

FOR IMMEDIATE RELEASE: FRIDAY, 2 OCTOBER 2026

Avicena Secures \$2 Million Federal Grant to Develop a Quantum Test for Detecting Biosecurity Threats Before Symptoms Appear

BIRD FLU AND LUMPY SKIN DISEASE ARE THE FIRST TARGETS FOR A QUANTUM-ENHANCED TEST DESIGNED TO DETECT PATHOGEN GENOMES IN UNDER 15 MINUTES

Perth, Western Australia – Avicena Systems has been awarded \$2 million by the Australian Government to build a quantum-powered diagnostic test that delivers ultra-sensitive, lab-grade results in under 15 minutes and screens for two critical pathogens.

Avicena is initially targeting two of the biggest threats to Australian agriculture: highly pathogenic H5N1 bird flu, which reached Australia this year, and lumpy skin disease, a cattle virus that has spread through South-East Asia to Australia's northern doorstep and is expected to arrive here.

"Every hour an infection goes undetected is an hour it has to spread," said Dr Paul Watt, Avicena's Executive Chair and Chief Scientific Officer. "The first stage established the physics of the test. Next we will build field-ready instruments to put it in the hands of industry players on the front line."

Following the successful first stage of the Critical Technologies Challenge Program, Avicena and the University of Western Australia received a \$500,000 award in 2025 to demonstrate the technology's viability. The next-stage award, a further \$2 million grant, will fund completion of field-deployed pathogen detector prototypes. Avicena will design, build and validate the quantum-enhanced instrument using real-world biosecurity samples and screening workflows.

To get the test from the lab to the front line, Avicena has assembled eight partners across Australia and the Gulf region: three research institutions, two government agencies and three livestock-focussed industry organisations.

Stakeholder engagement with the Northern Territory Department of Agriculture and Fisheries, the Northern Territory Livestock Exporters Association, Meat & Livestock Australia and Livestock Express – organisations intimately involved with Australia's livestock industry will help co-design pilots to introduce the test in real-world supply chains, from cattle yards to ports.

The University of Western Australia and Queensland University of Technology both bring research expertise in quantum biosensors, and Oman's Ministry of Agriculture, Fisheries Wealth and Water Resources and the College of Medicine and Health Sciences at Sultan Qaboos University will extend the work into the Gulf region, a key market for Australian livestock where Lumpy Skin Disease is already endemic.

Hearing a whisper in a stadium

Molecular tests detect specific DNA or RNA from pathogen genomes by multiplying copies of target genes a billionfold. However, samples also produce background noise: saliva, blood and swabs each emit a faint glow that can obscure the signal from pathogen targets in the earliest stages of infection – like trying to hear a whisper in a packed stadium.

Avicena's approach uses quantum dots (QDs) – nanoscale particles whose light signal shifts in a distinctive way, within billionths of a second, when they meet a pathogen molecule in the test. The company's quantum-enhanced technology uses highly sensitive single-photon counting detectors coupled with advanced optics to pick that pathogen signal out from the background glow – hearing the 'whisper in the stadium' – in mobile instruments built for use at transport borders and in the field.

Out of the lab and into the front line

The prototype is being designed for Avicena's award-winning Sentinel instrument, the company's automated testing platform. It can flexibly process between 10 and 5,000 samples an hour according to testing demand and is built to work outside the lab – at borders, farms, clinics and outbreak zones.

Australia sends livestock around the world, and the ability to test quickly, at scale and close to the source is expected to become increasingly critical to farmers, exporters, health authorities and biosecurity officials.

"When a new disease arrives, the fastest test closest to the source makes all the difference," said Tony Fitzgerald, CEO and co-founder of Avicena Systems. "This is cutting-edge Australian science, targeting new and dangerous animal and human pathogens that now threaten us regularly."

ENDS

Images and background information follow.

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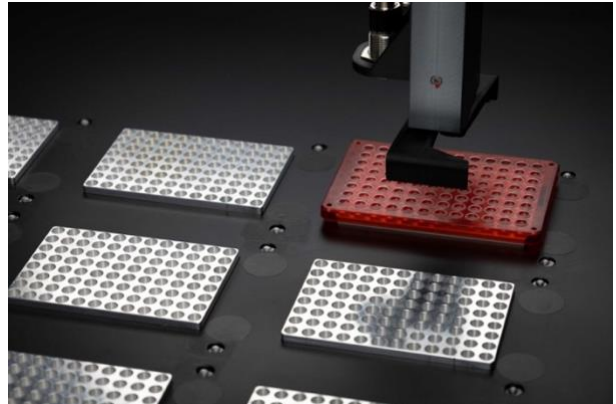
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Images and video clips of the Sentinel are available upon request



Dr Paul Watt, Chairman & Chief Scientist

About the Critical Technologies Challenge Program

The Critical Technologies Challenge Program (CTCP) is a key part of Australia's National Quantum Strategy, aiming to accelerate the development and commercialisation of quantum technologies in Australia. It focuses on addressing national challenges through quantum solutions and fostering collaboration between researchers, businesses and end-users.

Related links:

- [Government Media Release](#): Albanese Government backs Aussie quantum projects with \$12 million
- [Business.gov.au](#): List of funded projects, partners and amounts funded
- [News article](#) on the DISR website

About Avicena Systems

Avicena Systems is a Perth-based biosecurity technology company that has developed the award-winning Sentinel pathogen screening platform. Sentinel combines the best features of PCR and rapid tests into an integrated, scalable system for large-scale screening of human and animal pathogens, processing 10 to 5,000 samples an hour on demand from saliva, nasal swabs, blood and skin lesions. The Sentinel instrument is listed on the Australian Register of Therapeutic Goods (ARTG) to run ARTG-listed IVD tests.

Project partners

The University of Western Australia: Founded in 1911, Western Australia's oldest university and a member of the Group of Eight, Australia's leading research-intensive universities. Avicena's research partner since Stage 1.

Queensland University of Technology: A major Brisbane-based public university known for applied research across science, engineering and health, with a focus on getting research into real-world use.

Northern Territory Department of Agriculture and Fisheries: The Northern Territory Government department, formed in 2024, that oversees agriculture, biosecurity, animal welfare and fisheries across the Territory. The Northern Territory is a major producer and exporter of cattle.

Northern Territory Livestock Exporters Association: Represents the Territory's live export supply chain, from licensed exporters and transporters to accredited vets and quarantine yard operators. NTLEA runs Darwin's Berrimah pre-export quarantine yards, which handle around 70,000 cattle a year.

Meat & Livestock Australia: The not-for-profit research, development and marketing organisation for Australia's red meat industry, owned by around 50,000 levy-paying cattle, sheep and goat producers and supported by matched Australian Government R&D funding.

Livestock Express: A global leader in purpose-built livestock shipping, operating 11 dedicated carriers that move 600,000 to 750,000 head of livestock a year. Acquired by Australian company Heytesbury in 2026.

Ministry of Agriculture, Fisheries Wealth and Water Resources, Oman: The Sultanate of Oman's government ministry responsible for agriculture, livestock, fisheries and water resources, including national animal health. The Ministry is known for its progressive approach to animal health and protection of Oman's natural resources.

College of Medicine and Health Sciences, Sultan Qaboos University: The medical school of Sultan Qaboos University, Oman's flagship public university, founded in 1986. The college works alongside Sultan Qaboos University Hospital, one of the country's leading teaching hospitals.