

Finger-prick Blood-Based Nucleic Acid Testing on A USB Interfaced Device for HIV Self-Testing

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TECHNOLOGY READINESS LEVEL

4

Seeking

Investment | Licensing | Research

Keywords

- HIV
- Test
- Self-testing

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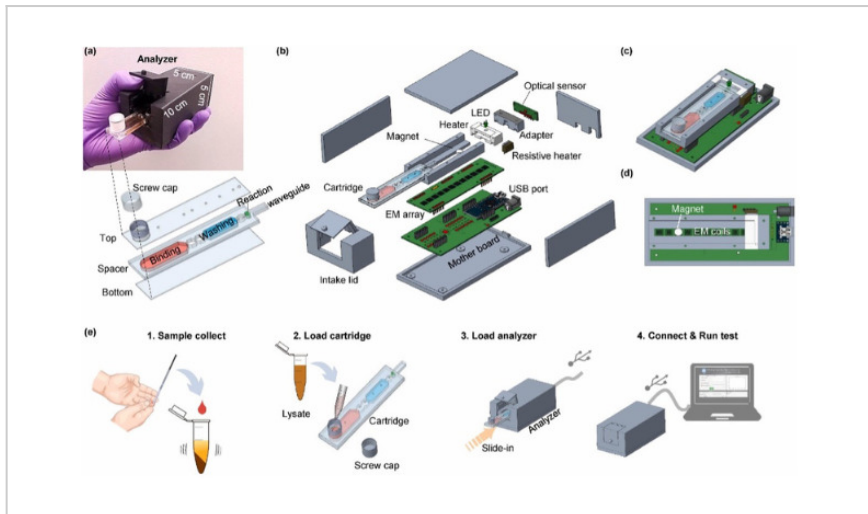
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Technology Summary

HIV self-testing is an emerging innovative approach that allows individuals who want to know their HIV status to collect their own specimens, perform a test, and interpret the results privately. In this work, we present a fully integrated nucleic acid testing device for streamlined HIV self-testing using 100 μ L finger-prick blood. The test requires the user to drop the finger-prick blood sample into a collection tube with a lysis buffer and load the lysate onto the microfluidic cartridge, and the testing result can be easily read out by a custom-built graphical user interface.

Application & Market Utility

Currently, there are limited available self-testing options for HIV that offers a private testing method. With a turnaround time of \sim 60 min, we achieved a limit of detection (LoD) of 214 viral RNA copies/mL of whole blood at a 95% confidence level. Due to its ease of use and high sensitivity, we anticipate the HIV NAT-on-USB device would be particularly useful for high-risk populations seeking private self-testing at the early stages of exposure. As of 2022, the market for HIV testing was estimated to be worth \$1.8 billion. It is predicted that as of 2033 the market will rise to \$2.4 billion.

Next Steps

Next steps involve seeking licensing to a company specializing in HIV test manufacturing, thereby advancing the development and commercialization of the nucleic acid testing device for streamlined HIV self-testing.