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Volume 1 • Issue 4 • 2017

Review Article

Current Opinions in Neurological Science

ISSN: 2575-5447

Neurosciences: The Encounter Between Disciplines

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Received: October 21, 2017; **Published:** October 25, 2017

Volume 1 Issue 4 October 2017

Introduction

When speaking of neurosciences an analogy for this discipline may be the legend of the roundtable of King Arthur; in this legend a hero met with his faithful knights in a harmonious way, they subjected to discussion the problems, challenges and difficulties that they had to solve. Nowadays a discipline which has a few years has proved to be the meeting point of disciplines that until recently rarely shared their approaches, the reason for this work is to share an opinion, hoping that in the future continue to grow and expand theories already existing.

Development

Neuroscience[1] is a scientific discipline that encompasses several areas and for this reason the term in plural is sometimes used. Neuroscientists investigate the different aspects that make up the nervous system: its structure, its functions, pathologies and molecular bases. Likewise, in this discipline the interactions between the different dimensions of the human brain are analyzed, since all of them serve to know the biological foundations of behavior.

With the foregoing we can deduce that the sciences that participate in this discussion are: biology, medicine, psychology, psychiatry and others more specific as biochemistry. In the next lines we can see the incursion of other areas such as technology.

Some of the research topics are[2]:

Awareness: *What is the neural basis of subjective experience, cognition, wakefulness, alertness, arousal and attention? How is the difficult problem of the conscience (en) resolved? What is its function?*

Perception: *How does the brain transfer sensory information into coherent inner perception? What are the norms by which perception is organized? What are the characteristics that constitute our perceptual experience of internal and external events? How are the senses integrated? What is the relationship between the subjective experience and the physical world?*

[1]Taken from: https://www.definicionabc.com/ciencia/neurociencia.php

[2]Taken from: https://es.wikipedia.org/wiki/Neurociencia

Learning and memory: *Where are memories stored and how do they recover again? How can learning be improved? What is the difference between explicit and implicit memories?*

Neural Plasticity: *How Plastic Is the Mature Brain?*

Development and evolution: *How and why did the brain evolve? What are the molecular determinants of individual brain development?*

Dream: *Why do we dream? What are the underlying brain mechanisms? What is your relationship with anesthesia?*

Cognition and decisions: *How and where does the brain evaluate reward and effort (cost) to modulate behavior? How does prior experience modify perception and behavior? What are the genetic and environmental contributions to brain function?*

Language: *How is it implemented neurally? What is the basis of semantic meaning?*

Diseases: *What are the neural bases (causes) of mental illnesses such as psychotic disorders (eg, mania, schizophrenia), Parkinson's disease, Alzheimer's disease or addiction? Is it possible to recover from loss of motor or sensory function?*

The diversity of issues, the complexity of the problems raised has forced scientists from different specialties to unite in search of common answers. Below we present some of the centers in the world that in our opinion have gathered attributes to be recognized as centers of reference:

Max Planck Institute: Located in Germany, it is a multidisciplinary center bringing together psychologists, biologists, and engineers not only from Germany but from other parts of the world. Its purpose is to be a research center as a training center for new scientists to cooperate with each other in order to continue their research.

Edinburgh Neuroscience at the University of Edinburgh: located in the ever beautiful Scotland, decided to give rise to a research center where to understand the brain and its operation is its goal, its focus on medicine and biology is marked.

Riken the Brain Science Institute: Japan, its discipline and achievement in science cannot be left behind and provide an opportunity to the neurosciences, it is interesting to see how scientists around the world have overcome language barriers seeking answers to common questions and doubts.

Berkeley Institute of Neuroscience: Located in California, an eminent training center has allowed researchers from other universities to seek continuation of their studies in their classrooms focus in brain.

These centers are not the only ones and there are many more whose work is of great importance in the conclusions we will give an explanation of why we mention these in particular.

As these institutions have emerged we cannot fail to mention projects and initiatives which are independently giving an opportunity to the development of this knowledge.

Women Brain Project: an initiative born in Switzerland, its focus is to bring together the areas of neuroscience knowledge focused on helping the neurological diseases that affect the female population.

Human Brain Project: European project, perhaps one of the biggest that has been seen its aim is to stimulate the development of research in all components of neurosciences, along with the dissemination of this information.

Brain Forum: it is an interdisciplinary committee where scientists and engineers seek to share their theories and new technologies that can give solution to the concerns that deal with the brain; it is impressive to see in one day seeing a neurosurgeon talking with an engineer in a system seeking to understand a technique of non-traumatic brain boarding.

We cannot fail to mention some of the pioneers of this science who have done a union work, talk about each of their initiatives would be books and books but we will make an effort to mention some names:

Daniel Goleman, Daniel Siegel, Tania Singer, Helen Riess, Rafael Yuste, Nikolaus Weiskopf, Andreas Meyer Lindenberg and many others are the new pioneers; as at the time were Santiago Ramón y Cajal, Charles Sherrington or Carl Wernicke.

Conclusion

During the elaboration of this article we are fully aware of its limitations, but the purpose is for readers to see in the neurosciences a field of research, a place of discussion, where we can seek answers to our scientific and human doubts.

One of the clearest conclusions that we can present with this article is that there is the desire of meeting, sharing information and being able to have an exchange of knowledge.

Dear reader, feel free to seek, investigate; it is the doubts and the scientific method that gave us the first tools as a modern society to grow and evolve; the essential conclusion is that science allows us to change, question us but never stop growing.

References

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4. Berkeley Institute of Neuroscience: http://neuroscience.berkeley.edu/
5. Women Brain Project: http://womensbrainproject.com/
6. Human Brain Project: https://www.humanbrainproject.eu/en/
7. BrainForum: http://thebrainforum.org/