Dear Independent Panel,

My name is Stephane, I am an Australian citizen who migrated from Switzerland eight years ago. I live in submission and raise my views and experiences about the Government's COVID-19 response.

I hope that the inquiry focuses on pandemic prevention. More than any other global catastrophic risk, we are able to prevent novel pathogens from emerging and to identify and eliminate them if they do. Given the huge human and economic costs of pandemics – and that pandemics worse than COVID-19 are possible – prevention should be our top priority.

The paper "The costs and benefits of primary prevention of zoonotic pandemics" (Bertstein 2022) makes the economic case for a focus on pandemic prevention. The paper shows that – even on pessimistic assumptions and without considering the potential impact of emerging technologies – significant investment in pandemic prevention is overwhelmingly justified.

In light of that analysis, the new Australian Centre for Disease Control should focus on efforts to prevent novel pathogens from emerging and being able to control them if they do.

1. Engineered pandemics are a significant risk and could be accelerated by advances in Al.

The Inquiry's terms of reference include preventative health measures. The best preventative health measure is likely to be preventing pandemics from occurring. To do this most effectively, we need to have a good understanding of how pandemics might begin.

Historically, zoonoses have been the leading cause of pandemics. This is a significant risk that government policy should address. Looking forward, Gopal et al in "Securing Civilisation Against Catastrophic Pandemics" use a range of tools to estimate the likelihood of different future pandemic scenarios. Their estimates show that dangerous pathogens leaking from labs have likely surpassed zoonoses as the key risk. Even more worryingly, they argue that maliciously engineered pandemics could become the overriding risk unless action is taken.

The reason engineered pandemics have become a critical public health concern is rapid progress in biotechnology and the rise of "dual-use" Al products.

"Dual-use risks" refers to the risks generated by Als intended to perform useful tasks if used by malicious actors. Specifically, biotechnology applications using artificial intelligence have capabilities that could amplify the ability of terrorists to harm Australians.

The US is taking dual-use risks seriously. On 25 July 2023, the US Senate Judiciary Subcommittee on Privacy, Technology and the Law took evidence about the potential risks of AI from Dario Amodei (CEO of Anthropic), Yoshua Bengio (Turing Award winner and the second-most cited AI researcher in the world), and Stuart Russell (Professor of Computer Science at Berkeley).

Committee Chair, Senator Blumenthal began the hearing by highlighting these "dual-use" risks:

The future is not science fiction or fantasy — it's not even the future, it's here and now. And a number of you [Amodei, Bengio and Russell] have put the timeline at 2 years before we see some of the most severe biological dangers. It may be shorter because the pace of development is not only stunningly fast, it is also accelerating at a stunning pace.

The hearings painted a concerning picture where frontier models will soon have the ability to combine with advances in biotechnology to supercharge the ability of malicious actors to do harm. Dario Amdodei, CEO of Anthropic, agreed with these concerns and called on Government to take action:

Anthropic is concerned that Al could empower a much larger set of actors to misuse biology... Today, certain steps in bioweapons production involve knowledge that can't be found on Google or in textbooks... We found that today's Al tools can fill in some of these steps... a straightforward extrapolation of today's systems to those we expect to see in 2 to 3 years suggests a substantial risk that Al systems will be able to fill in all the missing pieces, enabling many more actors to carry out large-scale biological attacks...

We have instituted mitigations against these risks in our own deployed models, briefed a number of US government officials—all of whom found the results disquieting, and are piloting a responsible disclosure process with other Al companies to share information on this and similar risks. However, private action is not enough—this risk and many others like it requires a systemic policy response.

In response to these hearings, on 30 October 2023, President Biden made an executive order that does two main things. First, it put a timeline on US agencies to develop a framework to ensure the proper screening of synthetic DNA. With or without the additional risks of AI, synthetic DNA is likely the essential input that any malicious or negligent actor would need to engineer a pandemic. Second, it put a range of requirements on AI labs designed to ensure future AI models don't have these "dual-use risks" that could contribute to a future pandemic.

While I appreciate that this issue may feel outside the scope of a preventative public health measure – the same was said of clean drinking water, the work of Florence Nightingale or many other advances in public health that came from leaders realising that a vast range of social and technological factors feed into public health. Indeed, the history of innovation in public health is a history of tackling cutting-edge problems that others neglected. All and synthetic biology are today's versions of those historic problems.

Indoor Air Quality could make a big difference, including emerging tech such as far UV-C

I believe that the Australian government should create clear codes of practice and standards for Indoor Air Quality (IAQ) and introduce regulations for high-risk spaces. Every year, Australians fall ill as a result of exposure to airborne pathogens in indoor environments. Some of the most vulnerable members of our community, the elderly and immunocompromised, are particularly exposed to this risk. Better controls on IAQ would not

only help protect us against current and future pandemics, but they can also reduce the negative health outcomes caused by other hazards like indoor smog, toxic materials, non-pandemic respiratory diseases, and other known airborne health hazards.

Despite <u>Australians spending at least 90% of their time indoors</u>, the Australian Department of Climate Change, Energy, the Environment and Water highlights that Australia has no specific controls on IAQ aside from the limited control specified by <u>Work Safe Australia</u>. Without nationalised standards and codes specifying minimum performance requirements for infection control, I worry that the nation will default to ineffective interventions that provide little protection against pathogens.

Clear and effective codes of practice and standards for IAQ Australia would provide clear metrics and targets for air quality with the goal to reduce pathogen transmission. Without clear metrics and targets, I worry that manufacturers and innovators will create products that are ineffective at cleaning indoor air to suitable levels to reduce pathogen transmission. Evidence-based standards for IAQ which are informed by the latest scientific research into respiratory disease, air filtration and sanitation, public health, and behavioural science would provide the correct regulatory environment to ensure effective IAQ interventions are available to the Australian public. Additionally, clear requirements should be specified for high-risk environments in which airborne infections are potentially life threatening such as in aged care facilities, hospitals, healthcare facilities, and other facilities caring for the immunocompromised. The Lancet COVID-19 Commission Task Force has proposed Non-infectious Air Delivery Rates (NADR) so we now have measurable goals for ventilation and filtration targets that protect against infectious disease transmission. The Task Force highlights that, while there is ongoing scientific debate over what metrics and targets are optimal, there is agreement that current practices are insufficient. I recommend that the Inquiry read the report to gain a better understanding of the considerations in setting effective codes and standards for IAQ

IAQ codes and standards could be defined by the Australian Building Codes Board (ABCB) in the National Construction Code. The ABCB could draw on the expertise of the Australian Commission on Safety and Quality in Health Care and the <u>Australasian Health Infrastructure Alliance (AHIA)</u>, as well as the existing IAQ work done by the ABCB. <u>ASHRAE Standard 241, Control of Infectious Aerosols</u> may also be helpful in informing codes and standards.

I believe that clearer codes of practice and standards for IAQ can help safeguard all Australians against airborne pathogens in indoor environments. With the right regulatory environment we can reduce the spread of pathogens, reduce the burden on our public health system, and safeguard the most vulnerable members of our community.

Since ancient times, the scope of public health has been increasing. Contemporaries would have thought that lenses in microscopes, the design of sewers, citrus on ships or a hundred other things had little to do with public health. However, expanding the scope of public health to include emerging issues and new technologies has directly led to substantially better outcomes. This inquiry is a chance to put new and emerging topics at the forefront of how we think about pandemics. Whether it's harnessing the benefits of metagenomic sequencing or addressing the risks of AI – I think it's essential that this Inquiry look to the risks and opportunities of the future.