

Graphene-Based Electrochemical Lateral Flow for Alzheimer's Disease Prognosis

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Alzheimer's Disease (AD) is the most common type of dementia [1], currently relies on diagnostic methods that are expensive, invasive, or time consuming. Blood biomarkers represent a significant step forward in addressing these challenges [2]; nevertheless, the lack of cost-effective, simple testing protocols remains a critical barrier.

Here, we propose a novel, cost-effective Point-of-Care (PoC) system designed for early AD diagnosis and monitoring disease progression. Leveraging a green, IR-laser-assisted low-cost print/stamp technology, we fabricate reduced graphene oxide (rGO) electrodes directly integrated into lateral flow assay (LFA) strips [3]. These rGO electrodes can be functionalized with aptamers that specifically bind to key AD biomarkers, enabling real-time monitoring of the disease. Binding events between the aptamers and target biomarkers induce detectable changes in the electrochemical signal, allowing for rapid, sensitive, and reliable detection.

This PoC system provides a promising, non-invasive approach to AD diagnostics, offering a streamlined, accessible solution for early detection and disease management.

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References

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