

# What is Microdialysis?

**Microdialysis is an *in vivo* bioanalytical sampling technique for continuously monitoring events occurring in a living tissue.**



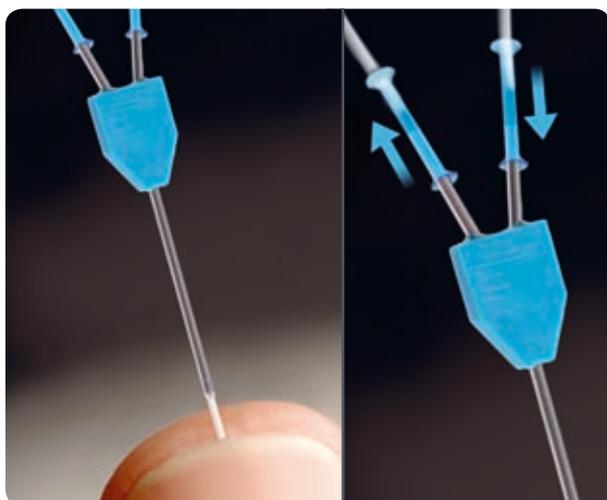
Before a molecule from the blood can enter a cell in an organ, or vice versa, it must first traverse the extracellular space. The extracellular space is filled with a fluid and comprises approximately 20% of the total tissue volume.

However, this crucial compartment for chemical communication between the cells (including neurotransmission) is experimentally inaccessible by conventional methods of bioanalytical chemistry.

**Microdialysis is based on sampling endogenous substances from the extracellular space. This process is accomplished using a unique device - The Microdialysis Probe.**

The Microdialysis Probe mimics the function of a blood vessel. The probe is constantly perfused with a physiological solution at a low flow-rate (usually less than 2  $\mu\text{l}/\text{min}$ ). Once the probe is implanted into the tissue, endogenous substances are filtered by diffusion out of the extracellular fluid into the perfusion medium.

By reversing the process the probe can be used to locally infuse exogenous compounds, nutrients and drugs for periods of up to several days. Samples are collected and then analyzed.



The Microdialysis Probe is a specially designed cannula with a semipermeable membrane at its tip. A variety of probe types with more than 20 different membrane and shaft length combinations are available. Corresponding guide cannulae facilitate easy insertion into organs, such as brain, muscles or blood vessels. They may also be used for long-term studies.

The inlet side of the Microdialysis Probe is connected to the CMA 400 or CMA 402 Syringe Pump and the CMA 110 Liquid Switch or the CMA 111 Syringe Selector. The outlet tubing is attached to the CMA 470 Refrigerated Fraction Collector or to the CMA 142 Microfraction Collector. Microdialysis combined with an appropriate analytical technique is the ultimate solution in the search for a universal, real-time biosensor.

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