NEWSLETTER
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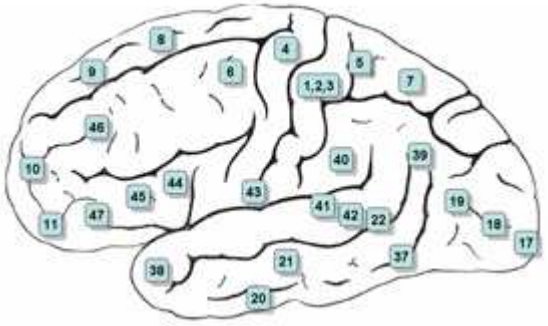
Functional Brain Imaging

The brain consists of a complex network of communicating neurons. Brain activity is nerve cells that communicate with other nerve cells through electrical impulses via nerve fibers (modulated by chemical synapses). Brain cells just like all other cells of the body need the supply of glucose and oxygen through the blood to function. This means that it is the brain's needs that regulate blood flow in the brain. If an area is activated, regulatory mechanisms will ensure that blood flow is given priority to this area.

Why measure brain activity?

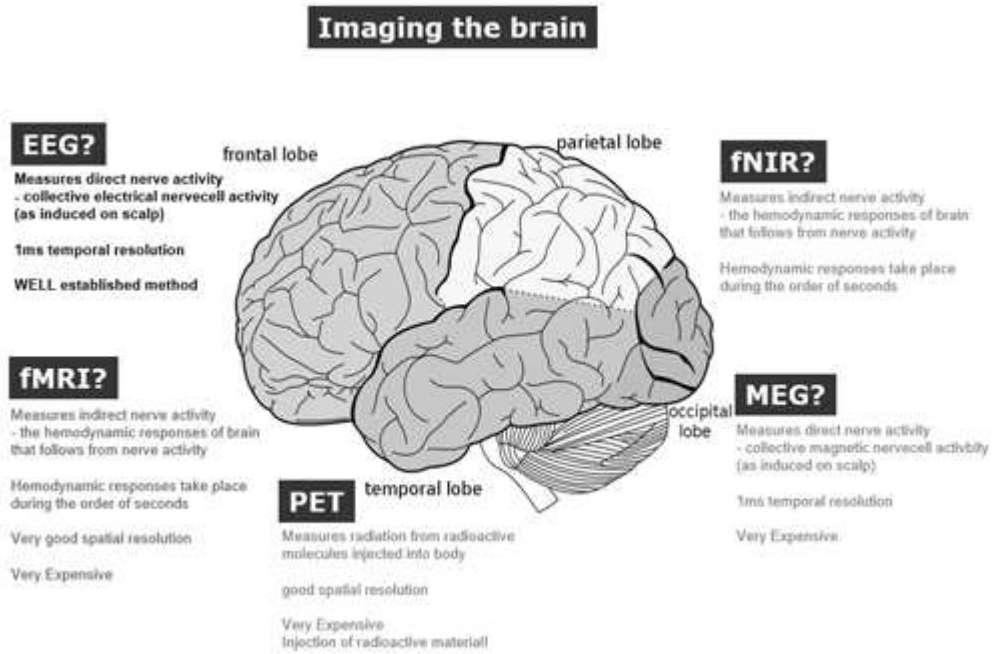
Some functions such as vision, hearing, speech, motor skills and decision making are mainly located in specific areas.



In addition, the electrical communication of the brain's network is modulated by synapses between the ends of each nerve axon and the other nerve cell. A chemical link where the nerve impulses translate into chemical molecules that are released into the synaptic space and detected by the recipient cells receptor.

Theese are reasons good enough for wanting to locate the brain activity. It can also be used as biofeedback.

What methods are there to measure brain activity?



Electromagnetic fields caused by nerve impulses
EEG means that electrodes measure the potential difference (electrical voltage) between different positions on the head - often with a cap.

MEG means using magnetic field sensors around the head, measuring variations in the magnetic field that are also caused by the electrical impulses in the brain. This requires a magnetically shielded space.

Blood flow in different parts of the brain
fNIR measures with spectroscopic methods differences in absorbance of light with different wavelengths emitted into the brain. Light sources and detectors are put on the head. Oxy and de-Oxy hemoglobin have different absorbance spectrum, which means that changes in oxygenation and total blood volume can be determinied for different parts of the brain.

fMRI is based on nuclear magnetic resonance that looks at how a material's local magnetic field under the influence of a triggered external magnetic field responds to radio pulse interference. These methods also provide a 3D image of how the oxygenation in the brain varies. The spatial resolution on fMRI is very good (the order of magnitude mm)

If you need more information in English - please contact our product expert:

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We wish you a Merry Christmas and a Happy New Year!

Don't hesitate to contact us at **biopac@jor.se** with a short description
of your situation and we are happy to give you tailored advice!

We also have systems for education.

Skulle du föredra att få dessa nyhetsbrev på svenska i fortsättningen?
Skicka ett mejl till **biopac@jor.se** och meddela oss.

JoR AB Knivsta/Försäljning/Service: 018-34 28 20, **biopac@jor.se**

Välkommen in på vår hemsida: **http://www.jor.se/measurement**

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