

# ***INSTITUTE COLLOQUIUM***

***(Through Webinar)***

**Title ::** Mechanics of ciliary beating  
and phototaxis

**Speaker :** Dr. Prerna Sharma,  
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30<sup>th</sup> JULY,  
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4pm onward

**Abstract :** Ciliary beating is the key to our existence and survival. The spontaneous shape oscillations of these microns sized filaments propel micro-swimmers like sperm and algae in fluids and help our lungs clear debris. There has been an extensive debate on the impact of hydrodynamic friction due to the fluid on ciliary beat. In this context, I will present our recent simultaneous measurements of waveform and flow field of isolated (cell-free) and reactivated cilia purified from single celled algae *Chlamydomonas reinhardtii*. Apart from the conventional waveform measurement, which only allows us to understand the passive elastic forces, the flow field enables us to directly measure the external viscous drag force acting on the cilia. We show that this simultaneous measurement provides vital information on ciliary mechanisms that cannot be obtained from waveform measurements alone. The second part of the talk will discuss phototaxis which is directed motion of *Chlamydomonas* cells towards blue light whose origin lies in coordination of beating among the two cilia present on the cell surface. Specifically, I will highlight the collective effect of cell number density dependent phototaxis.

Webinar link

YouTube link

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