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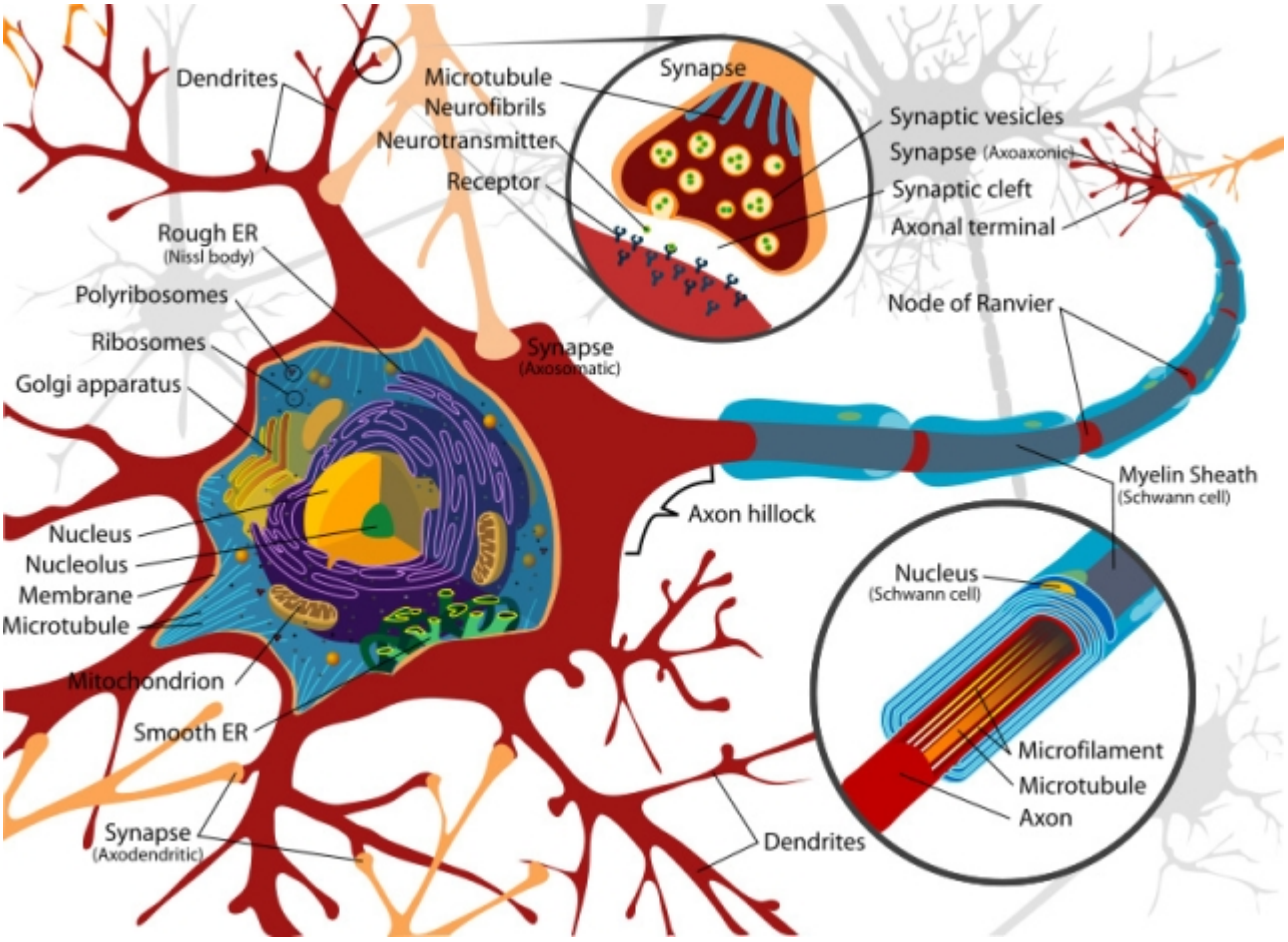
Development of the Neuronal Circuit [1]

Submitted by Marcos Lopez [2] on 1 August 2008 - 12:00am

 [2]



[3]

Neuron cell (click image to zoom)

Did you know that in average humans have approximately 100 billion neurons in the brain? Neurons are cells of the nervous system that respond to electric stimulus and process and transmit information. If you though that neurons only reside in the brain, you are wrong because they are found also in the spinal cord and the peripheral nerves. The complex area of science that study neurons, their development and pathology is ***neuroscience***.

Raised in the mountains of the beautiful town of Barranquitas, Puerto Rico [4], and now **professor of cellular biology** of **Yale University** [5], **Dr. Daniel Colón-Ramos** [6], studies the development events that direct the neuronal connectivity process. Neurons communicate throughout a process called synaptic transmission. This synaptic transmission, that is electrochemical discharges, pass trough some ramifications called synapses. As the computer cables connect to form circuits, the synapses are the connections that allow the neurons to form functional circuits. In the brains there are over 100 trillion of these connections (**see figure**). With whom the neurons connect determine all kinds of nervous responses, from memory to behavior.

In the human brain there are about 100 billion neurons that form over 100 trillion of these important connections. During development, these billion neurons form 100 trillion connections in a precise way. It is a mystery how, with several different options, a neuron knows with whom to connect. However, what are the events that occur to correctly form the circuits? What happens if some errors occur in this process? How this affects the behavior and memory? Specifically in this area of neuroscience is where **Dr. Colón-Ramos** works. Since the human brain is very complex, he uses a nematode(roundworm) called ***Caenorhabditis elegans*** *[7]* that only has about 302 neurons, to study these processes. In his last article published in ***Science*** *[8]*,**Dr. Colón-Ramos** demonstrated for the first time some novel molecular and cellular mechanisms able to regulate this process.

Since high school, **Dr. Colón-Ramos** always participated in scientific activities. When he was a senior at the **Colegio San Ignacio de Loyola** [9] in San Juan, PR, he represented PR in the **45th International Science and Engineering Fair (ISEF)** [10], in where he won the first prize in the team project category which allowed him to represent us in the ***Feria Científica del Cono Sur*** in Argentina. After graduating from high school, he got a scholarship to study in **Harvard** [11] in where he obtained a bachelor in biology. After this, he earned a Ph.D. in pharmacology and cancer biology from **Duke** [12]. After graduating, **Dr. Colón-Ramos** won the prestigious fellowship from the **Damon Runyon Cancer Research Foundation** [13] and continued post-doctoral studies in neuroscience in **Stanford University** [14] with **Dr. Kang Shen** [15].

After a year of hard work, **Dr. Colón-Ramos** was awarded with a **National Institutes of Health "Pathway to Independence Award Program" K-99 grant** [16], which is a program designed to facilitate receiving an R01 award earlier in an investigatorís research career. Nowadays he is the first and only puertorrican to obtain this award. Thanks to his prestigious papers in journals like ***Science***, **Dr. ColÛn-Ramos** obtained a tenure-track professorship at **Yale University** [5] in the program in Cellular Neuroscience, Neurodegeneration and Repair. Currently, he has an outstanding curriculum vitae with only 32 years-old.

Besides all the awards that he obtained in his career, **Dr. Colón-Ramos** has always been engaged in helping Puerto Rico. **Daniel** is the director of the **Council for the Advancement of Puerto Ricoís Scientific Research and Innovation (CAPRI)** [17], which is an organization dedicated to promote scientific research in our island. Also, he is one of the founders and visionaries of our web portal **CienciaPR.org** [18], which currently gets more than half million hits monthly.

Undoubtedly, **Dr. Colón-Ramos** is a great role model to follow for all the young puertorricans that will like to pursue a scientific career. If you will like to know more about **Dr. Daniel Colón-Ramos**

[6] and his research please visit his **profile at CienciaPR.org** [6]. **Dr. Colón-Ramos** is currently starting up his new lab at **Yale** [19] and is looking for laboratory technicians and post-doctoral fellows in neuroscience. If you think you are a good candidate for any of these positions please visit his **profile to establish contact** [19].

Tags:

- Daniel Colón-Ramos [20]
- Neurobiologia [21]
- c elegans [22]

Categorías de Contenido:

- Biological and health sciences [23]

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