Archer Materials
Technology

Archer Materials Limited (ACN: 123 993 233)
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ASX Announcement (ASX: **AXE**) 25 February 2025

Archer improves Biochip feasibility; progressing with development roadmap

Highlights

- Improved the accuracy of potassium detection for the Biochip's at-home testing of chronic kidney disease.
- Transitioning to testing and development of the Biochip using human blood and integrating it into a first prototype cartridge system, targeted at the end of 2025.
- Engagement with regulatory bodies to commence in H2 2025.
- Subject to regulatory feedback, Archer expects to commence clinical trials for potassium detection using the Biochip in 2026.
- Technical development continues to bolster Archer's IP portfolio around the Biochip product.

Archer Materials Limited ("Archer", the "Company", "ASX: AXE"), a semiconductor company advancing the quantum technology and medical diagnostics industries, has built on its previous work on feasibility of potassium sensing with its Biochip technology and will move towards development and optimisation of the device, including the testing of human blood samples.

In designing the Biochip, Archer needs to ensure that potassium test results do not vary significantly between graphene field effect transistors (gFETs) on the same chip. Over the past months the Archer team has been working to reduce the variability of test results between gFETS on the same chip. This has been achieved by development of Archer in-house processes that are performed during the functionalisation to make the gFETs into potassium sensors. This work has led to a significant decrease from 15% to 1.5% in on-chip device variability. By reducing variability to 1.5% Archer is now able to move the next stage in the Biochip development and start the testing of human blood.

To date, all testing and development has been done using mock samples. In the next stage of the Biochip development, Archer will now transition to working on human blood samples. This is a major step in moving towards having a working prototype and being ready for clinical trials.

In addition to testing human blood, Archer will also continue to work closely with graphene foundry supplier Paragraf to improve gFET devices to meet the sensing specifications required for the potassium sensor. Figure 1 shows the evolution in reduction in on-chip device variability due to the team's work over the last few months.

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Engineering plans for CY25 aim to integrate the Biochip into a prototype cartridge system and demonstrate the required potassium sensing accuracy using human blood samples. Preparation for engaging with regulatory bodies will begin soon and Archer intends to begin these early engagements this year. During CY26, Archer plans to develop the prototype into a manufacturable product and commence clinical trials.

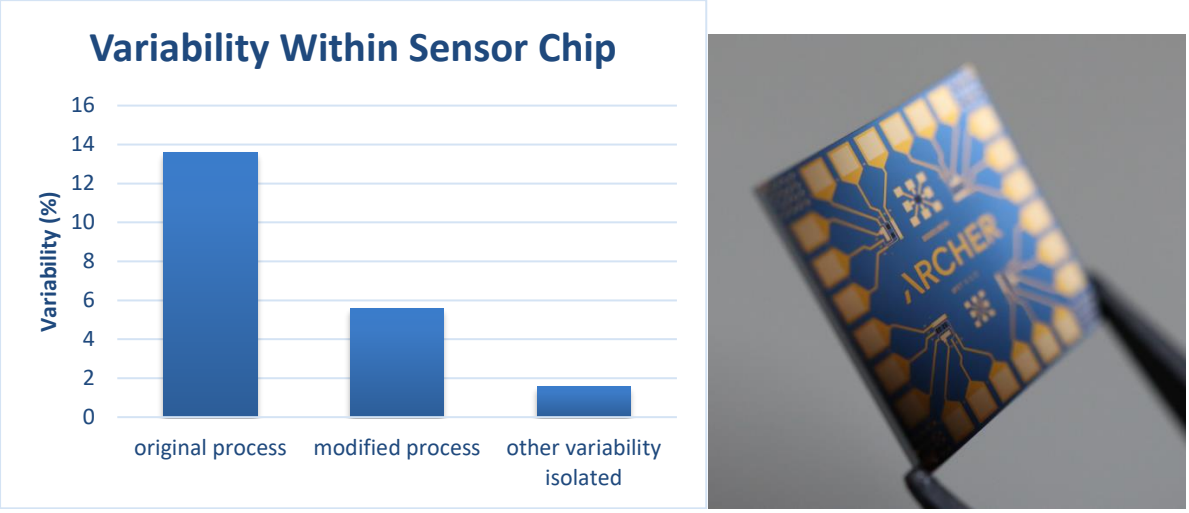

Image 1. The chart shows the variability of response to mM/l concentrations of potassium of gFET devices on a chip. The photograph shows Archer's sensor test chip. These chips contain several gFETs (barely visible). The liquid (currently mock samples, but later blood) is transferred to the chip in micro-litre volumes and the individual gFET responses are read.

Commenting on the Biochip developments, Greg English, Executive Chair of Archer, said,

"Over the past months, the Archer team has done a great job reducing the variability between gFETs on the same chip. This is a significant achievement in the development of the Biochip and allows us to progress to the next stage of development.

"The team is now looking towards testing human blood samples and integrating it into a prototype cartridge system. These are important steps before we engage in clinical trials."

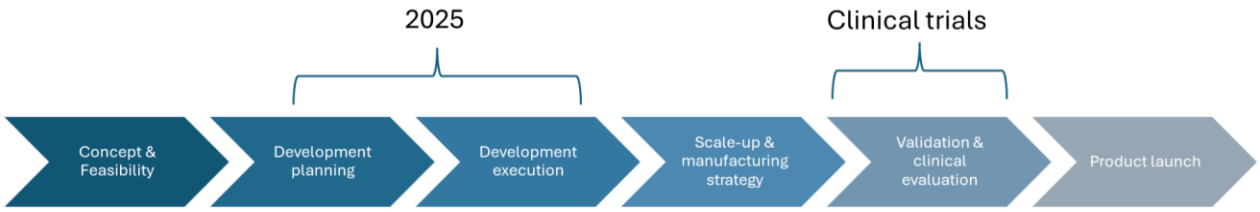

Image 2. Phases of medical diagnostic development within a regulatory framework.

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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