

## The Patch Clamp Technique

Our brains can be compared to computers: Countless pieces of information are constantly being received, selected, passed on and processed. This information is transmitted in the form of electrical impulses via nerve cells to the correct area of the brain. The patch clamp technique, which was developed by Erwin Neher and Bert Sakman, proves that signals are transmitted through ion channels to cell membranes.

### *Erwin Neher (2018) – Ion channels: Past, Present and Future*

“Our approach was to try to not push into the cell but place the measuring pipette touchingly onto the surface of the cell in order to isolate [...] a small patch of membrane for the electrical measurements and hoping to have one or a few of these ion channels, these pore-like structures being present in that patch of membrane. [...] And if that opens and closes it should produce a current which we can measure in the amplifier attached to it. “

**Tasks:** Find out about the patch clamp technique and answer the following questions:

1. What does the patch clamp technique measure?
2. How can measurements at the cell membrane be visualised? (Sketch an example of the structure.)
3. How should cells be prepared for measurement?

### **An initial overview:**

[https://www.deutsches-museum.de/fileadmin/Content/040\\_BN/PDFs/Prismentexte/Patch-Clamp-Messung.pdf](https://www.deutsches-museum.de/fileadmin/Content/040_BN/PDFs/Prismentexte/Patch-Clamp-Messung.pdf)

### **More detailed information:**

<https://www.leica-microsystems.com/science-lab/the-patch-clamp-technique/>