

Working for better reproduction By Benjamin Böhm

Sturgeons are in trouble all over the world. The need to understand the biology, behaviour and threats of this endangered ancient fish, which matures late in life, is enormously important to prevent the extinction of this species.

My part in the IMPRESS project focuses on the improvement of reproduction. To do this I am focussing on the identification of the hormonal regulation of the gonads of young and mature sturgeons to detect differences. Our aim here is to find ways to promote the production of healthy juvenile fish which are vital for the conditions in nature to secure wild populations and strengthen future generations. Also, we will update the fundamental knowledge of sturgeon biology.

My concrete work is to identify hormones and their required concentrations necessary to induce sexual maturation and spawning or spermiation. For this goal, our laboratory recently facilitated recombinant sturgeon luteinizing hormone (r-stLH) and follicle stimulating hormone (r-stFSH), which are main naturally occurring biomolecules needed in fish to develop sexual maturity. The availability of these hormones enables us to precisely apply defined quantities of these gonadotropins.



[Simpleshow video -
https://vimeo.com/271433793](https://vimeo.com/271433793)

We will use it on live fish as well as in laboratory pilot studies, using only tissues. This biotechnological produced analog to its natural occurring counterpart could also be used as a compound for standardized spawning induction for fish farmers. The production, quantities required and quality standards could be calibrated and thus be much more reliable than commonly used pituitary extracts harvested from other fish. This will give us a precise insight into how hormones are regulated and could lead to other projects to improve reproduction techniques in sturgeon.

To achieve our targets, we are working closely with a Russian sturgeon (*Acipenser gueldenstaedtii*) farm here in Israel. They provide not only the specimens but also facilities and the technical requirements for our experimental setups. This partner enables us to do continuous monitoring of selected groups of fish all year round. We also collaborated with a sturgeon farm in the Czech Republic where we will be able to replicate our completed experiments on the sterlet (*Acipenser ruthenus*). To be able to benefit from up to date RNA sequencing, we are closely cooperating with our partner from the Netherlands to detect gene expression level variations in reproduction related tissues, namely gonads, brain and pituitary of sturgeons in different developmental stages.

For me personally, a primary reason to join this project was to gain the best possible academic education in an international field of fish biologists. The interdisciplinary work and training schools offers students a broad insight into different types of research and therefore promotes personal and professional growth.