Dear Independent Panel,

Thank you for the opportunity to make a submission and raise my views and experiences about the Government's COVID-19 response. My name is [redacted] and I am an Effective Altruist who believes in using reason and data to promote good. I am a second-year economics and computer science student at [redacted] My joy is learning, sport and people.

I hope that the inquiry focuses on pandemic prevention. More than any other global catastrophic risk, we can prevent novel pathogens from emerging and 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 focusing 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.

My submission goes primarily to 'preventive health measures' in terms of reference 3.

Lab Leaks

Public commentary has focused on the possible origins of COVID-19, including whether it was a "lab leak". Regardless of the specifics of COVID-19 specifically, I've been shocked to learn about the high rate of safety incidents at labs handling dangerous pathogens. A publication from Manheim and Lewis found that from 1975-2016 there were 71 reported high-risk human-caused pathogen exposure events – as well as evidence of underreporting. An anonymous survey on biosecurity and accidents in Belgium reported almost 100 laboratory-acquired infections in a 5 year study period. A lab leak also likely began the 1977 flu pandemic.

Given pandemics can cost millions of lives and trillions of dollars, it seems clear that safety standards (or adherence to standards) fall far short of what is appropriate. While I'm firmly in favour of science, and think that science is a force for good in fighting pandemics, it has to be done responsibly.

As an outsider, there is little transparency about how physical containment facilities in Australia are regulated. The Office of the Gene Technology Regulator seems to focus mostly on GMOs and provides little information about its functions regarding physical containment facilities.

To the extent that information is available, OGTR's 2022-23 annual report is proud that it certified a record 132 physical containment facilities last year, meaning that there are now 1,874 "high-level" facilities operating in Australia. It also reports that it only conducted 49 inspections in the same period, including no inspections of the highest-level PC4 facilities.

Reviewing older reports, no PC4 facilities were inspected in 2021-22 either, and only 1 inspection occurred in 2020-21. Despite only conducting 49 inspections in 2022-23, 26 certified physical containment facilities were found to be non-compliant. In this context, the

report noted that OGTR takes a “cooperative approach” to compliance and that no culpability was found in any of these cases.

In addition to seeming shortcomings in oversight, the guidelines themselves are troubling. The rules for PC4 facilities were last updated in 2007 and reference standards like AS1324.1 on air filters and AS/NZS 2243.3 on lab safety, which don’t appear to have been updated since 2001 and 2002 respectively. AS1324.1 specifically has been criticised by the HVAC industry for being based on inaccurate research from the 1950s and has now been superseded by ISO 16890.

While this is a grim picture on multiple fronts, it’s not necessarily a criticism of OGTR. OGTR only has 51 employees and has wide-ranging regulatory functions apart from these topics.

Overall, this snapshot paints a grim picture of the state of regulation in Australia, and one that I think falls far short of public expectations about how seriously these issues would be taken. Before reading into this, I would have guessed that PC4 facilities comply with cutting-edge global standards that account for emerging technology, and would each be inspected several times per year.

I think that this Inquiry should recommend a thorough review of biosafety – including the suitability of requirements, degree of adherence, and adequacy of oversight – for all research that involves human or animal pathogens. The review should include a risk assessment that takes into account the potentially catastrophic global consequences of errors, and ensures that our approach to mitigation is proportionate to that risk.

Engineered pandemics and AI

One of the aspects of pandemic prevention that I think Australia should take much more seriously is the increasing possibility of engineered pandemics. The terms of reference for the Inquiry focus on anticipating future pandemics - and the evidence shows that doing that effectively requires thinking about this possibility.

Experts, including [redacted] assess that the technologies necessary to design, create and release dangerous and novel pathogens may become widely available by 2025. This is elaborated in the Geneva Security “Delay, Detect, Defend: Preparing for a future in which thousands can release new pandemics” (see Figure 1)

In 2021, Professor Brian Schmidt AC, Vice-Chancellor of the Australian National University, said that this “democratisation” of biotechnology is his single biggest fear:

[redacted]."

Subsequent to Professor Schmidt’s comments, the market for synthetic DNA, speciality reagents, and AI tools that can support lay people to use this technology has continued to accelerate.

A large group of people – malicious or not – having access to a technology that could kill millions of people is clearly an unacceptable risk.

In recognition of this risk, on 30 October 2023, President Biden made an executive order setting a 180-day timeline for the development of a framework that ensures effective screening for risky DNA sequences, best practices for access controls, technical guidances for effective screening, and robust oversight mechanisms. Currently, about 20% of DNA orders go without any screening. The executive order also threatens to cut funding to any provider that does not adhere to best practice screening after that 180-day timeline.

Australia already has a permitting regime to regulate the importation of synthetic DNA. The Inquiry should recommend that the Commonwealth urgently update this regime to act with the US in requiring labs importing DNA into Australia to apply these new screening procedures to all orders.

Urgent action to follow the US on the regulation of synthetic DNA will largely address the most pressing risks that Professors Esvelt and Schmidt highlight, but it's not an enduring solution. Steady advances in biotechnology and increasingly advanced AI are likely to be able to help nefarious users work around these kinds of regulations unless regulation keeps up and steps are taken to make AI safe.

With that in mind, the Inquiry should recommend that the Department of Industry work with the Department of Health and the CDC to develop minimum safety standards for frontier models that are deployed in Australia – specifically to ensure that models that pose biosafety risks are identified and restricted. We should set clear expectations for developers and deployers that AIs with "dual-use" capabilities that could pose catastrophic risks are not welcome in Australia. Finally, we need to keep close tabs on advances in biotechnology to ensure the ability to engineer pathogens never becomes widely available.