

What stirs within the sturgeon?

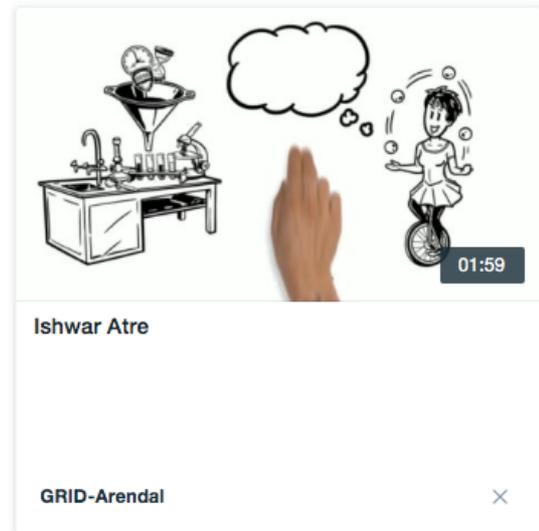
By Ishwar Atre

The Darwinian theory of survival of the fittest seems fleeting when 21 out of 27 species of the sturgeon (Acipenseridae) family, having existed for about 245 million years, suddenly becomes one of the most endangered species in less than a century with significant decrease especially in past few decades.

Famous for its caviar the once abundant sturgeon is now on the verge of extinction, not so much due to the natural factors as because of human exploitation and overfishing. Sturgeon are not only environmentally significant but also have a high economic value. However, its unsynchronized and late maturation makes farming it more taxing and time consuming and leads to high production costs.

One of the objectives of IMPRESS is to develop techniques for a controlled synchronization of gonadal sex differentiation and puberty by studying sturgeon's reproductive and neural endocrinology, and the genes responsible for sexual maturation in pituitary and gonads.

Better understanding of these mechanisms helps to design new molecular methods to better control and synchronize sexual maturation. We use both molecular and computational tools to understand the structure and mechanism of these gonadotropins and it is influenced by various neurotransmitters and neuropeptides. We also work on understanding how Vitellogenin, a protein known to be responsible for the ovular maturation in the female of the species functions.



[Simplishow video - https://vimeo.com/271434076](https://vimeo.com/271434076)

Vitellogenin is a female specific protein responsible for the formation of yolk proteins that are fundamental units of ovular development and can be used as a key regulator of this development. Being one of the few still surviving ancient species also makes sturgeon a common ancestor to the vertebrates of today. Therefore, these studies will not be limited to just the sturgeon but might even help gain similar results in other species.

Using several genetic and phylogenetic techniques will help retrace the evolutionary path of the sturgeon family. Our efforts are to identify and develop receptor models to regulate follicular development in a controlled and efficient manner to improve methods currently used in the aquaculture industry.

It is imperative to both environmentally and economically understand the underlying machinery of sturgeon hormones for the development of the industry and conservation of the species.