

Genome of saltwater creature could aid understanding of gene grouping

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The genetic code of a simple saltwater creature could help researchers learn more about how groups of genes function in humans and other species.

A study published this week in the journal *Nature* breaks down the genetic code of *Trichoplax*, a simple saltwater creature that one might find anywhere in the world, even in the common household aquarium.

"We're trying to identify, in the *Trichoplax*, genes that are also found in other animals - our genome and the fruit fly genome and so on," said study co-author Nicholas Putnam, an assistant professor of ecology and evolutionary biology at Rice University. Recognizing common genes among many species helps scientists figure out their lineage, as well as where they diverge.

What Putnam finds interesting about this saltwater creature is how common some elements of its genetic code are to other classes of life and how that kind of data might help scientists learn the ways groups of genes function.

Why *Trichoplax*? Sequencing a genome is "a big effort and a big investment, and so we have to choose carefully," Putnam said. "The motivation for choosing this animal was its phylogenetic position" – its relatively low place in the evolutionary chain.

Trichoplax is "a tiny little pancake of cells you can barely see without a

microscope," he said. "And they're extremely simple – about as simple as you can be – just a disc of cells that's two layers thick."

Still, humans share elements with the lowly beast that only become evident through charting its DNA. A gene index published as part of the Nature paper, titled "The *Trichoplax* Genome and the Nature of Placozoans," clearly shows many large collections of genes that group together on both the *Trichoplax* and human chromosomes.

The chart is very much a product of Putnam's work. Though his doctorate at the University of California at Berkeley is in physics, he found himself pulled into genomics for his computer skills, writing assembly code to make practical the analysis of a genetic sequence.

Putnam came to Rice to continue his search for the common roots of genetic similarities between wildly divergent creatures.

What purpose do these large, conserved groupings of genes serve? "Well, that's one of the main questions I'm going after now that I'm setting up my own lab," he said. "Is there a reason they're together? And if they get separated by a mutation, does that disrupt some mechanism of gene regulation, or cause some other problem for an organism?"

Or, he wondered, is our understanding of the process flawed? It's a big question, he acknowledged.

"But it's a very clear question. And I've decided to try to find the answer to that."

Source: Rice University

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