

ICTS Skype Seminar

Title : Effect of extra-cellular nutrient environment and intra-cellular biochemical conditions on the chemotactic performance of E. coli

Speaker : Subrata Dev, S N Bose National Centre for Basic Sciences, Kolkata

Date : Tuesday, January 8, 2019

Time : 12:15 PM

Venue : Amal Raychaudhuri Meeting Room, ICTS Campus, Bangalore

Abstract : Chemotaxis is the directed motion of organisms in response to a chemical gradient. E.coli chemotaxis is one of the most well-studied systems in biology. The motion of an E. coli consists of run-and-tumble modes. We are interested in two broad questions. The first one is related to chemotactic performance of an E. coli cell and the second one is related to its run-and-tumble motion.

We identify a set of well-defined response functions which characterize different aspects of chemotactic performance and investigate how these different response functions depend on the external environment and the internal biochemical pathway of the E. coli cell and at what conditions the chemotactic performance becomes most efficient. The second question deals with a simple run-and-tumble random walk whose switching frequencies between run and tumble mode depend on a stochastic signal. We are interested in characterizing the effect of signaling noise on the longtime behavior of the random walker.