ENS – IISER Network / BIOSANTEXC Project

Internship Proposal Form
France to India

(Discipline/Field name)

Internship title: Cellular Mechanosensing and its regulation of Golgi Organisation

Keywords related with the subject (minimum 3):

Name of the IISER: IISER,Pune

Name of the laboratory(ies): Cell Adhesion Lab

Name of the internship supervisor(s): Dr. Nagaraj Balasubramanian

Email(s): adhesion.lab@gmail.com

Prerequisites for the internship: Basic cell biology lab experience will be useful
Requested level: If you have any tissue culture experience that will be a bonus.

Foreseen internship dates:

Internship type (refer to page 1):
☒ **3–6-month internship** ☐ Research stays ☐ 6+6 months internship
(ideally 6 months)

For 3 to 6 months internships, please indicate the desired duration: ideally 6 months.

For 6+6 months internships, please also fill in:

- **Name of the internship co-supervisor:**
- **Name of the co-supervisor's laboratory/entity:**
- **Email of the co-supervisor:**

BIOSANTEXC is a project co-funded by the French Ministry of Europe and Foreign Affairs (Ministère de l'Europe et des Affaires Etrangères).

Internship proposal (description and expected training outcomes / half page min, 1 page max):

Integrin-mediated cell-matrix adhesion is known to regulate cell growth and survival, which is deregulated in transformed cancer cells that acquire the ability to grow without adhesion, becoming anchorage-independent. Previous studies from the lab have established cell-matrix adhesion to be a vital regulator of Golgi organization and function. Studies have also shown that the Golgi organization is altered in cancer cells, which could affect cell-surface protein glycosylation, intracellular trafficking kinetics, and cargo sorting. This project aims to understand importance of the extracellular matrix (ECM) stiffness, known to be sensed by integrin-mediated adhesion, has in regulating the Golgi organization and function in normal and cancer cells. We also aim to test the role differentially expressed genes, identified in breast cancer cells by an *in silico* screen from the lab, has in regulating regulating Golgi organisation in response to changing matrix stiffness.

Along with basic tissue culture, the project will involve learning transfection, immunostaining of cells, making of 2D polyacrylamide gels of varying stiffness coated will collagen. It would also entail learning some advanced confocal microscopy, image processing and analysis.

Internship conditions:

- hostel accommodation (subject to availability)
- stipend towards living costs on campus