Archer Materials
Technology

Archer Materials Limited (ACN: 123 993 233)
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ASX Announcement (ASX: **AXE**) 28 July 2025

Archer Biosensor advancements support broader platform potential

Highlights

- Significant improvements achieved in accuracy of biosensor for measuring potassium levels in blood.
- A new chip design and readout system—close to final product form—is expected to deliver a further accuracy boost, with test results expected in October.
- Archer is engaging with stakeholders and building a network of medical experts to support clinical trials, targeting potassium sensor regulatory approvals in Australia (TGA) and the US (FDA).
- The biosensor platform is highly adaptable and is designed to also test for different ions, not just potassium.
- Successful demonstration of detection of lithium ions, opening other opportunities in healthcare, environmental monitoring, and industrial control.
- The testing of other ions represents a planned and natural extension of the potassium biosensor development around the biochip.

Archer Materials Limited ("Archer", the "Company", "ASX: AXE"), a semiconductor company advancing the quantum technology and medical diagnostics industries, is progressing the biochip product development on technical, strategic, and regulatory fronts.

Broader platform potential

Over the past year, the Company has made considerable progress in advancing its biosensor technology, which aims to measure potassium levels in human blood. The biosensor, based on Archer's proprietary biochip technology, remains the core focus of its medical device development program.

Since its commencement, Archer's biosensor development has been part of a broader strategy to build a versatile sensing platform capable of detecting a variety of ions in liquids. Potassium detection in blood was selected as the initial target due to its clinical importance and the significant unmet need in the area. Archer's potassium biosensor is designed as a gateway to empowering people to take control of their health, simply and safely, from their homes, resulting in fewer hospital visits for the elderly and chronically ill.

The biochip sensing platform is designed to be inherently adaptable. By modifying surface chemistry and sensor configuration, the platform can be tuned to detect other ions of interest without the need for a complete redesign of the sensing architecture. This flexibility enables potential applications across multiple sectors, including point-of-care diagnostics, environmental monitoring, and industrial process control.

The Company's recent technical progress in this application has validated the performance of the core technology and now provides a strong basis for evaluating additional sensing opportunities.

While the Company is evaluating future opportunities enabled by the platform, the development and potential commercialisation of the potassium biosensor remains the primary objective. The progress made to date has strengthened Archer's capability to address immediate clinical needs while also laying the groundwork for long-term value creation across multiple markets.

Image 1: Archer's lab biochip testing systems in Sydney. An engineer is placing prototype biochips into our fluidic system which then gets connected to the electronic readout system. The bolstered engineering team along with increased testing capability, like the setups above, is accelerating the development.

Potassium testing update

The Sydney team is building on early biosensor test results (ASX ann. 25 February 2025) and has accelerated testing and development activities. The team is also refining the sensor design, resulting in a measurable improvement in the sensor's accuracy.

The biosensor is entering a key phase on the engineering roadmap as the Company seeks to optimise the chip design and electronic readout system. The new chip layout and readout electronics are expected to deliver greater measurement accuracy. Importantly, both are close to final product form, requiring only minor tweaks to fit into a full prototype. Chip design is complete, fabrication is set to begin soon, and the readout electronics are in the final stages of assembly. Testing results from both are expected in October 2025.

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Archer's collaboration with Hylid (ASX ann. 31 March 2025) is progressing well, with initial design and fabrication testing for sensor-compatible cartridges underway. This work is expected to deliver the chip, haemolysis testing, and cartridge components for our medical device lab demonstrator by the end of the year.

Marketing

The Company's marketing research is identifying segments of the kidney disease market—worth over US$3 billion—that can be realistically targeted by the biosensor. One example input to these models is the potential cost savings for the U.S. federal government, specifically through Medicare, if patients had access to at-home potassium monitoring. By detecting abnormal potassium levels early, the use of Archer's biosensor could help prevent hospitalisations, which are expensive and often avoidable. See below:

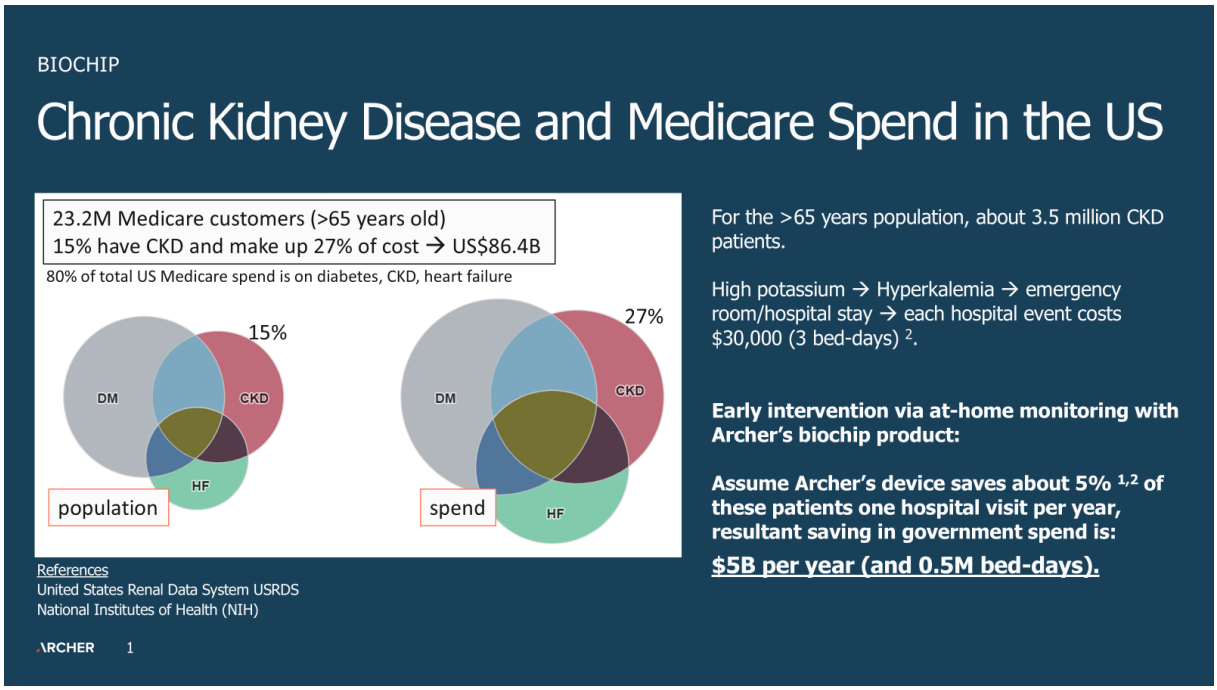

Image 2: Data from the US highlights the scale of chronic kidney disease (CKD) among Medicare patients over 65, both in terms of population size and federal spending.

Regulatory strategy

Archer has ramped up stakeholder engagement to help refine the use-case for their point-of-care and at-home blood potassium sensor. This work is critical for both engineering decisions and the regulatory strategy.

The Company is building a network of key opinion leaders and medical researchers to support upcoming clinical trials. These trials will generate the data needed for regulatory submissions in key markets, including Australia (TGA) and the United States (FDA).

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Testing for other ions

Archer has commenced preliminary testing of other ions in liquid environments using the biochip technology. This work builds directly on the technical foundations established through the development of the potassium-in-blood biosensor. Archer is now applying this architecture to explore the detection of additional ions relevant to both clinical and industrial use cases.

The successful demonstration of potassium sensing provided critical validation of the sensor's underlying performance, including stability, selectivity, and sensitivity in liquid samples. With this foundation in place, the Company has begun early-stage laboratory testing of ions relevant to other applications.

Like potassium, the biochip device can measure parts-per-million of lithium via a significant voltage response from the sensor. This ion and measurement in blood are of interest to patients being treated for certain neurological disorders.

The testing of other ions represents a planned and natural extension of the potassium biosensor development. The Company's next steps in this expanded testing strategy include optimising surface functionalisation to improve ion selectivity and benchmarking performance across multiple ion types. These efforts aim to enhance the versatility and scalability of Archer's sensing platform while building upon the technical progress achieved in the potassium program.

Commenting on the Biochip progress, Simon Ruffell, CEO of Archer, said,

"Archer's engineering team has been bolstered over the last few months, and the result is more rapid development work for blood potassium sensing as well as development of the underlying ion testing platform for a multitude of other applications.

"We know there is a huge addressable market in the chronic kidney disease area and, now that the engineering program is advancing well, it is exciting to be building our use-case, regulatory strategy, and thinking through commercialisation plans for realisation of revenue once we pass through regulatory approval.

The early results for the testing of other ions are promising, and we are excited by the opportunity to expand the testing platform."

The Board of Archer authorised this announcement to be given to ASX.

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About Archer

Archer is a technology company that operates within the semiconductor industry. The Company is developing advanced semiconductor devices, including chips relevant to quantum computing, sensing, and medical diagnostics. Archer utilises its global partnerships to develop these technologies for potential deployment and use across multiple industries. www.archerx.com.au