



**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, industrial hygiene, ecotoxicology, and pathophysiology. Natalia has work experience in the histopathologic examination of human lungs and molecular mechanisms of fibrotic and hypersensitive reactions involved in the development of pulmonary disorders and is a published author in peer reviewed manuscripts. She is currently focused on exposure assessment, environmental toxicology, e-cigarettes (vaping), radionuclides, heavy metals, and asbestos. Her current projects involve scientific work related to litigation, assessing mathematical models for dose-response curves, interpreting toxicological studies, and characterizing risks posed by chemicals in the environment and workplace. She has a Master of Science degree 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
Jackson Hole, Wyoming 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.

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 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 published manuscript
- 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
- Conducted 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 which 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 in a timely manner

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

- Intensive summer program for students in medicine
- Instruction in 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. **Assessment 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.
2. **Assessment of the potential adverse effects of vaping products containing nicotine and various flavorings.** Considering the national concerns about whether E-cigarettes are a public health problem or a benefit to those who are trying to quit smoking (or both), this presents a classic opportunity for conducting a health risk assessment.
3. **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

Natalia Achtar-Zadeh. 2015. "Role of Flavins in Stabilizing and Nucleating the Folding of Styrene Monooxygenase Reductase." Unpublished undergraduate thesis manuscript and poster.

4. 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-ILD). American Journal of Respiratory and Critical Care Medicine. doi.10.1164/ajrccmconference.2019.199.1_meetingabstracts.A5258
5. 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

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. Miesleszko, 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.14334