

Expert Talk on “Bacterial resilience from single cell to colony scale using Mathematical Models”

Date: 13th January 2023

Venue: I Blok Auditorium, MRU, Faridabad

Time: 01:00 pm

Speaker: Dr. Garima Rani, Human Frontier Sciences Program (HFSP) Cross-Disciplinary Fellow, Department of Physics & Materials Science, Université du Luxembourg, Luxembourg



MANAV RACHNA UNIVERSITY
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**School of Applied Sciences
Manav Rachna University**

presents

Research Seminar
on

**BACTERIAL RESILIENCE
FROM SINGLE CELL TO
COLONY SCALE USING
MATHEMATICAL MODELS**

KEY SPEAKER

Dr. Garima Rani

Ph.D. IMSc, Chennai
Human Frontier Sciences Program
(HFSP) Cross-Disciplinary Fellow

**Department of
Physics & Materials Science**



January 13 | 11:00 AM | I Block Audi



A research seminar was organized by the Department of Sciences (Physics Program) to engage the students and research community at Manav Rachna University in the said field and open possibilities for future research collaborations.

Ms. Moditma, Assistant Professor, delivered a welcome address and introduced the speaker, Dr. Garima Rani to the audience. Prof. Pradeep K. Varshney, Dean, School of Sciences, welcomed the speaker by presenting a sapling as a token of respect and affection. Dr. Garima shared her knowledge on bacterial cells by presenting a journey of her research work beginning from her Master's thesis. A brief introduction to bacteria was given, suggesting their dizzying ability to colonize even the most hostile of habitats and serious public health challenges in light of increased display of antibiotic resistance by them. To counter this, the need for developing newer antimicrobial agents was discussed, beginning with an understanding of the physical principles underlying bacterial resilience. The mechanical stability of the bacterial cell from the viewpoint of elasticity theory was first discussed. Modelling of action of new age anti-microbial polymers on bacteria using molecular dynamics simulations and experiments was then presented. A glimpse of the use of machine learning methods for image analysis and system training was also given. Thus the speaker presented an overview of new dimensions in the study of bacterial resilience by using a combination of theory, simulations and experiments, to keep the audience from diverse backgrounds engaged during the talk. Several questions were asked during and after the talk, which were humbly taken by the speaker. The seminar saw an interesting exchange of knowledge between the speaker and the faculty members, opening up possibilities for future research collaborations