

ASX Announcement ([ASX: AXE](#))

1 December 2021

Archer develops sensing pathways to detect genetic information

Highlights

- Archer has developed its first biochemical reactions for application in its biochip technology.
 - The reactions have the potential for on-chip detection and quantification of specific DNA or RNA fragments relevant to viruses and bacteria.
 - The work is a significant step in the Company's development of its biochip[†], providing potential reaction mechanisms for the technology's future operation and applications in disease detection.
 - The biochip has been developed in-house by Archer staff and Archer owns 100% of the biochip technology intellectual property.
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Archer Materials Limited ("Archer", the "Company", "[ASX: AXE](#)") is pleased to provide shareholders with a technical progress update on Archer's 'lab-on-a-chip' technology ("biochip"). Archer owns 100% of the biochip technology intellectual property.

The Company is developing a biochip that would allow droplets of biological specimens to be processed and analysed using graphene-based sensor devices integrated in on-chip devices. Archer's lab-on-a-chip technology is based on two key technologies, micro- and nanofabrication, and biochemical reactions for potential application in disease detection.

Last month (ASX ann. [4 November 2021](#)), the Company announced that it had successfully fabricated on silicon wafers nanosized biochip components inside hair-thin microfluidic channels required for the processing, mixing and transportation of biological specimens.

The Company has successfully developed its first biochemical reactions for the detection and quantification of nucleic acid sequences (both DNA and RNA), for potential use and application at room temperature in its biochip technology. The nucleic acid sequences of interest could potentially be of viral, bacterial, or other microbial origin, which would allow for the development of Archer's biochip towards tailored on-chip pathogen detection.

Nucleic acid markers are useful for monitoring various states of health and disease; for the identification of pathogens and their strains; and the diagnosis of many diseases. Commonly known techniques to analyse biological samples for known nucleic acids include polymerase chain reaction (PCR). The techniques developed by Archer could potentially apply in conjunction with, or without, the use of PCR.

[†] Journal also focuses on critical issues and significant applications Lab on a Chip technology may address: <https://www.rsc.org/journals-books-databases/about-journals/lab-on-a-chip/>

Commenting on the biochip development progress, Archer CEO Dr Mohammad Choucair said: “This is a significant achievement, as the Company has now, with its in-house capability, developed the biochemical foundations to potentially allow for future operations and applications of Archer’s biochip in the detection of various diseases.

“There are few examples of lab-on-a-chip technologies that detect nucleic acids without the need for PCR. Archer’s biochemical processes could potentially allow for on-chip detection of pathogens, with several practical advantages, including eliminating cold-logistics supply chain requirements and the need for PCR, if favourable”.

About Archer’s Biochip

Archer’s biochip is lab-on-a-chip technology the Company is developing to enable the complex detection of some of the world’s most deadly communicable diseases. The biochip development commenced in Nov 2020 (ASX ann. 5 Nov 2020). The Company strengthened its biochip fabrication capabilities (ASX ann. 22 Mar 2021), working towards best-in-class sub-10 nanometre fabrication (ASX ann. 8 Apr 2021), established chip testing operations (ASX ann. 11 Jun 2021), and recently fabricated and integrated nanosized biochip components in microfluidic channels on chip compatible substrates (ASX ann. 4 Nov 2021). Archer is currently focused on micro- and nano-fabrication of the biochip device components and integrating these components with chemical reactions to detect diseases, which pose significant technological challenges to potentially commercialising lab-on-a-chip devices[†].

About Archer

Archer is a technology company that operates within the semiconductor industry. The Company is developing and commercialising advanced semiconductor devices, including chips relevant to quantum computing and medical diagnostics.

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

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