

Exponent®
Engineering & Scientific Consulting

Stephanie Pearlman, Ph.D.

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Professional Profile

Dr. Pearlman specializes in the development of molecular diagnostics, utilizing her diverse experiences at the interface of molecular biology, infectious disease, microbiology, and micro/nanoengineering. She has experience working collaboratively with international teams across the entire product lifecycle, starting from project feasibility through FDA Verification and Validation study design, testing, and documentation.

Dr. Pearlman has extensive expertise focused on direct sample preparation for many forms of clinical sample matrices, ranging from non-invasive swab specimens to tumor tissue biopsies, for downstream use in clinical diagnostic and molecular assay development applications.

She is a Biomedical Engineer by training, with a decade's worth of interdisciplinary lab experience. She has deep expertise running traditional biological assays, including immunoassays, kinetic binding, nucleic acid amplification tests (e.g., RT-qPCR, ddPCR), including isothermal methods (e.g., LAMP, SDA), Western blotting, and brightfield and fluorescence microscopy. She is experienced with bioconjugate techniques for protein modification and characterization. She has extensive experience culturing and transforming bacteria (including *Mycobacterium* spp.), protozoa (e.g., *Giardia* spp., *Entamoeba* spp., *Trichomonas* spp.), and mammalian and human cell lines. She also has a variety of experience with micro/nano materials characterization techniques, including contact angle goniometry, UV-Vis spectroscopy, rheometry, and colloid characterization (Zetasizer and NanoSight).

Prior to joining Exponent, Dr. Pearlman worked at Sherlock Biosciences, Inc., where she leveraged her specific expertise in sample preparation for development, formulation, packaging, long-term stability, and FDA Verification and Validation Studies of a disposable, at-home nucleic acid-based test for combined Chlamydia and Gonorrhea diagnosis. She was also responsible for design and development of a novel tongue swab-based tuberculosis lateral flow test meant to replace traditional sputum testing.

For her formal training, Dr. Pearlman completed her Ph.D. in Biomedical Engineering at Vanderbilt University. Her dissertation focused on improvement of current methods used for genetic and microscopic diagnosis of tuberculosis in the most resource-limited and highest-burdened parts of the world, some of which was in collaboration with the Bill and Melinda Gates Foundation. Prior to her Ph.D., she worked as an undergraduate research assistant at University of California, Irvine, where she focused on microfluidic applications for personalized cancer diagnostics.

Academic Credentials & Professional Honors

Ph.D., Biomedical Engineering, Vanderbilt University, 2022

Annual Biomedical Research Conference for Minoritized Scientists (ABRCMS) Presentation Award: Engineering, Physics, and Mathematics – 2015

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Prior Experience

Scientist I/II - Sample Prep, Sherlock Biosciences, Inc, 2022-2024

Chemical Hygiene Officer, Sherlock Biosciences, Inc, 2023-2024

Graduate Research Assistant, Vanderbilt University, 2016-2022

Graduate Teaching Assistant, Vanderbilt University, 2016-2017

Undergraduate Research Assistant, University of California, Irvine, 2014-2016

Undergraduate Research Assistant, University of California, San Francisco, 2013

Professional Affiliations

ASTM International (formerly the American Society for Testing and Materials):

• Member of ASTM Committee E35 on Pesticides, Antimicrobials, and Alternative Control Agents

• Member of ASTM Committee E55 on Manufacture of Pharmaceutical and Biopharmaceutical Products

• Member of ASTM Committee F04 on Medical and Surgical Materials and Devices

Northeast Branch - American Society of Microbiology (ASM)

Association for Diagnostics & Laboratory Medicine (ADLM): 2024-2025

American Chemical Society (ACS), Student Member: 2020-2022

Biomedical Engineering Society (BMES), Student Member: 2017-2022

American Society of Microbiology (ASM), Student Member: 2015-2016

Publications

Pearlman SI, Tang EM, Tao YK, Haselton FR. Controlling Droplet Marangoni Flows to Improve Microscopy-Based TB Diagnosis. Diagnostics (Basel) 2021; 11(11):2155

Pearlman SI, Leelawong M, Richardson KA, Adams NM, Russ PK, Pask ME, Wolfe AE, Wessely C, Haselton FR. Low-Resource Nucleic Acid Extraction Method Enabled by High-Gradient Magnetic Separation. ACS Applied Materials and Interfaces 2020; 12(11):12457-12467.

Presentations

Pearlman, SI, Tang EM, Evans, D, Tao, YK, Haselton, FR. Improving M. tuberculosis Microscopic Diagnosis Using Magnetic Enrichment and Induced Marangoni Flow. Poster Presentation, Biomedical Engineering Society (BMES) Annual Meeting, Virtual Meeting, 2021.

Pearlman SI, Tang, EM, Tao, YK, Haselton, FR. Improving visual assessment of sputum smear microscopic diagnosis of M. tuberculosis using high-gradient magnetic enrichment and induced droplet Marangoni flows. Oral Presentation. ACS Spring 2021 - Macromolecular Chemistry: The Second Century, 2021.

Pearlman, SI, Leelawong, M, Richardson, K, Adams, N, Wright, D, Haselton, F. Low-Resource Nucleic

Acid Extraction Device based on High-Gradient Magnetic Separation. Oral Presentation, Biomedical Engineering Society (BMES) Annual Meeting, Philadelphia, PA, 2019.

Pearlman, SI, Wessely, C, Wolfe, A, Pask, ME, Pasic, L, Mernaugh, R, Haselton, FR. Design of a High-Gradient Magnetic Separator for Improved TB Diagnosis. Poster Presentation, Biomedical Engineering Society (BMES) Annual Meeting, Atlanta, GA, 2018.

Pearlman, SI, Mousapour, B, Jhaveri, D, Haun, J. Measurement of Cancer Cell Biomechanic Properties Using a High-Throughput Microfluidic Platform. Poster Presentation, Annual Biomedical Research Conference for Minoritized Scientists (ABRCMS), Seattle, WA, 2015.

Pearlman, SI, Jhaveri, D, Smirnova, L, Lee, AP, Haun, J. Study of Mucin 1 Glycocalyx Content through Cell Deformability. Poster Presentation, Poster Presentation, Annual Biomedical Research Conference for Minoritized Scientists (ABRCMS), San Antonio, TX, 2014.