

# Small number of genes have big impact on fish egg quality

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Researchers discover that a small suite of genes appears to be responsible for egg quality in fish, like this 4-year-old domesticated striped bass female from the NC State University Pamlico Aquaculture Field Laboratory in Aurora, N.C. Photo courtesy of Benjamin Reading.

(Phys.org) —NC State researchers have taken a big step toward solving a puzzle that has long vexed vertebrates – predicting egg quality, or the viability of embryos in eggs.

Using [gene expression data](#) and computer modeling, the researchers examined farmed striped bass (*Morone saxatilis*) and showed that the coordinated interactions of less than 2 percent of the fish's expressed genes – a suite of 233 ovary genes – explain more than 90 percent of embryo initial survival.

The findings may help farmers select fish that have the highest probability of producing large numbers of viable eggs, says Benjamin Reading, an NC State fisheries researcher and co-author of a paper describing the research, published this week in *PLOS One*. Additionally, fisheries managers may be able to better evaluate the percentage of non-farmed females likely to produce viable eggs and subsequently modify management strategies.

Poor [egg quality](#) is one of the limiting factors of farming fish, also known as aquaculture. Knowing more about the genetic processes behind embryo development and harnessing them could not only spur aquaculture, but could also provide clues to [embryo development](#) in other vertebrates – including, perhaps, humans.

**More information:** Chapman RW, Reading BJ, Sullivan CV (2014) "Ovary Transcriptome Profiling via Artificial Intelligence Reveals a Transcriptomic Fingerprint Predicting Egg Quality in Striped Bass, *Morone saxatilis*." *PLoS ONE* 9(5): e96818. [DOI: 10.1371/journal.pone.0096818](#)

Provided by North Carolina State University

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