

Udaya Sree Datla

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SUMMARY

Strong research professional with demonstrated working history in Biomedical and Pharmaceutical research sectors. Currently pursuing a Doctor of Philosophy (Ph.D.) focused on Translational Medicine and Biomedical Engineering, with doctoral research work involving aspects of Synthetic microecology, Host-pathogen Interactions, Microfabrication, Biomaterials and Immunoengineering. Passionate about solving global issues in Health Care and Higher Education.

EDUCATION

Doctorate in Translational Biology, Medicine and Health (2015 - 2021)

Virginia Polytechnic Institute and State University, Blacksburg, VA, USA.

Academic advisors: Dr. Caroline N. Jones (current), Dr. William H. Mather (past)

Relevant course work: Gateway to Translational Biology, Medicine and Health (covering fundamentals of Neuroscience; Immunity and Infectious Diseases; Cancer; Development, Aging and Repair; Cardiovascular and Metabolic Sciences, Health and Implementation Science), Focus area: Cancer; Advanced Inflammation Biology, and Engineering Mathematics.

Dissertation Title (Anticipated): "Engineering approaches to study the spatiotemporal dynamics of microbe-microbe and host-microbe interactions in health and disease"

Master of Science in Biomedical Sciences (2011 – 2013)

Brody School of Medicine, East Carolina University, Greenville, NC, USA.

Department: Internal medicine – Hematology/Oncology.

Academic advisor: Dr. Myon-Hee Lee

Relevant course work: Biochemistry, Molecular Cell Biology, Advanced Molecular Genetics, Biostatistics, Research Ethics, and Bioinformatics.

Thesis Title: "Genetic and Hypoxic Effects on Germline Tumor Development in *Caenorhabditis elegans*"

Bachelor of Pharmacy (2007 - 2011)

Andhra University College of Pharmaceutical Sciences, Visakhapatnam, AP, India.

Relevant course work: Biopharmaceutics, Clinical Pharmacy, Pharmacology, Pharmaceutical Microbiology and Biotechnology, Pharmaceutical Engineering, Inorganic, Organic, and Medicinal Chemistry.

Project Title: "A Factorial Study on the Individual and Combined Effects of Hydroxy propyl β - Cyclodextrin and Poloxamer on the Solubility and Dissolution Rate of Piroxicam"

CERTIFICATIONS

Future Professoriate Graduate Certificate, Virginia Tech

Jan' 19 – May' 21

A program designed to explore a variety of pedagogical methodologies/scholarly paradigms, and aimed at preparing graduate students for a career in teaching and research.

Relevant course work: Preparing Future Professoriate, Contemporary Pedagogy, and Communicating Science.

Relevant activities: Blogging, journaling, and open discussions on matters concerning higher education and contemporary pedagogy. Improvisation and group exercises in science communication.

RESEARCH/WORK EXPERIENCE

Virginia Tech, Blacksburg, VA, USA

Aug' 15 – Present

Graduate Research Assistant

- ✓ Currently working on
 - Engineering and developing robust in vitro microfluidic assays to quantify the neutrophil decision-making dynamics in response to the acute and chronic infection states (planktonic vs. biofilm) of *Pseudomonas aeruginosa*
 - Elucidating the effects of microenvironment on tumor-immune cell crosstalk, on-chip
- ✓ Co-investigated the potential of the heparin-based hydrogel as a 3D matrix for solid-phase growth factor presentation and cultivation of human breast cancer cell spheroids
- ✓ Studied the spatiotemporal dynamics of growth and acquired resistance in vivo in an engineered *E. coli* killer-prey ecosystem
- ✓ As a part of research rotation, worked on
 - Irreversible Electroporation (IRE) treatment in murine triple-negative breast cancer cells in vitro and resazurin metabolism methods for cell viability studies
 - Dynamics of Thymic stromal lymphopoietin (TSLP) in breast cancer cells exposed to pulsed electric fields.
- ✓ Led a team in setting up Cleanroom processes for microfabrication and designed the lab webpage @<https://jones.biol.vt.edu/>

Patheon Pharmaceuticals, Greenville, NC, USA

Oct' 13 – Jul' 15

Analytical Chemist

Skilled lab analyst in QC (Quality Control) department with

- ✓ Hands-on experience in finished product testing of sterile liquid/ lyophilized solid dosage forms (antibiotics, antifungals, and antineoplastic agents), working on assay, content uniformity and determination of impurities in these dosage forms
- ✓ Practical experience in controlled substances testing adhering to guidelines
- ✓ Knowledge in evaluating guideline excursion and OOS (Out of Specification) test results

Brody School of Medicine, Greenville, NC, USA

Aug' 11 – Aug' 13

Graduate Research Assistant

- ✓ Conducted research to study the role of various gene regulatory networks on *C. elegans* germline tumor development
- ✓ Taught lab-specific techniques to postgraduates, interns, and undergraduates
- ✓ Assisted in proofreading grant proposals and maintained lab supplies

TEACHING EXPERIENCE

Virginia Tech, Blacksburg, VA, USA

Aug' 17 – Dec' 19

Instructor

- ✓ Instructor for Principles of Biology lab class (BIOL 1115) to Freshmen and Sophomores (Eval. score: 5.7/6)
- ✓ Instructor for Immunology lab class (BIOL 4714) to Seniors and Advanced Juniors (Eval. score: 5.5/6)
- ✓ Co-authored significant sections of the Immunology (BIOL 4714) lab manual
- ✓ Teaching assistant to Principles of Biology lecture class (BIOL 1105)

PEER-REVIEWED PUBLICATIONS

- **Datla, U. S.**, Vundurthy B.P.*, Menon, N.*, & Jones, C. N. (2020). A multi-sensing microfluidic platform to study the host response to *Pseudomonas aeruginosa* planktonic and biofilm infections, from an innate immune standpoint. (*Manuscript in preparation*)
- **Datla, U. S.**, Vundurthy B.P., Nguyen, N. #, Radic, M.Z., & Jones C. N. (2020). Neutrophil decision-making

in antimicrobial host defense during sepsis. (*Manuscript in preparation*)

- Menon, N., Dang, H. X., **Datla, U. S.**, Moarefian, M., Lawrence, C. B., Maher, C. A., & Jones, C. N. (2020). Heparin-based hydrogel scaffolding alters the transcriptomic profile and increases the chemoresistance of MDA-MB-231 triple-negative breast cancer cells. *Biomaterials Science*, 8(10), 2786-2796.
<https://www.ncbi.nlm.nih.gov/pubmed/32091043>
- **Datla, U. S.**, Mather, W. H., Chen, S., Shoultz, I. W.[#], Täuber, U. C., Jones, C. N., & Butzin, N. C. (2017). The spatiotemporal system dynamics of acquired resistance in an engineered microecology. *Scientific reports*, 7(1), 16071.
<https://www.ncbi.nlm.nih.gov/pubmed/29167517>
- **Datla, U. S.**, Scovill, N. C.[#], Brokamp, A. J.[#], Kim, E., Asch, A. S., & Lee, M. H. (2014). Role of PUF-8/PUF Protein in Stem Cell Control, Sperm-Oocyte Decision and Cell Fate Reprogramming. *Journal of cellular physiology*, 229(10), 1306-1311.
<https://www.ncbi.nlm.nih.gov/pubmed/24638209>
- Cha, D. S., **Datla, U. S.**, Hollis, S. E., Kimble, J., & Lee, M. H. (2012). The Ras-ERK MAPK regulatory network controls dedifferentiation in *Caenorhabditis elegans* germline. *Biochimica et Biophysica Acta (BBA)-Molecular Cell Research*, 1823(10), 1847-1855.
<https://www.ncbi.nlm.nih.gov/pubmed/22820175>
- Cha, D. S., Hollis, S. E., **Datla, U. S.**, Lee, S., Ryu, J., Jung, H. R., Kim, E., Kim, K., Lee, M., Li, C., & Lee, M. H. (2012). Differential subcellular localization of DNA topoisomerase-1 isoforms and their roles during *Caenorhabditis elegans* development. *Gene Expression Patterns*, 12(5), 189-195.
<https://www.ncbi.nlm.nih.gov/pubmed/22452997>

[#] Students mentored

ACADEMIC PUBLICATIONS

- **Datla, U. S.** (2021). Engineering approaches to study the spatiotemporal dynamics of microbe-microbe and host-microbe interactions in health and disease. *Virginia Polytechnic Institute and State University*.
- **Datla, U. S.** (2013). Genetic and hypoxic effects on germline tumor development in *Caenorhabditis elegans*. *East Carolina University*. <http://thescholarship.ecu.edu/handle/10342/4327>
- **Datla, U. S.**, Rao, K. S. P., & Chowdary, K. (2011). A Factorial Study on the effects of Hydroxypropyl β -cyclodextrin and Poloxamer on the Solubility and Dissolution rate of Piroxicam. *Andhra University College of Pharmaceutical Sciences*.

SELECTED RESEARCH PRESENTATIONS

- Nicholas Nguyen[#], **Udaya Sree Datla**, and Caroline N. Jones (2019) The spatiotemporal dynamics of innate immune cell response to pathogen signaling in engineered microenvironments. *Mid-Atlantic Undergraduate Research Conference (MAURC)*, Virginia Tech (Poster)
- Surya Gara[#], **Udaya Sree Datla**, and Caroline N. Jones (2019) Quantifying neutrophil decision-making during infection. *Mid-Atlantic Undergraduate Research Conference (MAURC)*, Virginia Tech (Poster)
- **Udaya Sree Datla**, Caroline N. Jones (2018) Multi-Sensing Microfluidic Platforms to Decipher Host-Pathogen Dynamics. *ASM Microbe*, Atlanta, Georgia (**Invited talk**: Plenary session - Beyond the Mouse-Advanced Models of Host-microbe Interactions) - Travel award received
- Nidhi Menon, **Udaya Sree Datla**, Caroline N. Jones (2017) Heparin-based Hydrogel as a 3D Matrix for Solid-phase Growth Factor Presentation and Cultivation of Human Breast Cancer Cells. *Biomedical Engineering Society (BMES) Meeting*, Phoenix, Arizona (Poster)
- **Udaya Sree Datla**, William H. Mather, Sheng Chen, Isaac W. Shoultz, Uwe C. Täuber, Caroline N. Jones & Nicholas C. Butzin (2017) The spatiotemporal network dynamics of acquired resistance in an engineered microecology, presented at:
 - 18th International Conference on Systems Biology (ICSB), Virginia Tech (Oral and poster)

- Center for Soft Matter and Biological Physics (CSMBP) Summer Discussion Meeting, Virginia Tech (Oral)
 - The 2nd Center for Soft Matter and Biological Physics Symposium, Virginia Tech (Poster)
 - The 2nd Molecular Biophysics Symposium, The Biocomplexity Institute of Virginia Tech (Poster)
 - **Udaya Sree Datla**, Lee, M.H. (2013) Effect of Hypoxia on Tumorigenesis in *C. elegans* Germline. *Research and Creative Achievement Week (RCAW)*, East Carolina University (Oral)
 - Cha, D.S., **Datla, U.S.**, Hollis, S.E., Kimble, J., and Lee, M.H. (2012) The Ras-ERK MAPK regulatory network controls dedifferentiation in *Caenorhabditis elegans*. *The C. elegans "Topics" meeting*, University of Wisconsin-Madison (Poster)
 - Nguyen, Q.[#], Brokamp, A.[#], **Datla, U.S.**, and Lee, M.H. (2012) Regulation of germline stem cells via PUF proteins and Regulation of dedifferentiation via HIF-1 proteins. *Summer Biomedical Research Program (SBRP)*, East Carolina University (Poster)
 - **Udaya Sree Datla**, Sindhu Prabha Bonam (2009) Bone Marrow Stem Cell Transplantation to Treat Leukemia. *Pharmacoin-09*, a national seminar on emerging technologies in pharmaceutical sciences and practice, sponsored by Indian Pharmaceutical Association Education (IPAE) division, AU College of Pharmacy (Poster)
- [#] Students mentored

HONORS & AFFILIATIONS

- Received *Graduate Student Teaching Certificate* through the Center for Excellence in Teaching and Learning (CETL) at Virginia Tech (2020).
- Received *David W. Francis and Lillian Francis Scholarship Fund* from the graduate school, Virginia Tech - awarded to only two students university-wide for research emphasizing longer, safer, and healthier lives (2018-19)
- Received *Center collaboration award* from Center for Soft Matter and Biological Physics, Virginia Tech in recognition for outstanding research through a successful collaboration (2017)
- Master's thesis nominated (but not selected) for *Outstanding thesis award* in Life Sciences category for East Carolina University 5th Annual Thesis and Dissertation Awards (2015)
- Selected to be published in the newsfeed as the *best graduate student* in Brody School of Medicine for November 2012
- *Active participant award* winner in SKILLS test, a Pharmaglow contest on scientific blog writing skills conducted by Pharmainfo.net, Canada (2009)
- Member of the *Biomedical Engineering Society* (2017), *American Society for Microbiology* (2018), *American Association of Immunologists* (since 2019), and *Society for Leukocyte Biology* (since 2019)

VOLUNTEERING

- Created learning materials (video and activity) to provide science enrichment to kindergarten children, as a part of the Girls Launch! project with Virginia Tech Center for Communicating Science (2020)
- Engaged in science storytelling to a public audience at the Warm Hearth Retirement community, Blacksburg (2019)
- Volunteered in *Kids' Tech University* outreach event at Virginia Tech, where I interacted with middle-school kids and demonstrated them the principles of
 - Microfluidics and its application in synthetic biology (2016)
 - Synthetic micro ecology (2017)
- Volunteered in *patient counseling* at Andhra University health center, Visakhapatnam (organized by Indian Pharmacy Graduates Association) to gain an insight into patient care, focusing on Diabetes-related awareness (2009)