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Travel to the origins of the human being [1]

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By Daniel A. Colón-Ramos / Special for El Nuevo Día endi.com [2] Christmas is close and with it, my return to my country and the emotional visits to loved ones. During those visits, among food, domino games and drinks, generally arise two frequently asked questions: “Have you gained weight?” and “Tell me about what you are doing in California.” It is the second subject that makes me sweat, because these annual questions are asked with mischief and like it wasn’t asked the year before: “So, your mother says you are in California, dissecting worm brains. Explain me, I think I might need some of those medical advances you are making over there.” And right there starts my dilemma, and there is no valid defense. So this year I decided to go on the offense. I admit I spend my life thinking about nematodes,, little worms no bigger than the commas in this article. But I am not the only one: thousands of scientists world-wide dedicate their lives to understanding the biology of this unique organism, known to scientists as C. elegans. But it was not always like this. Everything started in the 1960’s, when South African Sydney Brenner decided that the most fascinating question in biology was how an organism went from one cell (in conception) to a multicellular organism with specialized tissues, like the nervous tissue. And he decided to use a simple model organism to answer that complex question. His logic was very clear: to determine what goes wrong in a disease, you have to decipher first how normal biology works. And to define how biology works in complex animals, we need to understand how that basic biology works in simple organism, like the nematode. And his logic was right. In the past five years, four biologists, Brenner included, have conquered the Nobel Prize in Physiology and Medicine for their work in nematodes. Those biologists have made surprising discoveries in nematodes, and those discoveries are relevant for human physiology. This is because evolution has conserved many of the genes that control basic processes of the animal biology, from worms

to humans. My research line with nematodes consists of studying how the brain develops. The human brain has over 100 billion neurons that connect with each other to form neural circuits. Those circuits allow us to receive sensory information, give way to behavior and they are modified when we learn. How the brain develops, how it changes with experience, how it stores memories and it gets sick are questions we don't understand yet. The nematode's brain is much more simple that the human brain. Instead of 100 billion cells, nematodes have 302 neurons. However, these 302 neurons allow the nematode to survive against predators, find food, reproduce, remember and even learn. By studying how C. elegans' brain functions and develops, I hope to contribute to understand how your brain, my distinguished reader, is capable of processing visual stimuli, in the form of letters in this article, which allows the formation of new knowledge about how a little worm help me understand you.

Links
[1] https://www.cienciapr.org/en/external-news/travel-origins-human-being?language=es [2] http://www.endi.com/XStatic/endi/template/nota.aspx?n=110018