

Genome researchers come together to sequence 7,000 invertebrate animal species

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FIU marine scientist Heather Bracken-Grissom holds a spider crab during a research trip in Belize in 2012.

FIU biological sciences professors Heather Bracken-Grissom, Timothy Collins and Mauricio Rodriguez-Lanetty have been invited to join the Global Invertebrate Genomics Alliance (GIGA), an international consortium that promotes genomics research of invertebrate animal species.

Inspired by the Human Genome Project and Genome 10K project, which sequenced genomes from 10,000 [vertebrate animals](#), GIGA is setting out to sequence, assemble and annotate the genomes of 7,000 invertebrate species, with a particular focus on marine populations because of the unrivaled biodiversity in the oceans. A genome is the entirety of an organism's hereditary information and is encoded in its DNA or RNA.

"Traditionally, an individual investigator, or a small group of investigators, does the research in his or her lab needed to answer a question. A lot of fantastic science is done that way, but for some of these more complex questions, more thoughtful planning and a broader collaboration is needed," said Collins, chair of the Department of Biological Sciences. "There are people all over the globe working on invertebrate genomics and phylogenetics. By working together, we can develop tools and standards so we are confident in the quality of all the data collected in separate labs."

In addition to sequencing genomes, GIGA will develop tools to facilitate genomic research and encourage collaboration; develop standards to ensure data quality, comparability and integration; and coordinate sequencing efforts to avoid duplications and efficiently leverage resources. GIGA's efforts are being done to complement ongoing efforts to sequence vertebrates, insects and nematodes, or roundworms.

Invertebrates, or animals without backbones, make up more than 70 percent of the 1.9 million described [animal species](#) on Earth. They have long served as model organisms in research across diverse areas of biology, including sea urchins for developmental cell biology and cancer cell biology; mollusks for neurobiology research; fruit flies for genetics research; and nematode worms for cell line maturation, development and genetics.

"The invertebrates are a diverse and amazing group of organisms. Many are farmed or harvested for human consumption (lobsters, crabs, squid), synthetic drugs (sponges and sea squirts), biomedical tools and biomimetic materials (silk). Others have a negative implications as many are vectors of disease that affect human, livestock and plant health," said Bracken-Grissom, professor in the Marine Sciences Program. "Their genomes will likely provide a lot of interesting and unexpected discoveries for geneticists and general biologists and the public alike."

Provided by Florida International University

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