



An innovation ecosystem needs some accidental heroes

Focusing on discovery research has to be about the idea

Professor Sharath Sriram
WA Chief Scientist

A few years back, the Productivity Commission questioned Australia's need to invest in research and development. Did such investment produce enough productivity and economic returns to the country, or should we stop and focus on incremental innovation, innovation that naturally happens?

As a policy nerd, I responded to that with the analogy of lighting. Incremental innovation would probably mean we'd have a better candle today, but disruptive innovation is why we have light bulbs. And I constantly think through that lens of what choices we want to make in innovation. Do we just want to keep improving gradually, or do we dramatically change the system for the better? This is something we need to look at as a research and innovation community.

Whenever people ask me about the sector, I point to four key ingredients: the fundamental research that produces the intellectual property; the infrastructure that allows us to demonstrate the validity of the idea; taking that idea and turning it into a product or service for the community; and, most important, the people who make it happen. The idea generators, the commercialisation experts, the business leaders, the clinicians, the people who work at the coalface and the pipeline of talent who come through.

If those four don't work in sync, we don't have an innovation ecosystem. That's probably the biggest opportunity for having an Office of Medical Research and Innovation (OMRI) in the WA Department of Health. Instead of all of them fragmented and happening in isolation, you can bring together an umbrella system.

I'm a firm believer that the most valuable discoveries, especially if they're disruptive, happen by accident. So how do we create a culture and an environment that allows this to happen? That's where our programs matter a lot.

For example, one of the key funding programs in Australia, the National Health & Medical Research Council (NHMRC), has the Ideas Grant, which is meant to be about the idea. Complementing that are the Investigator Grants, meant to be about the people. But are the Ideas Grants backing the ideas, or are they taking the risk-averse aspect of looking at the investigators, their environment, their capabilities, and finally diluting the value of the idea?

Because, if you are focusing on discovery research, it has to be about the idea. And if you trace back the biggest successful discoveries or Nobel Prizes, it's often been by

people in their 20s. So how do we put in place frameworks that allow that free thinking and risk-averse attitude?

When I say things happen by accident, here is a personal example. We had a PhD student in our lab making gas-separation membranes. We had a science fiction view of wanting to split water vapour in the air to create a micro fuel cell that charges your phone. Obviously, that didn't work or you might be using it today. But we did find that the membranes separated a lot of biological and digestive gases – this was a completely accidental discovery.

Then came the challenge of how to prove it and make it real. We were engineers. The Australian Research Council considered it a medical problem, and they don't fund anything medical. At the NHMRC, the only scheme where it could fit in was a Development Grant, but it wasn't clinical enough.

It took two and a half years to find funding from an unexpected source – the Department of Agriculture. They were doing a carbon monitoring program about what to feed cows to reduce their methane production. Our technology, converted into a capsule the size of an AA battery, was used in cows; and as their feedstock was changed, we were able to track the amount of methane being produced.

So that was how the discovery got validated. And once that happened, the NHMRC funding for a Development Grant came through. We went through clinical trials, and by partnering with a product development firm this idea was spun out into a company called Atmo Biosciences. They make a gas-sensing capsule you swallow. They've successfully tested it on more than 1,400 people. It's FDA-approved and starts sales later this year. ■

“ I'm a firm believer that the most valuable discoveries, especially if they're disruptive, happen by accident. So how do we create a culture and an environment that allows this to happen? ”

This is an edited extract from Prof Sriram's speech in the OMRI Speaker Series.