeh**. 2015. Role of Flavins in Stabilizing and Nucleating the Folding of Styrene Monooxygenase Reductase. Undergraduate thesis manuscript and poster.

### **Publications [Peer-Reviewed]**

1. Yingwei Zhang, Kirk D. Jones, **Natalia Achtar-Zadeh**, Gary Green, Jasleen Kukreja, Brian Xu, Paul J. Wolters. 2018. Histopathologic and Molecular Analysis of Idiopathic Pulmonary Fibrosis Lungs from Patients Treated with Pirfenidone or Nintedanib. Histopathology. doi: 10.1111/his.13745
2. Gabrielle Y. Lui, Iazsmin Bauer Ventura, **Natalia Achtar-Zadeh**, Brett M. Elicker, Kirk D. Jones, Paul J. Wolters, Harold R. Collard, Ayodeji Adegunsoye, Mary E. Streck, Brett Ley. 2018. Prevalence and Clinical Significance of Antineutrophil Cytoplasmic Antibodies in North American Patients with Idiopathic Pulmonary Fibrosis. Chest. doi: 10.1016/j.chest.2019.05.014
3. Ram P. Naikawadi, Gary Green, Kirk D. Jones, **Natalia Achtar-Zadeh**, Julia E. Mieleszko, Jasleen Kukreja, John Greenland, Paul J. Wolters. 2020. Airway Epithelial Telomere Dysfunction Drives Remodeling Similar to Chronic Lung Allograft Dysfunction. American Journal of Respiratory Cell and Molecular Biology. doi: 10.1165/rcmb.2019-0374OC
4. Joyce S. Lee, Janet La, Sara Aziz, Evgenia Dobrinskikh, Robert Brownwell, Kirk D. Jones, **Natalia Achtar-Zadeh**, Gary Green, Brett M. Elicker, Jeffrey A. Golden, Michael A. Matthay, Jasleen Kukreja, David A. Schwartz, Paul J. Wolters. 2021. Molecular Markers of Telomere Dysfunction and Senescence are Common Findings in the Usual Interstitial Pneumonia Pattern of Lung Fibrosis. Histopathology. doi: 10.1111/HIS.143.