Early, rapid sex-linked markers for *Colossoma macropomum*, the Amazon Tambaqui.

The development of genetic markers for genomic screening is essential for addressing more effective breeding programs in aquaculture. Many key traits are associated with sex, and therefore sex determination is central to many selective breeding programs.

The Amazon Tambaqui, Colossoma macroponum, is an important freshwater fish for aquaculture in South America. The species displays a clear sex dimorphism in growth performance, with females reaching larger sizes at harvest. Importantly, differences in body weight between genders are not observed during the grow-out period when animals are usually phenotyped for selective breeding.

Researchers at Embrapa Pesca e Aquicultura, Embrapa Amazonia Ocidental, Brazil and the University of Stirling, Scotland have developed a PACE-validated sex marker panel for rapid, simple, and cost-effective gender monitoring to boost genetic gains in Tambaqui breeding programs.

A genetic linkage map was generated by DNA sequencing from 248 individuals sampled from two F1 families. Sex-linked markers were identified and validated by the fluorescent based, allele specific PCR technology PACE. The four most informative sex-linked markers were validated on another 206 sexed individuals, demonstrating an accuracy in predicting sex ranging from 90 to 96.7%. The PACE-validated sex marker panel can be used as a powerful tool for gender monitoring during the grow-out stage within selective breeding programs and improve selection accuracy and genetic gains.

Reference:

Varela, Eduardo Sousa, et al. "A high-density linkage map and sex-linked markers for the Amazon Tambaqui Colossoma macropomum." BMC genomics 22.1 (2021): 1-10.