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Fluorescent Potassium Ion Sensors

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Patent Pending

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Invention Description

The accurate measurement of potassium ion levels in biological samples is essential given the impact such ion levels have on many aspects of homeostasis. Normal potassium levels are important for the maintenance of heart and nervous system function. Traditionally, potassium ions have been measured in plasma or serum using ion-selective electrodes, which are cumbersome to use and costly to maintain. Therefore, there is a need for the development of alternative methods of measuring potassium ion concentration in a variety of sample mediums.

Researchers at the Biodesign Institute of Arizona State University have developed new, chemical potassium ion sensors and sensing membrane preparations. The chemical sensors have double bonds which enable the sensing molecules to be chemically conjugated onto suitable polymer matrices to form stable sensing membranes.

The new potasium ion sensors are suitable for both intracellur and extracellur sensing. Due to the crosslinking ability of the probes, dual sensors can be further fabricated. For example, a polymerizable oxygen probe was co-polymerized with the potassium ion sensor resulting in a dual potassium and oxygen sensing film.

Potential Applications

- Highly selective intracellular potassium ion sensors
- Highly selective extracellular potassium ion sensors

Benefits and Advantages

- Enables the polymerization of the sensors with other polymerizable probes for dual or multi-sensing
- Alleviates the leaching problems of the sensors
- Great potential to be immobilized onto biomedical devices.