



Pot-bellied seahorse  
(*Hippocampus abdominalis*)

it is the result of a separate evolutionary experiment lasting more than 50 million years. “We were interested in understanding just how seahorse pregnancy takes place,” says Wilson, an evolutionary biologist whose research

focuses on how and why animals reproduce.

Wilson and his colleagues tracked gene activity in the brood pouch of pot-bellied seahorses (*Hippocampus abdominalis*) over the duration of pregnancy.



**Biology Professor  
Tony Wilson and  
International**

## **Research Team Unravel the Genetic Basis of Male Pregnancy**

*The study of male pregnancy in seahorses has broad implications for understanding pregnancy in all animals.*

Seahorses have a unique mode of reproduction: male pregnancy, which closely resembles the pregnancy of female mammals, including humans. Biology Professor **TONY WILSON** and an international team of researchers have taken a major step toward answering the question of whether the structures of complex reproductive systems, like the seahorse’s, reflect a common genetic architecture. The team, which included researchers from City University of New York (CUNY), the University of Zurich in Switzerland, and the University of Sydney in Australia, published their findings in *Molecular Biology and Evolution*.

Male seahorses carry offspring in specialized brooding organs, providing protection, gas exchange, osmoregulation, and nutrients to offspring during their development. While the male brood pouch is functionally equivalent to the mammalian uterus,

They identified genetic changes associated with critical morphological and physiological processes in the male brood pouch, including tissue remodeling and embryo implantation, nutrient and waste transport, gas exchange, and immunological protection.

Systematic comparisons between the genes active in the male brood pouch during pregnancy and those responsible for other highly developed forms of internal reproduction in mammals, reptiles, and fishes revealed that many of the key genes are identical across species, a result that suggests the existence of a common evolutionary tool kit associated with internal reproduction.

Wilson and his team are currently studying the genetic regulation of reproduction in species with more rudimentary forms of male pregnancy. “The seahorse system offers an opportunity to study ‘evolution in action,’ and to identify specific genetic changes associated with the development of pregnancy in this group,” says Wilson.

—Ernesto Mora

Other members of the *Syngnathidae* family of fish that have the unique characteristic referred to as “male pregnancy” are the pipefish, and the weedy and leafy seadragon, below.

