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Sea cucumbers and regeneration [1]

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 [2]

Sea cucumber, Holothuria glaberrima.

Sea cucumbers [3] are echinoderms commonly found in the coasts of Puerto Rico. Although they are called ìcucumbersî due to their morphology, they are not really plants, but animals. In Asia they are considered a delicacy, but in Puerto Rico they are not used as food. Instead, they are used by researchers to understand one of the biggest mysteries in biology: the process of regeneration [4]. Certain organisms, like echinoderms, have regenerative capacities, and can grow new organs from scratch even as adults. Other organisms, such as mammals, have very limited regenerative capacities. In the specific case of sea cucumbers, they can eviscerate [5] their digestive system and redevelop it anew. How does the sea cucumber regenerate its digestive system? Could we use the molecular cues that direct this process in sea cucumbers to help regenerate diseased organs in humans?

These are some of the questions of interest in the lab of **Dr. Jose Enrique García-Arrarás** [6] (University of Puerto Rico in Rio Piedras). Dr. Garcìa Arrar·s first became interested in these questions while teaching an undergraduate class were he used sea cucumbers collected from the local coast as a teaching tool. He then conducted a series of elegant cytological studies on the regeneration of sea cucumbers.

Recognizing the importance of molecular biology, the García-Arrarás lab then pioneered the use of molecular biology techniques to understand the process of regeneration in sea cucumbers. Today the lab uses microarray and bioinformatic approaches [4] to identify the genes required for

intestinal regeneration. Although the focus of the lab is in intestinal regeneration, they are also interested in the regeneration of the nervous system and recently received funds from the American Recovery and Reinvestment Act (ARRA) stimulus package for a study aimed at identifying the genes involved in nervous system regeneration. ARRA funds were very competitive and were awarded to studies that will accelerate the process of biomedical discoveries. These funds will help the lab accomplish their long-term goal: to understand how animals such as sea cucumbers have great regenerative capacities, while others, such as vertebrates, have only a limited capacity to regenerate certain tissues.

Besides research, **Dr. García-Arrarás** [6] has also trained many students in science, and his lab has housed international scholars from Colombia, Chile and Russia.

If you will like to know more about **Dr. García-Arrarás** [6] and his research visit his profile at CienciaPR [7].

Tags:

- José García-Arrarás [8]
- Neurobiologia [9]
- sea cucumber [10]

Categorías de Contenido:

- Biological and health sciences [11]

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