

RANJINI BHATTACHARYA

Khorana Scholar, Society of Mathematical Biology Member



RESEARCH EXPERIENCE

Interpreting the Secretome Mediated Dynamics in TNBC: A Mathematical Approach

PI: Dr. Anindita Chakrabarty and Dr. Sudeepto Bhattacharya
Shiv Nadar University, India

Studying the dual role of therapy-induced senescence in Triple-Negative Breast Cancer progression and resistance using experimentation and modeling.

Understanding the Evolutionary Games in NSCLC Microenvironment

PI: Dr. David Basanta and Dr. Andriy Marusyk
Moffitt Cancer Center, Tampa, FL, USA

Studying the interactions between sensitive, resistant, and producer cells in Non-Small Cell Lung Cancer microenvironment using a game-theoretic model.

An Algae- Bacterium Consortium for Detection and Degradation of Estrogen Mimicking Compounds

PI: Dr. Rohini Garg and Dr. Richa Priyadarshini
Shiv Nadar University, India

Using synthetic biology to build an algae-bacterium consortium for detecting EMCs in water and expressing laccase enzyme for their degradation.

Tracking SARS CoV-2 Heterogeneity

PI: Dr. David Basanta
Moffitt Cancer Center, remotely from India

Understanding and modeling the effect of patient and viral genome level heterogeneity in the evolution of COVID-19.

Identification of the mode of action of YM155 in TNBC: A Transcriptomic Approach to Drug Resistance

PI: Dr Anindita Chakrabarty [*Shiv Nadar University, India*]
Using a network-based approach to identify the regulatory pathways implicated in resistance to the drug YM155.

Role of Adaptive Therapy in Reducing Intratumoral Heterogeneity

PI: Dr Mohit Kumar Jolly [*Indian Institute of Science, India*]
Using clinical data to validate adaptive therapy models and predict novel therapeutic regimens for prostate cancer.

INTEREST AREAS

Cancer Biology; Immunology; Systems Biology, Mathematical Biology; Computational Biology; Genetic Circuits; Genome Engineering; Network Theory; Game Theory; Complex Systems

EXTRA-CURRICULAR

Founder and Core Member, Nature Sentinels (2018-20)
Animal Rescue Volunteer; Dance (Bharatanatyam, Ballet, Jazz)
Teaching Volunteer; Member of the University Queer Collective
Member of U-17 Girls Football Team in Subroto Cup Tournament

EDUCATION



B.Sc. (Research) – Biotechnology
[July 2017 – May 2021] Minor- Physics
Shiv Nadar University, Greater Noida, India

CERTIFICATIONS



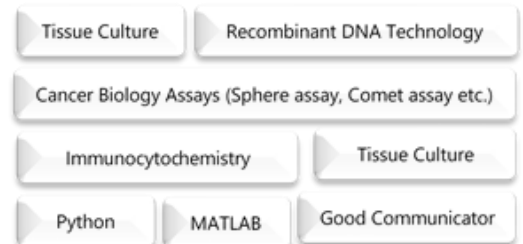
- ❖ CRISPR
- ❖ Introduction to Genetics and Evolution
- ❖ Introduction to Systems Biology
- ❖ Mathematical Biology
- ❖ Machine Learning with Python and R
- ❖ Data Visualization with MATLAB

ACHIEVEMENTS



- ❖ Silver Medal in iGEM 2019
- ❖ Khorana Scholar, 2019
- ❖ Recipient of Dean's List Felicitation in Monsoon 2018, 2019 and Spring 2020
- ❖ First Prize at Genethics, IIT Delhi
- ❖ First Prize in All India iGEM Meet, IISER Bhopal

SKILLS



CONFERENCE



- ❖ Poster Presentation at eSMB 2020
- ❖ Poster Presentation at Translational Medical Oncology, AIIMS Delhi, 2020
- ❖ Talk and Poster Presentation at All India iGEM Meet, IISER Bhopal, 2019 (First Prize)
- ❖ Presentation at Student Research Convention, IIT Kanpur, 2019
- ❖ Poster Presentation at International Conference for Multiscale Simulation and Mathematical Modelling, JNU, 2018
- ❖ Presentation on 'India and its Pollution Woes', IIT Roorkee, 2018

PUBLICATIONS



- ❖ Bhattacharya, R., Chakrabarty, A. "Senescence-Induced Chemoresistance in Breast Cancer: An Evolutionary Biologist's Perspective" (2020), *Frontiers of Oncology* (In communication)
- ❖ Bhattacharya, R., Vander Velde, R., Marusyk, V., Desai, B., Kaznatcheev, A., Marusyk, A., Basanta, D. "Understanding the Evolutionary Games in NSCLC Microenvironment" *bioRxiv* (2020)