Sravanti Uppaluri

CURRENT POSITION

Assistant Professor
School of Liberal Studies +91-9686395660
Azim Premji Univeristy
Bangalore, India
sravanti.uppaluri@apu.edu.in

EDUCATION

Max Planck Institute for Dynamics and Self-Organization, Göttingen, Germany

Ph.D., Physics of Biological and Complex Systems, 2008-2011

- Thesis: *Unicellular Parasite Motility: A Quantitative Perspective*
- Advisor: Prof. Thomas Pfohl

University of Toronto, Toronto, ON, Canada

M.S., Biomedical Engineering, 2003-2005

- Thesis: *Simulation and Implementation of a Genetic Non-inverting Amplifier*
- Advisor: Prof. Stephen Davies

McMaster University, Hamilton, ON, Canada

B.Sc., Life Science, 1998-2002

- *With honours*

EMPLOYMENT

Assistant Professor, Bangalore, India 2016-Present
School of Liberal Studies, Azim Premji University
Research Interest: Biophysics and Developmental Biology
Program Design, Curriculum development and Instruction for Undergraduate Program

Postdoctoral Fellow, Princeton, USA 2012-2015
Soft Living Matter Group, Princeton University
Research Interests:
Biophysical mechanisms of size and growth control in *C elegans*
Mechanisms of Intracellular organization
Eco-evolutionary dynamics of two species systems
Mentor: Undergraduate thesis students

Collaborations Manager, Bangalore, India 2005-2007
Dr. Reddy's Laboratories, Aurigene Discovery Technologies Ltd.,
Headed project management team for company-wide programs
Played a key role in resource allocation, budgeting, and project reporting
Presented technical and business aspects of projects to current and prospective clients

Assistant Scientist, Orangeville, Canada 2000
Burnside Environmental
Collected and compiled data from government and private agencies
Assisted in establishing groundwater and surface water monitoring network

Research Assistant, Hamilton, Canada 2000
Psychology Department, McMaster University,
Researched the effect on visual perception in infants born with cataracts
Recruited subjects for testing under challenging circumstances

Resource Centre Designer, Waterloo, Canada 1999
Alzheimer Society of Kitchener Waterloo
Educated students and interested individuals regarding Alzheimer Disease
Interacted with and counselled caregivers as well as individuals with Alzheimer Disease

Awards and Distinction

- Max Planck Doctoral Fellowship 2007-2011
- Travel award of the GGNB 2010
- Performance excellence award (Aurigene Discovery) 2007
- University of Toronto Graduate Fellowship 2003-2005
- Graduated with Dean's Honour from Undergraduate Studies 2002
- McMaster University Entrance scholarship 1998
- University of Western Ontario Entrance scholarship (declined) 1998
- Graduated with distinction from high school 1998

Research Interests

Biophysics and Quantitative Biology: Cellular organization, Growth and size control, Developmental biology, Motility and diffusion patterns, Collective cell behaviour, Cytoskeletal dynamics

Developmental and Systems Biology: Evolutionary and developmental biology, Memory and decision making, Modelling biological systems, Host-pathogen interactions, Genetic circuits, Gene regulation

Soft Condensed Matter Physics: Microfluidics, Rheology of soft and biological matter, Protein assembly, Biopolymer dynamics

Techniques: Molecular biology techniques (*C. elegans*, hydra, planaria, trypanosomes, yeast, *E.coli*), Optical Microscopy (confocal, fluorescence), Soft and photo-lithography, Microfluidic design and construction (bioMEMS), Image processing, Optical trapping and manipulation of single cells

Teaching, Mentoring, Outreach

- Developed curriculum for courses at different levels ranging from school children to advanced graduate level courses
- Teaching experience in undergraduate biology, biochemistry, calculus, and lab-based courses
- Facilitated problem based learning programs
- Generate excitement about science and raise awareness of opportunities in science careers to under-privileged students
- Designed hands-on learning activities in different areas of science
- Offer workshops on communication, scientific integrity, proposal writing etc.
- Extensive experience in mentoring undergraduate students

TEACHING

Azim Premji University 2016-Present
Course design and instruction: Introductory biology, Molecular Biology, Biochemistry, Biophysics, Cell and developmental biology, Advanced Writing
Mentoring honours thesis project students

Princeton University 2012-2015
Mentor Undergraduate Senior Theses

Max Planck Institute for Dynamics and Self Organization 2009 & 2010
Graduate level Course Design and Instructor - Microfluidic methods

University of Göttingen 2009
Biochemistry for Medical Students- Lab course

University of Toronto 2003-2004
Teaching Assistant - Calculus I
Da Vinci Engineering Program Course Design and Instructor

McMaster University 2001
Group Facilitator - Problem Based Learning course
Teaching Assistant - Calculus I

OUTREACH

Teacher Training Workshop **Bangalore, India** 2016
Desgin and demonstrate lab based learning modules for midlle school teachers
Science Day **Bangalore, India** 2016
Desgin activity based learning setup for school children
Trenton Outreach - **Princeton, NJ** 2012-2015
Worm biology, genetic engineering, microfluidics, microscopy
Nanodays - **Princeton, NJ** 2014
Phase transitions, behaviour in biology, microscopy
Girls Days - **Göttingen, Germany** 2008-2011
Granular matter, soft matter physics, biophysics

PUBLICATIONS

Journals

Shivers J*, **Uppaluri S**, Brangwynne CP, Microfluidic immobilization and subcellular imaging of developing *C*aenorhabditis elegans,Microfluidics and Nanofluidics 21 (9), 149, 2017. *Work with Undergraduate Mentee

Thutupalli S*,**Uppaluri S***, Constable G, Levin S, Stone H, Tarnita C, Brangwynne CP, Farming and Public Goods Production in *C. elegans*, PNAS , February 2017 *Equal contribution

Uppaluri S, Weber SC, and Brangwynne CP, Hierarchical size scaling during multicellular growth and development, Cell Reports, 345(17), 2016.

Uppaluri S, Brangwynne CP. A size threshold governs *Caenorhabditis elegans* developmental progression. Proceedings of the Royal Society B. 282: 20151283, 2015.

Gilpin W*, **Uppaluri S**, Brangwynne CP. Worms under pressure: bulk mechanical properties of *C.* elegans are independent of the cuticle. Biophysical Journal. 108(8):1887- 98. Apr 21, 2015. *Work with Undergraduate Mentee

Hochstetter A, Stellamanns E, Deshpande S, **Uppaluri S**, Engstler M, Pfohl T, Microfluidics-based single cell analysis reveals drug-dependent motility changes in trypanosomes. Lab on a Chip, 2015. *In press*

Stellamanns E, **Uppaluri S**, Hochstetter A, Heddergott N, Engstler M, Pfohl T. "Optical trapping reveals propulsion forces, power generation and motility efficiency of the unicellular parasites *Trypanosoma brucei brucei*". Scientific Reports 4(6515), Oct 1, 2014.

Heddergott N, Krüger N, Wei A, Stellamanns E, **Uppaluri S**, Pfohl T, Engstler M. "Trypanosome Motion Represents an Adaptation to the Crowded Environment of the Vertebrate Bloodstream". PLoS Pathogens 8(11): e1003023, 2012.

Uppaluri S, Heddergott N, Stellamanns E, Herminghaus S, Engstler M, Pfohl T. "Flow loading induces oscillatory trajectories in bloodstream parasites". Biophysical Journal. 103(6):1162-9 Sep 19, 2012.

Uppaluri S, Nagler J, Stellamanns E, Heddergott N, Herminghaus S, Engstler M, Pfohl T. "Impact of microscopic motility on the swimming behaviour of parasites: stiffer trypanosomes are more directional". PLoS Computational Biology, 7(6): e1002058, 2011. Featured article

Zaburdaev V, **Uppaluri S**, Friedrich R, Engstler M, Pfohl T, Stark H,"Langevin dynamics deciphers the motility pattern of swimming parasites". Physical Review Letters, vol. 106, no. 20, p. 208103, May 2011.

Publications

Book Chapter

Engstler M, Heddergott N, Krüger T, Stellamanns E, **Uppaluri S**, Pfohl T. African Trypanosomes Are A Model System For Functional Analysis Of Microbial Motility in Nature Inspired Fluid Mechanics, edited by C.Tropea and H Bleckmann, Notes on Numerical Fluid Mechanics and Multidisciplinary Design (NNFM) 119, 43-61, 2012.

Professional activities

Peer Reviewing

Manuscripts in Lab on Chip, PLoS One

Presentations

EMBO Size and Shape - Bangalore, India 2018
Poster: Sizing up memory in Planaria

Asian Association for Biology Education - Goa, India 2016
Talk: Case studies on teaching through interdisciplinary research in regenerative medicine and developmental biology using model organisms

India - Behaviour, Ecology and Evolution (I-BEE) - Corbett, India 2016
Talk: Bacteria farming enhances *C. elegans* population growth

Indian Institute of Science - Bangalore, India 2015
Invited Talk: Sizing up worm growth

Jawaharlal Nehru Centre for Advanced Scientific Research - Bangalore, India 2015
Invited Talk: Sizing up worm growth

C.elegans International Meeting - Los Angeles, USA 2015
Poster: Nucleolar size scaling in multicellular growth and development
Session Poster Judge: "Development - Morphogenesis"

Mid-Atlantic Society for Developmental - Princeton, USA 2015
Session Chair: "Mechanisms of Morphogenesis"

American Society for Cell Biology -Philadelphia, USA 2014
Poster: "Nucleolar size scaling through *C.elegans* growth and development "

Cedar Crest College - Allentown, USA 2014
Invited Talk: "The importance of locomotion and growth: worms to parasites"

Ashoka University - New Delhi, India 2014
Invited Talk: "Using analogies in Science"

American Society for Cell Biology - New Orleans, USA 2013
Poster: "Nucleolar Function in Developing *C.elegans* larvae"

Biophysical Society Meeting - Philadelphia, USA 2013
Poster: "Nucleolar Assembly, Cell Growth, and Size Scaling"

DPG Frühjahrstagung - Dresden, Germany 2011
Talk: "Single cell motility in flow: how parasites invade tissue"

Pattern Formation and Transport in Complex Systems – Saarbrücken, Germany 2011
Invited talk: "Unicellular parasite motility"

Biophysical Society Meeting - San Francisco, USA 2010
Talk: "Impact of microscopic motility schemes on the overall behavior of parasites"

DPG Frühjahrstagung - Regensburg, Germany 2010
Talk: "Impact of microscopic motility on overall swimming behaviour of parasites"
Poster: "Mechanisms of Parasitic Cell Motility in Blood Flow and Possible Impact on Host Infection"

DPG Frühjahrstagung - Dresden, Germany 2009
Talk: "Understanding parasite motility" Poster: "Cell motility in blood flow"

Dynamics Days Europe - Göttingen, Germany 2009
Poster: "Single cell motility in tunable environments"

Synthetic Biology 1.0. – Cambridge, Massachusetts Institute of Technology 2004
Poster: "Genetic Circuit Engineering"