**Your full name: Abhipsha Dey**

**Title of the project: Assessment of the teratogenic potential of microplastic on sturgeon embryo development.**

Sturgeons (Acipenseriids), the ancient giants appeared in the fossil records around 200 million years ago which makes them one of the oldest living creature. Presently, sturgeons are categorized as the world’s most threatened group of species with almost two-thirds of the population being critically endangered (available online: https://www.iucnredlist.org/ (accessed on 16 January 2025), and xenobiotics in water pollution is one of the most important cause behind their declining population. Moreover, sturgeon embryos are directly exposed to aquatic contaminants during organogenesis which influences their developmental trajectory.

Bisphenol A (BPA) is an endocrine-disrupting chemical commonly used in the manufacture of polycarbonate plastics, epoxy resins, and thermal paper. Use of BPA has been restricted and prohibited in consumer products which resulted in the development of a series of substitutes such as Bisphenol S (BPS) and Bisphenol F (BPF). Their occurrence in the aquatic environment is ubiquitous and their adverse effects on the aquatic organisms are global concern. Their adverse effects on aquatic organisms are similar to or even stronger than BPA. Furthermore, the toxic effects of BPA are more on organisms in the larval period than in the adult period. Several studies have reported the deleterious effect of BPA on juvelniles (~ 1 year) and larvae ( older than 4 days) of Acipenser gueldenstaedtii. However, to date, there is a lack of studies on the potential effect of BPS and BPF on sturgeons, particularly during the very early stage of development (blasula and gastrula). Thus, we aim to understand the acute toxicity of BPS and BPF on sturgeon embryo development and the modulation of their toxicity at different temperatures. We will use sterlet (*Acipenser ruthenus*) as a model for projecting the threats on sturgeon population.

In this study, we will expose sterlet embryos to different environmentally relevant concentrations of BPS and BPF at different temperatures (10°C, 16°C, 18°C). One group of embryos will be exposed during blastulation (2-24 hpf) and other group will be exposed during gastrulation (24-48 hpf). We will perform neutral and alkaline comet assay on sterlet embryos to check the DNA damage potential of those chemicals and the effect of temperature on them. This experiment will be performed during the spring spawning season. Additionally, we will collect the embryos at different stages of development and store them for further analysis. During the summer school project, we will analyze the comet assay results and perform qPCR on sterlet embryos at different developmental stages. Additionally, we will perform histology on 10dpf old embryos to assess the effect of BPS and BPF on sterlet embryos at the tissue level.