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## Technology to study the brain[i] - 30/04/2018

The brain is a complex and sophisticated organ made by a lot of layers and billions of cells that is able to study itself. It is not simple, but today, scientists have three main ways to investigate a live brain safely, which is, not being harmful to someone and thus they try to relate our behavior with brain areas.

The first method is electroencephalography (EGG), which was invented 100 years ago and it measures electrical waves that happen when the brain cells communicate with each other. It provides us information to identify precisely when electric signals occur during activities like learning or paying attention and registering them in just milliseconds and from that we can extract patterns to study diseases such as epilepsy.

fMRI (functional magnetic resonant images), the second way to analyze how the brains work, is a technique to measure how quickly oxygen is consumed by brain cells showing which regions are involved during a cognitive or behavior activity. With these images we can determine where exactly some activities take place in our brain, even though there are hundreds of them occurring. So, neuroscientists can combine these two types of monitors to know when and where a neuro activity is occurring to better understand the brain function in a total.

The third and even more accurate is PET, the positron emission tomography, a completely safe way too. Using PET, doctors inject a radio element into the blood that allows the observation of some drugs behavior acting in our brain. The tracer can bind to some specific molecules and follow the treatment of diseases like Alzheimer.

With these three techniques working together researches can discover many things. For example, they can study our memory comparing the results of a game

played by a number of people monitored during the activities. However, in a near future more techniques will come bringing more image and elements that will allow us connect the brain regions and the association of many other processes in execution simultaneously or even isolate individual nerves to understand better and better this complex system.

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[i] TED education: <<https://youtu.be/B10pc0Kizsc?t=1>>

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