

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 Biology, Microbial Ecology, Host-pathogen Interactions, Tissue Engineering, and Systems Immunology. Passionate about solving global issues in Health Care and Higher Education.

EDUCATION

Doctorate in Translational Biology, Medicine and Health (2015 - 2020)

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, Fundamentals of Cancer, Advanced Inflammation Biology, and Engineering Mathematics.

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 *C. elegans*.”

Bachelor of Pharmacy (2007 - 2011)

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

Relevant course work: Biopharmaceutics, Clinical Pharmacy, Pharmacology, Pharmaceutical 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 – Dec’ 19

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.

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), and fluctuating rates of *Pseudomonas aeruginosa* infection
 - The anaerobic skeletal muscle infections of *Clostridium perfringens*
- Quantifying the chemotactic migration ability of neutrophils towards inflammatory stimuli in fractions of RA (Rheumatoid Arthritis) patient synovial fluid samples
- 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 cells
- ✓ 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

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 – Apr' 18

Instructor

- ✓ Taught Principles of Biology lab class (BIOL 1115) to Freshmen and Sophomores (Evaluation score: 5.66/6.00)
- ✓ Taught Immunology lab class (BIOL 4714) to Seniors and Advanced Juniors (Evaluation score: 5.54/6.00)
- ✓ Authored significant sections of the Immunology lab manual

SKILLS

Technical Skills:

- ✓ Biomedical: Bacterial and mammalian cell culture and cell viability assays, phagocytosis assay, Real-time PCR, DNA sequencing, ELISA, SDS-PAGE, western blot, immunohistochemistry, irreversible electroporation; Generation of knock-out mutants and RNA interference in *C. elegans*; Design and fabrication of microfluidic devices

- ✓ **Pharmaceutical:** High-Performance Liquid and Thin Layer Chromatographic (HPLC) analysis, UV/Vis and Fourier transform infrared spectral analysis, and heavy metals testing of drug products in a GLP (Good Lab Practice) environment; Formulation and evaluation of various pharmaceutical dosage forms; Pharmacology experiments on frogs; Synthesis and assay of various medicinal and natural products

Instruments Handled:

- ✓ Fluorescence and Nomarski microscopes, PCR thermal cycler, Agilent and Waters HPLC systems with Multiple Wavelength (MWD) and PhotoDiode Array (PDA) Detectors, UV/Vis spectrophotometer, FTIR (Fourier Transform Infrared) spectrometer, Karl Fischer titrator, Osmometer, Density meter, Conductivity meter, Turbidimeter, Dissolution test apparatus (eight stage), Disintegration test apparatus (of USP Standard), Multi-station rotary tablet press

Software Skills:

- ✓ Well acquainted with using ATLAS chromatography data system software, LIMS (Laboratory Information Management System) software, Image processing software – ImageJ, Graphics editor software – Adobe Illustrator, Design application softwares - AutoCAD and Rhino 3D, Multiphysics modeling software - COMSOL
- ✓ Working knowledge of MATLAB, Python, HTML, and proficiency in blogging

PEER-REVIEWED PUBLICATIONS

- Neeli, I., **Datla, U. S.***, Moarefian M.*, Jones, C. N., & Radic, M.Z. (2019). The effect of Cl-amidine as a potent chemoinhibitor of neutrophil chemotaxis in Rheumatoid arthritis patients. (*Manuscript in preparation*)
- **Datla, U. S.**, Menon, N.*, Moarefian M.*, & Jones, C. N. (2019). A multi-sensing microfluidic platform to study the host response to *Pseudomonas aeruginosa* biofilm infections, from an innate immune standpoint (*Manuscript in preparation*)
- Menon, N., Dang, H. X., **Datla, U. S.**, Moarefian, M., Lawrence, C. B., & Jones, C. N. Heparin-based hydrogel as a biomimetic niche for breast cancer cell spheroid cultivation. (2019). (*Submitted to Biomaterials Science*)
- **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>

* Co-authors; # Students mentored

ACADEMIC PUBLICATIONS

- **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*

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. *Pharmacon-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

- Associate of the *Virginia Tech Graduate Academy for Teaching Excellence (VTGrATE)*
- 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 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* (2019), and *Society for Leukocyte Biology* (2019)

VOLUNTEERING

- Engaged in science story-telling 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)