Research Tools

Method and Device for Measuring Electrical Conductance of Membranes with a Radio Frequency Probe

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WARF: P01413US

Inventors: Daniel van der Weide

The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a method for measuring the conductance of single channels from biochemical membranes.

Overview

Biological membranes, such as cell membranes, are intrinsically impermeable to ions and polar molecules. Thus, transport of ions through biological membranes requires special channel or pump proteins whose function can be assessed by electrical conductance measurements. Current methods of measuring conductance across cell membranes are labor- and skill-intensive and not suitable for high throughput screening.

The Invention

A UW-Madison researcher has developed a method for measuring the conductance of single channels from biochemical membranes such as supported bilayers and cell membranes. The method uses a probe that creates a highly localized radio frequency field that interacts with the membrane. The sharp-tipped probe, which may have an inner core tip surrounded by a coaxial shield, is positioned adjacent to the exposed surface of the biochemical membrane. Radio frequency power is supplied to the probe to apply the radio frequency field to the membrane. Channel protein activities, such as transport and binding, are detected by changes in the electromagnetic field transmitted through the membrane.

Applications

- Testing compounds and drugs for their potential to block ion channel and pump protein activity
- High throughput screening of ion channel function

Key Benefits

- Exhibits relatively little noise as compared with current methods
- Much less time- and labor-intensive than current methods
- Doesn't require application of a separate voltage bias across the membrane
- Multiple probes can be used for multiple, simultaneous measurements.
- Probe may be mounted for scanning movement to allow investigation of a membrane region.
- May be used under field conditions

Additional Information

For More Information About the Inventors

- Daniel van der Weide

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Tech Fields

- Drug Discovery & Development : Preclinical testing
- Research Tools : Protein interactions & function

For current licensing status, please contact Emily Bauer at emily@warf.org or 608-960-9842

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