SUNITA SUBEDI PAUDEL, M.Sc.
Ph.D. Candidate | Center for Lung Biology
Department of Physiology, Cell Biology and Biomedical Engineering
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BIOGRAPHICAL INFORMATION

- Date of Birth: May 3, 1989
- Physical Address: 1357 Colleton Drive, Semmes, AL – 36575
- Contact Number: (251) – 622 – 3219
- Marital Status: Married with two kids (Denish and Delisha,) Husband (Physics, Ph.D.)

EDUCATION

2017–Present Doctor of Philosophy: Basic Medical Science (Mentors: Troy Stevens and Dhananjay Tambe, Ph.D.) Concentration: Lung Biology (University of South Alabama Center for Lung Biology), Physiology, Cell Biology and Biomedical Engineering, University of South Alabama, Mobile, Alabama

2015–2017 Master of Science: Computational Physics (Mentor: Ras B. Pandey, Ph.D.) Concentration: Biopolymer Physics, University of Southern Mississippi, Hattiesburg, Mississippi

2009–2012 Bachelor of Science: Physics and Chemistry
Tribhuvan University – Prithvi Narayan Campus, Pokhara, Nepal

AWARDS AND HONORS

2022 American Thoracic Society Student Scholar

2021 Active Senator Award - University of South Alabama

2020 American Thoracic Society Student Scholar

2017 Outstanding Performance and Dedication Award from Women in Science and Engineering - University of Southern Mississippi.

2016 Outstanding Student Award achievement from Women in Science and Engineering - University of Southern Mississippi

2012 Full Scholarship as Outstanding Student – Prithvi Narayan Campus

TECHNICAL SKILLS

* **Microscopy and Bioimaging**: Confocal Microscopy (Nikon, Andor Spinning Disk, Carl Zeiss), Monolayer Stress Microscopy, Atomic Force Microscopy, Transmission Electron Microscopy, Scanning Electron Microscopy.

* **Imaging**: Calcium Imaging, Immunohistochemistry, Immuno-fluorescence, FRET Imaging

* **Experimental Technique**: Cell Culture, Growth Curve, Single-cell cloniong, Western Blotting, Polymerase Chain Reaction (PCR), ELISA, Different Sorts of Protein Assay, Animal Experiments (Rat and Mice), Isolated Lung Study for Permeability Study, CRISPER/Cas-9, Preparing different stiffness polyacrylamide gel for cell culture.

* **Instrument Handle**: Flow Cytometry, ID5 Molecular Device, Centrifuge of different types, Autoclave, Osmometer, Laser Spectroscopy, Celigo.

* **Programming Language**: Fortran, Python, MATLAB, Octave, C++, Visual Studio, R

* **Software Package**: SIESTA, Quantum Expresso, VASP, LAMMPS, VMD, Xcrysden, Jmole, PyMOL, Xmgrace, Gnuplot, GraphPad Prism.

* **Operating system**: Unix (OS X), Linux, Window.

PROFESSIONAL SOCIETY MEMBERSHIPS

2020 – Present Pulmonary Vascular Research Institution
2019 – Present American Heart Association
2019 – Present Southern Biomedical Engineering Society
2017 – Present American Thoracic Society
2015 – 2018 American Physical Society

LEADERSHIP

2020-Present University of South Alabama College of Medicine Senator

2020-Present University of South Alabama Basic Medical Science Student Advisory Committee

2020-2021 University of South Alabama Basic Medical Science GradPal

2020-2021 University of South Alabama Justice Initiative Student Advisor Team

2019-2021 University of South Alabama International Advisory Committee Leader

2015-2017 University of Southern Mississippi Student Physical Society Treasurer

PROFESSIONAL AND TEACHING EXPERIENCES

2017 - Present Graduate Research Assistant, taught graduate, medical and undergraduate

students various lab techniques, The University of South Alabama, Mobile, AL.

2015 - 2017 Graduate Teaching Assistant, taught undergraduate students Astronomy (ASL111 and ASL 112) and Physics (PHY 101 and PHY 201). The University of Southern Mississippi, Hattiesburg, MS.

2012 - 2013 Department Head of Science, taught overall science to high school students that include Physics, Chemistry and Biology, Shining Star Secondary School, Pokhara, Nepal.

PEER-REVIEWED PUBLICATION

1. **Sunita Subedi Paudel**, Althea deWeever, Navneet Singh, Elizabeth O. Harrington, Corey E. Ventetuolo, Troy Stevens, Dhananjay Tambe, Effect of substrate stiffness on human pulmonary artery endothelial cells from pulmonary hypertension patients, (Under Preparation).

2. **Sunita Subedi Paudel**, Althea deWeever, Troy Stevens, Dhananjay Tambe, Effect of substrate stiffness on the calcium signaling of lung endothelium (Under Preparation).

3. Navneet Singh, Carsten Eickoff, Paul Bertone, **Sunita S. Paudel**, Dhananjay Tambe, Leslie Litzky, Katherine Cox-Flaherty, James Klinger, Sean Monaghan, Christopher Mullin, Mandy Pereira, Thomas Walsh, Mary Whittenhall, Troy Stevens, Elizabeth Harrington, and Corey Ventetuolo, Transcriptional Profiles of Pulmonary Artery Endothelial Cells from Living Patients with Pulmonary Hypertension: New Insights into Pathobiology During the Disease Course, *European Respiratory Journal* (Under Preparation).

4. **Sunita Subedi Paudel**, Althea deWeever, Sarah L. Sayner, Troy Stevens, Dhananjay Tambe, Subendothelial surface stiffness impairs migration and local inter-cellular membrane motion in pulmonary endothelium, *American Journal of Physiology Lung Cell Physiology,* 2022 (In Press)

5. Reece Stevens, Mikhail Alexeyev, Natalya Kozhukhar, Viktoriya Pastukh, **Sunita S. Paudel**, Jessica Bell, Dhananjay Tambe, Troy Stevens, Ji Young Lee, Carbonic anhydrase IX proteoglycan-like and intracellular domains mediate pulmonary microvascular endothelial cell repair and angiogenesis, *American Journal of Physiology Lung Cellular and Molecular Physiology;* 323: L48–L57, 2022.

6. Alyson Nguyen, Keith Battle, **Sunita S. Paudel**, Ningyoug Xu, Jessica Bell, Linn Ayers, Cassandra Chapman, Ajay Singh, Srinivas Palanki, Thomas Rich, Diego F. Alvarez, Troy Stevens, Dhananjay Tambe, Integrative Toolkit to Analyze Cellular Signals: Forces, Motion, Morphology, and Fluorescence, *Journal of Visualized Experiments*; 181, e63095, 2022.

7. Reece P. Stevens, **Sunita S. Paudel**, Santina C. Johnson, Troy Stevens, Ji Young Lee, Endothelial metabolism in pulmonary vascular homeostasis and acute respiratory distress

syndrome, *American Journal of Physiology Lung Cellular and Molecular Physiology;*321(2), L358-L376, 2021.

8. Phoibe Renema, Natalya Kozhukhar, Viktoriya Pastukh, Domenico Spadafora, **Sunita Subedi Paudel,** Dhananjay T Tambe, Mikhail Alexeyev, Dara W Frank, Troy Stevens, Exoenzyme Y induces extracellular active caspase-7 accumulation independent from apoptosis: modulation of transmissible cytotoxicity, *American Journal of Physiology Lung Cellular and Molecular Physiology;* 319(2), 380-390, 2020.

9. Ji Young Lee, Reece P. Stevens, Mary Kash, Chun Zhou, Anna Koloteva, Phoibe Renema, **Sunita S Paudel**, Troy Stevens, KD025 Shifts Pulmonary Endothelial Cell Bioenergetics and Decreases Baseline Lung Permeability, *American Journal of Respiratory Cell and Molecular Biology;* 63 (4), 519-530, 2020.

10. Panisak Boonamnaj, **Sunita Subedi Paudel**, Warin Jetsadawisut, Sunan Kitjaruwankul, Pornthep Sompornpisut, R.B. Pandey, Thermal response of a protein (hHv1) by a coarse-grained MC and all-atom MD computer simulations, *Physica A: Statistical Mechanics and its Applications* 527:121310, 2019.

11. Sunan Kitjaruwankul, Panisak Boonamnaj, **Sunita S. Paudel**, Warin Jetsadawisut, Pornthep Sompornpisut, Ras B.Pandey, Thermal-induced folding and unfolding of a transmembrane protein (CorA), *Physica A: Statistical Mechanics and its Applications*; 506 (987-992), 2018.

12. Ras B. Pandey, Sunan Kitjaruwankul, Panisak Boonamnaj, **Sunita S. Paudel**, Warin Jetsadawisut, Pornthep Sompornpisut (2017). Conformational modulation of transmembrane segments of a protein (CorA) by effective media, *International Journal of Virology & Infectious Diseases:* 2 (1), 6, 2017.

PUBLISHED ABSTRACTS AND PRESENTATION

2022 Dhananjay T. Tambe**, Sunita Subedi Paudel**, Jessica Bell, Thomas C. Rich, and Troy Stevens, An open-source toolkit to visualize cellular morphology, motion, fluorescence, and forces (2022), *SPIE Photonics West*.

2022 Silas J. Leavesley, Santina Johnson, **Sunita Paudel**, Jennifer Knighten, Dhananjay Tambe, Michael Francis, Na Gong, Mark S. Taylor, and Thomas C. Rich, Combined hyperspectral imaging, monolayer stress microscopy, and S8 image analysis approaches for simultaneously interrogating cellular signals and biomechanics (2022), *SPIE Photonics West*.

2022 **Sunita Subedi Paudel**, Navneet Singh, Katherine Cox-Flaherty, Mandy Pereira, Dhananjay T. Tambe, Troy Stevens, Elizabeth O. Harrington, and Corey E. Ventetuolo, Human pulmonary artery endothelial cells isolated from patients with pulmonary hypertension exhibit anoikis resistant (May 2022), *American Thoracic Society*.

2022 Althea Deweever, Chun Choi, Victoria Pastukh, Meredith S. Gwin, Sarah B. Voth, **Sunita Subedi Paudel**, Allison Baumann, Natalya Kozhukhar, Trinity Elston, Ji Young Lee, Christopher Michael Francis, Silas Leavesley, Mikhail

Alexeyev, Amy Nelson, Mike T Lin, Ron Balczon, and Troy Stevens, Autofluorescent detection of cytotoxic tau as a putative point of care method (May 2022), *American Thoracic Society*.

2022 **Sunita Subedi Paudel**, Navneet Singh, Elizabeth O. Harrington, Corey E. Ventetuolo, Dhananjay T. Tambe, and Troy Stevens, Human pulmonary arterial endothelial cells from pulmonary arterial hypertension patients exhibit anoikis resistant (March 2022), *Graduate Research Symposium*, The University of South Alabama

2021 **Sunita Subedi Paudel**, Althea Deweever, Amy Nelson, Troy Stevens, and Dhananjay T. Tambe, Paracellular Fluctuations Analyzer - A Tool to Assess Rapid Paracellular Remodeling in Pulmonary Endothelium (May 2021), *American Thoracic Society*.

2021 Althea Deweever, **Sunita Subedi Paudel**, Ron Balczon, and Troy Stevens, Untangling the Fluorescence Behaviour of Pulmonary Amyloids and Pseudomonas Aeruginosa's Siderophore Pyoverdin (May 2021), *American Thoracic Society.*

2021 Althea Deweever, **Sunita Subedi Paudel**, Silas Leavesely, Ron Balczon, and Troy Stevens, Iron Irreversibly Alters the Autofluorescence of Pulmonary Amyloids: Implications on Amyloid Detection in Clinical Samples (May 2021), *American Thoracic Society*.

2021 Althea Deweever, **Sunita Subedi Paudel**, Ron Balczon, and Troy Stevens, Copper but not Zinc Ions Modify the Autofluorescence of Pathogenic and Antimicrobial Pulmonary Amyloids (May 2021), *American Thoracic Society*.

2021 Alyson Nguyen, Keith Battle, **Sunita Subedi Paudel**, Jessica Bell, Linn Ayers, Thomas Rich, Diego Alvarez, Troy Stevens, and Dhanajay Tambe, An Automated In Vitro Experimental Platform to Analyze Structure, Motion and Forces in Adherent Cells (May 2021), *FASEB Journal.*

2021 Althea deWeever, Meredith Gwin, Sarah Voth, **Sunita Subedi Paudel**, Silas Leavesely, Ron Balczon, and Troy Stevens, Development of a Novel Point Care of Care Test for Toxic Amyloids in Patients Recovering from Hospital Acquired Pneumonia (May 2021), *FASEB Journal.*

2021 **Sunita Subedi Paudel**, Althea Deweever, Amy Nelson, Troy Stevens, and Dhananjay T. Tambe, Paracellular Fluctuations Analyzer - A Tool to Assess Rapid Paracellular Remodeling in Pulmonary Endothelium (March 2021), *Graduate Research Symposium*, The University of South Alabama.

2021 **Sunita Subedi Paudel**, Althea deWeever, Amy Nelson, Troy Stevens, and Dhanajay Tambe, Effect of substrate stiffness on the morphological dynamics of

pulmonary artery endothelial cells, (Jan 2021), *Pulmonary Vascular Research Institute.*

2020 **Sunita Subedi Paudel**, Dhananjay Tambe, and Troy Stevens, Substrate Stiffness Acts as a Permeability-Inducing Mechanical Stimulus in Pulmonary Arterial Hypertension (May 2020) *American Thoracic Society.*

2020 Meredith S. Gwin, Sarah Voth, **Sunita Subedi Paudel**, N. Onanyan, A. Darby, Christopher Michael Francis, and Troy Stevens, Essential Role for Gamma Secretase Activating Protein (GSAP) in Infection-Elicited Endothelial Proteinopathy, (May 2020) *American Thoracic Society.*

2020 **Sunita Subedi Paudel**, Dhananjay Tambe, and Troy Stevens, Substrate Stiffness: A permeability-inducing mechanical stimulus in pulmonary endothelium, (March 2020) *36th Southern Biomedical Engineering Conference*.

2019 **Sunita Subedi Paudel**, Dhananjay Tambe, and Troy Stevens, How substrate stiffness is affecting endothelial cells? (March 2019), *Graduate Research Symposium*, The University of South Alabama.

2018 **Sunita Subedi Paudel**, Troy Stevens, and Dhananjay Tambe, Contribution of Endothelial Substrate Stiffness to Activation of Store-Operated Calcium Entry: Impact on Permeability, *(*Nov 2018*), COM Research Conference*, University of South Alabama- College of Medicine.

2018 Warin Jetsadawisut, Sunan Kitjaruwankul, Panisak Boonamnaj, **Sunita Subedi Paudel**, Pornthep Sompornpisut, and Ras Pandey, Conformational response of a membrane protein (CorA) by a coarse-grained model, (Mar 2018), *APS March Meeting.*

2017 **Sunita Subedi Paudel**, and Ras B. Pandey, Conflicting thermal responses of the cytoplasmic domain of hH_v1 channel by all-atom MD and all-residue coarse-grained MC simulations, *(*April 2017*), Susan A. Siltanen Graduate Student Research Symposium*, The University of Southern Mississippi.

2017 Panisak Boonamnaj, **Sunita Subedi Paudel**, Warin Jetsadawisut, Sunan Kitjaruwankul, Pornthep Sompornpisut, and Ras Pandey, Conflicting thermal response of a monomer and a tandem dimer of a membrane protein segment (hH_v1*)*, (Mar 2017), *APS March Meeting.*

2017 **Sunita Subedi Paudel**, and Ras B. Pandey, Effect of temperature on the structure of a protein segment (hH_v1) by a coarse-grained model (Feb 2017), Mississippi Academy of Science 81st Annual Conference, The University of Southern Mississippi.

ORAL PRESENTATIONS

2017-Present Presentations at Center for Lung Biology Research in Progress once a year, University of South Alabama.

2022 "*Substrate Stiffness: A mechanical determinant of endothelial phenotype*." National Jewish Health Seminar.

2022 "*Human Pulmonary Artery Endothelial Cells Isolated from Patients with Pulmonary Hypertension Exhibit Anoikis Resistance*." VuMedi (Virtual Presentation).

2022 *"Human pulmonary artery endothelial cells isolated from patients with pulmonary hypertension can survive without microenvironment."* Frontiers of Engineering, Automation and Technology Seminars, The University of South Alabama.

2020 "*Substrate stiffness: A permeability inducing mechanical stimulus in pulmonary endothelium*." Southern Biomedical Engineering Society.

2017 "*Effect of temperature on the structure of a protein segment (hHv1) by a coarse-grained model*." Mississippi Academy of Science.

2017 "*Conflicting thermal response of a monomer and a tandem dimer of a membrane protein segment (hHv1)*." American Physical Society.

2017 "*Contradictory thermal responses of the cytoplasmic domain of hHv1 channel by all-atom MD and all-residue coarse-grained MC simulations*." Susan A. Siltanen Graduate Student Research Symposium, The University of Southern Mississippi.