

***In vitro* genetic banks: consolidated technologies and emerging challenges**

Danilo Pedro Streit Jr., Romulo Batista Rodrigues, Jhony Lisboa Benato, Thales França, Eduardo Nicoleti, Gregorio Valdivia, Thales Flores, Leonardo Alencar, Marco Rotta

Aquam Research Group, Animal Science Research Program and Veterinary Science Research Program of Federal University of Rio Grande do Sul (UFRGS), Porto Alegre, Brazil

Resumo

Genetic resource conservation strategies are divided into *in situ* and *ex situ*. Within the *ex situ* strategy, animals can be kept *in vivo* or *in vitro*. The *in vitro* method, through a germplasm bank, is considered the most economical of all strategies, since it preserves a high volume of genetic resources in a reduced space.

The mastery of the cryopreservation technique based on Polgue's experiments published in 1949, allowed the development of germplasm banks that over the years have been consolidated for use in animal production and in the conservation of genetic resources of different species.

In fish, the use of germplasm banks in animal production is restricted to a few species, especially salmon. It is no coincidence that fish sperm cryopreservation protocols evolved from just three species: salmon, carp and sturgeon.

In Brazil, the use of germplasm banks for fish production is still not used regularly. In early 2010, a genetic improvement program was created, but unfortunately discontinued, for two native species, *Colossoma macropomum* and *Pseudoplatystoma reticulatum*. As published by Streit et al. in 2015, the Improvement Program for these species was based on a germplasm bank.

Across the world, numerous countries maintain germplasm banks for aquatic resources, focusing on species with potential for aquaculture. Examples include Norway, Canada and the United States. In Brazil, CENARGEN is the official depository for receiving samples and keeping them stored. CENARGEN currently has samples of 0.27% of the national ichthyofauna, 95% of which is *C. macropomum*, given its importance for national aquaculture. On the other hand, it is necessary to develop strategies to increase the number of species of the Brazilian mega-ichthyofauna registered in CENARGEN. It is now understood that the genetic reserve strategy, through germplasm banks, is fundamental to a nation's food security.

Palavras-chave: Germplasm banks, *Colossoma macropomum*, *ex situ*, sperm