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Scripps Scientists to be Honored with Prestigious International Biology Award

Researchers selected to receive Kowalevsky Medal for modernizing the science of fish-like invertebrate

The marine invertebrate amphioxus, or lancelet.

Linda and Nick Holland, marine biologists based at Scripps Institution of Oceanography at UC San Diego since 1987 and 1966, respectively, have been selected to receive one of the world's most prestigious awards in the field of evolutionary biology.

In March the husband-and-wife scientists will be awarded the Alexander Kowalevsky Medal by the 147-year-old Saint Petersburg Society of Naturalists (SPSN) in Russia.

The Kowalevsky Medal was first established in the 1910s, but due to many circumstances, including World War I and the Russian Revolution, the award was not given and sat dormant for nearly a century. SPSN resurrected the medal in 2001 and now bestows the award annually "for distinguished achievements" in evolutionary developmental biology and comparative zoology.

In addition to receiving the Kowalevsky Medal, Linda and Nick will be elected honorary SPSN members, receive an SPSN diploma, and present lectures during their March 13-17 trip to St. Petersburg.

The Hollands are being recognized for advancing and modernizing the science of amphioxus, a small, worm-like marine animal also known as a lancelet. Amphioxus appears fish-like, with a small tail fin and medial fins, and spends most of its time burrowed in sand with its snout extended for filter feeding.

Considered a key invertebrate in the evolutionary tree of life, the slowly evolving creature is one of the closest living invertebrate relatives of vertebrates after an evolutionary separation more than 520 million years ago. The animal serves as an intriguing comparison point for tracing how vertebrates have evolved and adapted.

Nick and Linda Holland have been awarded the Alexander Kowalevsky Medal for their research on the fish-like amphioxus.

Linda and Nick began focusing on amphioxus in the summer of 1988 with the first of regular amphioxus sample collecting trips off Tampa, Fla. (at the time there was only one other laboratory studying amphioxus in the world—today there are more than 30 due to the animal's intriguing value to evolutionary biology). Since those early days, the Hollands' work has rapidly advanced and modernized amphioxus biology, with achievements in understanding the animal's brain evolution, developmental biology, and vital genome sequencing data.

Alexander Kowalevsky, for whom the award is named, was a 19th century biologist best known for research on early embryo cell patterns. His pioneering research in evolutionary developmental biology greatly advanced science's view of how branches of the animal kingdom are separated.

"Since Kowalevsky did the very first study on amphioxus development—recognizing that its early development is invertebrate-like and its later development vertebrate-like, I think our receiving the Kowalevsky medal is quite fitting," said Linda Holland. "(Nick and I) are both surprised and gratified to have received the Kowalevsky Medal in recognition of what we have accomplished to bring evolutionary developmental biology of amphioxus into the modern era."

Pioneering amphioxus was rewarding, but not easy. Nick Holland fondly remembers that for the first decade of amphioxus work, the only convenient time and place to collect and spawn the animals was summer in Tampa and biologists came from all over the world to join them.

"In those early days of developmental evolutionary biology, there was an overabundance of pioneering work to be done, and everyone functioned independently without any worries about competition," said Nick. "We would live in memorably seedy motels and work in the labs of memorably generous friends at the University of South Florida. After collecting animals all

afternoon, we would eat dinner together at our favorite Greco-Italian restaurant and then go back to the lab to coax the animals to spawn. When they did, everyone worked until dawn, slept until noon, and then collected all over again.

“In spite of the heat, humidity, mosquitos, and sunburns, those were summers of exciting discoveries in the company of interested and interesting colleagues—in sum, a pleasure to think back upon.”

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