



NZHR Submission on New Zealand Productivity Commission/ Te Kōmihana Whai Hua o Aotearoa Draft Report “*New Zealand firms: Reaching for the frontier*”.

Introduction

New Zealanders for Health Research (NZHR) was established in November 2015 to bring about increased investment in health research from government, industry and philanthropy. We believe that health research saves and improve peoples’ lives, and directly and indirectly contributes to New Zealand’s economic prosperity. We are therefore committed to ensuring that health research is fully valued, that it is embedded as an essential component of New Zealand’s health system, and there is a level of investment in health research which results in the best possible health, productivity and economic returns.

Summary of NZHR recommendations

1. The Productivity Commission Report (PCR) be strengthened by specifically commenting on the sufficiency of the government’s current 2% aspirational R&D target, and recommending a more appropriate target if it believes the current target is insufficient.
2. The PCR use the term “health innovation”, instead of “healthtech” to better collectively describe the three main subsectors of: medical devices; digital health and IT products; and diagnostics and therapeutics.
3. The PCR addresses New Zealand’s low level of health R&D by recommending an appropriate target based on both its analysis of other SAEs and the relatively high importance it places on development of the health innovation sector as part of its proposed overall strategy for maximising the economic contribution of New Zealand's frontier firms.
4. The PCR include an estimate of the economic returns of increased R&D investment, both for the economy as a whole and for those sectors where innovation potential is high, including health
5. Given the similarities between the New Zealand and UK health system funding arrangements the PCR draw comparisons with the UK health system where health research is an essential, normal and funded component of clinical practice.
6. The Productivity Commission’s final report includes a recommendation that the Health Transition Unit embeds health innovation R&D within the health system as part of the process of responding to the Health and Disability System Review report.
7. The PCR include an analysis of the government’s Health Research Strategy HRS and its implementation track record, and recommends as to how both could be strengthened to create an improved health innovation environment.
8. Given the focus of the PCR on health R&D NZHR recommends that in addition to its references to the advantages that gene editing would confer to breeding techniques, biosecurity and climate change, the report extends and strengthens its comments to include benefits to health outcomes.



Background

The New Zealand Productivity Commission is seeking comments on its draft report “*New Zealand firms: Reaching for the frontier*”¹.

The report was commissioned by the Ministers of Finance, of Economic Development and of Trade and Export Growth requesting that the New Zealand Productivity Commission undertake an inquiry into maximising the economic contribution of New Zealand's frontier firms.

The Terms of Reference for the enquiry state that while aspects of New Zealand's recent economic performance have been strong, productivity growth is persistently weak and a significant drag on living standards and wellbeing.

“This inquiry focusses on a central aspect of New Zealand's productivity performance - the economic contribution of New Zealand's frontier firms. Frontier firms are the most productive firms in the domestic economy within their industry. These firms play an important role in shaping aggregate productivity performance, both through their own performance and through the way they diffuse new technologies and business practices into the New Zealand economy”.

“While New Zealand has some world-leading firms, on average our frontier firms are not performing as well as their international peers, and the diffusion of innovations from the domestic frontier to other domestic firms seems slow.”

“The purpose of this inquiry is to identify policies and interventions that could maximise the performance and contribution to the economy of New Zealand's frontier firms through:

- *improving the performance of the frontier firms themselves; and*
- *helping innovations diffuse more effectively from frontier firms to other New Zealand firms.”*

The Productivity Commission's report (PCR) includes both a general focus on the need for improved productivity to be driven inter alia by innovation through investment in research and development, and a specific focus on the role of health R&D.

Much of the PCR commentary in this regard echoes issues that have been previously raised by NZHR. NZHR has developed its submission to both amplify the Commission's observations and to identify where its comments and recommendations could be further strengthened.

Many of NZHR's positions have been previously articulated in its November 2020 Briefing Paper for the incoming Ministers of Health and Science Research and Innovation (BIM)². This is presented in its entirety as a companion document to NZHR's submission, and unless otherwise stated is the prime reference document for this submission's comments and assertions.

¹ New Zealand Productivity Commission (2020). *New Zealand firms: Reaching for the frontier*. Draft report. [Frontier firms \(productivity.govt.nz\)](https://www.productivity.govt.nz/firms)

² New Zealanders for Health Research (November 2020). Briefing Paper for the Incoming Ministers of Health and Science, Research and Innovation: Ka Whakarauratia te Hunga e te Rangahau Hauora: Health Research Saves Lives. <https://www.nz4healthresearch.org.nz/wp-content/uploads/2020/11/NZHR-briefing-paper-for-incoming-Ministers-241120.pdf>



NZHR's response

Overview

NZHR has consistently asserted that:

- Lifting investment in health research will contribute to improvements in New Zealand's economic prosperity;
- New Zealand's investment in research and development (R&D) across the board is inadequate when compared to other small advanced economies (SAEs), government ambitions in this regard are mediocre, and both of these factors act as a handbrake on government willingness to acknowledge the even more dire underinvestment in health R&D;
- There is a longstanding and significant disconnect between health R&D investment and the New Zealand health system, a situation which could have been ameliorated by the Health and Disability System Review report but was instead exacerbated by it.

Either directly or by implication the PCR largely validates NZHR's positions and NZHR in turn supports the overall direction of the PCR's observations and recommendations, especially as they apply to driving innovation through investment in health and other R&D.

Furthermore, NZHR concurs with the Commission's view (page 2) that geography is not a life sentence condemning New Zealanders to lower living standards, that opportunities exist for New Zealand to change key aspects of the status quo and lift performance, and that it is timely for New Zealand to learn from other SAEs.

General R&D Investment

NZHR supports the PCR's assertion of the usefulness of comparing New Zealand with other small advanced economies (page 13), i.e. *"Although every small economy is distinctive, looking across this group can illustrate common themes and key differences. Most are high performing, generating strong economic and social outcomes. But they also face the constraints of small domestic markets, and some are relatively remote. These economies can provide more relevant lessons for New Zealand than larger economies. Small advanced economies are not just scaled-down versions of larger economies, but have specific characteristics that shape their performance"*.

The PCR further observes (page 94) that *"New Zealand's innovation ecosystem is weaker on most dimensions than other SAEs. Investment in R&D in other SAEs (except Ireland) is significantly larger than in New Zealand. New Zealand's gross domestic expenditure on R&D (GERD) is 1.3% of GDP, which is less than half of the average GERD in SAEs (2.7%). Similarly, business enterprise expenditure on R&D (BERD) is well below the SAE average (0.74% of GDP v. 1.9%)"*

NZHR's submission³ on the MBIE's consultation paper: New Zealand's Research, Science & Innovation Strategy⁴ stated that *"we continue to believe that the government's 10 year aspirational 2.0% of GDP R&D investment target is too low. Our submission [is] that in order for New Zealand to increase its international competitiveness its R&D investment target should be established in the context of the R&D investment levels of both other small advanced economies and New Zealand's major*

³ NZHR. November 2019. Submission on MBIE's consultation paper: New Zealand's Research, Science & Innovation Strategy, September 2019. <https://www.nz4healthresearch.org.nz/wp-content/uploads/2019/11/NZHR-submission-re-MBIE-RSI-strategy-101119.pdf>

⁴ MBIE. September 2019. New Zealand's Research, Science & Innovation Strategy. Draft for Consultation. <https://www.mbie.govt.nz/dmsdocument/6935-new-zealands-research-science-and-innovation-strategy-draft-for-consultation>



trading partners (and not merely the OECD average). We proposed and continue to maintain that New Zealand's aspirational R&D target should be set at 3.3%."

Upon reviewing the PCR report's chart on page 94 NZHR believes that New Zealand should be aiming to be in the top quarter of SAE R&D investors, and once again we continue to maintain that New Zealand's aspirational R&D target should be set at or near 3.3%.

Although it may be inferred that the PCR report is suggesting that New Zealand's current and aspirational GERD levels are too low, it stops short of specifically saying so. NZHR therefore recommends that in the context of its page 13 comments (re the usefulness of comparing New Zealand with other SAEs) the PCR report be strengthened by specifically commenting on the sufficiency of both New Zealand's current 1.3% R&D performance and the government's 2% aspirational R&D target, and recommending a more appropriate target if it believes the current one is insufficient.

NZHR further notes that PCR is silent on the economic returns from increasing R&D investment, and recommends that there be an estimate of the economic returns of increased R&D investment, both for the economy as a whole and for those sectors where innovation potential is high, including health.

Health R&D Investment

The PCR comments that "healthtech is a vibrant and fast-growing sector in New Zealand. The industry includes three main subsectors: medical devices; digital health and IT products; and diagnostics and therapeutics" (page 141). NZHR agrees with the assertion but suggests that the term "healthtech" is a misnomer as many will understand the term to largely equate to digital health and IT products (as the PCR itself seems, confusingly, to do at various points). NZHR therefore recommends that in order to improve the clarity of the PCR's messaging that it instead uses the term "health innovation", which NZHR believes better collectively describes the three main subsectors identified by the PCR.

The remainder of this section of NZHR's addresses:

- Insufficiency of New Zealand's health R&D investment
- The health system's indifference to the value of health R&D
- Clinical trials
- GMO based therapies

Insufficiency of New Zealand's health R&D investment

New Zealand's historical complacency with respect to R&D investment generally, including its unwillingness to benchmark itself with other SAEs, puts a handbrake on any commitment it might otherwise have to increasing its health R&D investment.

In its BIM (2020) NZHR points out that over the past fourteen years direct government investment in health research has never exceeded 1% of government health care costs (it has fluctuated between 0.6% and 0.8%), and in the absence of any government signals to the contrary, NZHR forecasts the figure to fall away to its historical lows of 0.6% by 2027. NZHR's BIM makes the case for aspiring to a 2.4% target, and also maintains at the very least that the government should in any case be aspiring to the 2% target that it has set for itself for R&D generally.

The BIM starkly sets out the gap between current performance and where in NZHR's view New Zealand should be aspiring to in the graph below.



NZHR acknowledges that its approach to establishing the 2.4% government health research investment target could be viewed as being overly narrow. Costs of ill health are born by government agencies other than the Ministry of Health, non-government entities, and also by society at large. Furthermore, government investment in health research is not confined to allocations to the Health Research Council and the health related national science challenges, and both the commercial and philanthropic sectors also invest in health research. To test the continuing appropriateness of the 2.4% investment target NZHR has undertaken an additional “snapshot” analysis as presented in Tables 1 and 2 (which are fully referenced in the NZHR 2020 BIM).

Whichever way one looks at it NZHR’s analysis both demonstrates that New Zealand’s health R&D investment is woefully low, and supports NZHR’s strategy of focusing on increasing direct ringfenced investment in health research to 2.4% of health care costs, while also continuing to focus on lifting other sources of government investment, together with commercial and philanthropic investment.

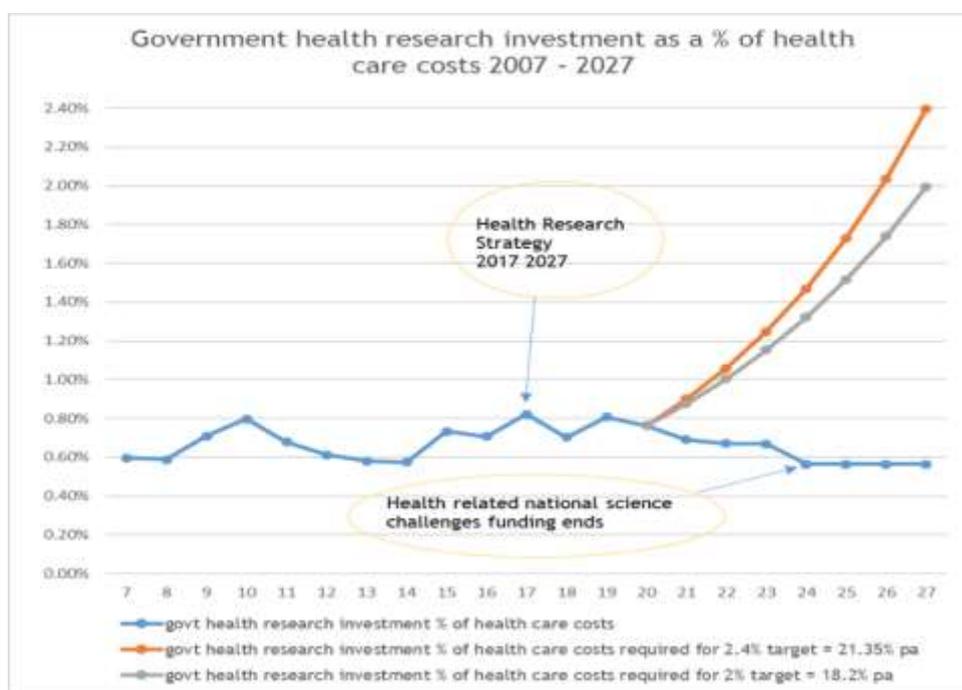


Table 1: Investment in health research vs costs of addressing/mitigating ill health

		code	2018/19 \$'000
Govt health care costs	Ministry of health (direct health care)	A	17,441,284
	Ministry of Health (other)	B	784,000
	ACC	C	1,466,782
	Supported living payments	D	1,562,611
	Total govt	E	21,254,677
Societal health care costs	Business costs of workplace absence	F	1,790,000
	Health insurance claims paid	G	1,263,000
	Personal costs of accessing primary health care	H	600,000
	Personal indirect costs of ill health	I	14,900,000
	Total costs of ill health	J	39,807,677



		code	2018/19 \$000
Investment in health research	Direct govt	K	122,726
	Tertiary	L	43,500
	Other govt	M	90,218
	Commercial	N	172,000
	Philanthropic	O	65,000
	Total health research investment (sum of the above)	P	493,444
	Total health research investment (Dept of Statistics)	Q	528,000
	Total health research investment (MBIE/MoH/HRC estimate)	R	320,000

Table 2: Health Research Investment Ratios

Descriptor	Investment ratio	Formula
Ringfenced govt health research investment vs direct health care costs	0.72%	K/A
Ringfenced govt health research investment vs total govt costs of addressing ill health	0.59%	K/E
Ringfenced govt health research investment vs total govt and society costs of addressing ill health	0.31%	K/J
Total govt health research investment vs total govt costs of addressing ill health	1.2%	(K+L+M)/E
Total govt health research investment vs total govt and society costs of addressing ill health	0.65%	(K+L+M)/J
Total health research investment vs total govt and society costs of addressing ill health	1.2%	P/J
Total health research investment, with ringfenced govt health research investment at 2.4% target, vs total govt and society costs of addressing ill health	2.0%	$((K*3.3)+(L+M+N+O))/J$

Although the PCR comments favourably on CoRE funding arrangements (pages 103 and 142) NZHR believes that they represent an example of constrained health R&D investment. In the most recent round of funding although cardiac health was a new health related CoRE funding recipient, this was at the expense of the Centre for Brain Research and the MedTech CoRE both of which lost their funding. NZHR speculates that this was in part due to there not being enough funding to go round, and cannot help noting the grim irony of this in light of the PCR's observation that *the MedTech CoRE has played an important role in encouraging collaboration and nurturing an active innovation network* (page 142)

The PCR (pages 7, 127 and 141 - 143) comments on the lack of and the need for increased government targeted innovation funding to incentivise the health system to engage in health R&D activities. NZHR contends that this is unlikely to occur while New Zealand continues to accept its current low levels of health R&D, and recommends that the PCR addresses this by recommending an appropriate target based on both its analysis of other SAEs and the relatively high importance it places on development of the health innovation sector as part of its proposed overall strategy for maximising the economic contribution of New Zealand's frontier firms. NZHR would be unsurprised if the PCR were to arrive at a figure of approximately 3%.



The health system's indifference to the value of health R&D

NZHR was concerned to note that none of four government health related agency briefings^{5 6 7 8} to incoming ministers acknowledge New Zealand and government underinvestment in health R&D, even though at least two of the agencies (the Health Research Council and the Ministry of Health) have long been aware of NZHR's position and concerns.

The New Zealand health system has a long history of government sanctioned indifference to the value of health R&D. The 1993 health reforms specifically excluded RHAs from funding clinical trials and other research, something which continues to this day through there not being an allowance in the Population Based Funding formula for DHBs to undertake health research, including clinical trials. Following its 2011 review of clinical trials the Health Committee's recommendation that health research be considered a core component of health service delivery was specifically rejected by Cabinet, and Pharmac has been permitted to drive down pharmaceutical prices without having to be accountable for the significantly negative impact that this has on investment in clinical trials (as illustrated in the fourth graph in the next section).

This history of indifference is perpetuated in the report of the Health and Disability System Review (HDSR). Both the PCR (pages 7, 127, 141 - 143) and NZHR (2020 BIM) have commented on report's near silence on the value of health R&D being embedded as an essential component of a reformed health system - a system which should be aspiring to achieve both improved health outcomes and improved equity of outcomes. In fact, despite NZHR's submission⁹ the review's interim report did not mention health R&D at all, and notably did not include in its 468 citations any mention of the government's own Health Research Strategy (HRS)¹⁰. Although this specific oversight was addressed in the final report as a direct result of NZHR's advocacy the continued absence of any health R&D recommendations remains a source of deep concern, the health system continues to represent mostly barren ground when it comes to partnering with the health innovation sector, and NZHR agrees with the PCR's recommendations (page 142) that the gravity of the current situation be addressed.

The PCR (page 142) notes that DHBs are important sources of reference test sites and clinicians. *"Yet their participation in clinical trials is not currently mandated or rewarded. Almost all the Commission's case-study interviewees highlighted the challenge of opening up DHBs to play a bigger role in innovation. Some drew a contrast with the US, where academic hospitals treat innovation and the creation of spinoff companies as part of their mandate, and attract talent and resources accordingly"*. NZHR adds that many of its stakeholders draw contrasts with the UK where health research is an essential, normal and funded component of clinical practice. As the UK's NHS based health system arguably has more in common with the New Zealand health system than the insurance funded US health system NZHR recommends that the CPR draws comparisons with the UK system. If the New Zealand system were to look something like the UK system that in NZHR's view would be a good start.

⁵ Health Research Council. 2020. Briefing for Incoming Minister. https://www.beehive.govt.nz/sites/default/files/2021-01/Health%20Research%20Council%20BIM_0.pdf

⁶ Ministry of Health. 2020. Briefing for Incoming Minister. <https://www.beehive.govt.nz/sites/default/files/2020-12/Health.pdf>

⁷ Health Transition Unit. 2020. Briefing for Incoming Minister. <https://www.beehive.govt.nz/sites/default/files/2020-12/Health%20Transition%20Unit.pdf>

⁸ HQSC. 2020. Briefing for Incoming Minister. <https://www.beehive.govt.nz/sites/default/files/2020-12/HQSC.pdf>

⁹ NZHR. May 2019. Submission on the Review of the New Zealand Health and Disability System. <https://www.nz4healthresearch.org.nz/wp-content/uploads/2019/05/NZHR-submission-Health-System-Review-final-280519-Final.pdf>

¹⁰ MoH and MBIE. June 2017. New Zealand Health Research Strategy 2017 -2027.

<https://www.health.govt.nz/system/files/documents/publications/nz-health-research-strategy-jun17.pdf>



NZHR notes that a Health Transition Unit (HTU) has been established within the Department of the Prime Minister, under the leadership of a former Director General of Health Stephen McKernan, to manage implementation of the HDSR's recommendations. NZHR believes that Cabinet's response to the HDSR does not preclude the HTU from embedding health R&D into a reformed health system, and proposes that a recommendation to this effect be included in the Productivity Commission's final report.

Perhaps contrary to the PCR's comments (page 7) the HRS is in fact an attempt by the centre to provide a coherent strategy on innovation and learning to, among other things, guide DHBs and bring a coordinated approach to developing New Zealand's health R&D sector, including through implementation of actions to strengthen health sector participation in research and innovation, and to enable and embed translation across the health sector.

NZHR however observes that implementation appears to be slow, interactions between the three agencies responsible for its implementation (HRC, MoH and MBIE) are not always well coordinated, the Ministry of Health is dragging the chain through perpetuating its lack of resourcing and commissioning arrangements which would require DHB's to engage with health R&D, and overall governance of the strategy's implementation lacks transparency.

NZHR recommends that the PCR report includes an analysis of both the HRS and the government's implementation track record, including recommendations as to how both could be strengthened to create an improved health innovation environment.

NZHR notes with interest the PCR's comments on Denmark (page 24), where the large pharmaceutical firm Novo Nordisk is the largest company in one of Europe's strongest biopharma clusters. In 2014, there were 83 companies in the cluster; it employed approximately 20 000 people, and invested around DKK10 billion (around NZD\$2.25 billion) annually in research and development in Denmark. NZHR wonders what the potential would be for this to be emulated in New Zealand were there to be a better developed health innovation environment. Fisher and Paykell Healthcare and Douglas Pharmaceuticals are two New Zealand companies which come to mind as potential frontier firms.

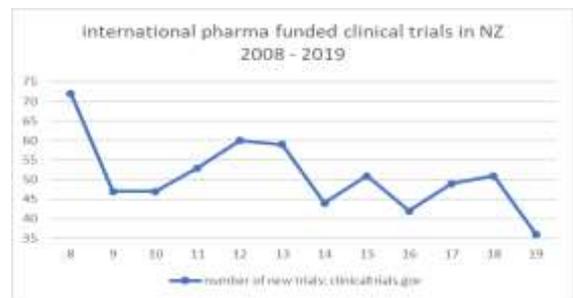
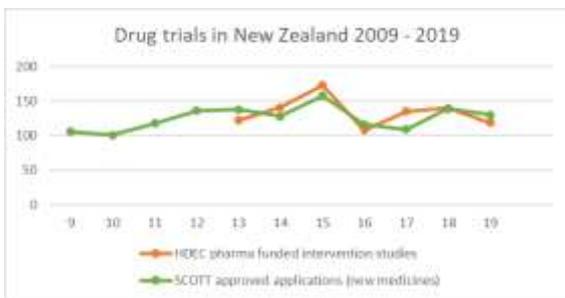
NZHR remains concerned that the Cabinet approved recommendations of the 2011 Health Committee Clinical Trials and Innovation review¹¹ were never systematically followed up, constituting further evidence of the health system's indifference to health R&D. Had the recommendations been properly acted upon New Zealand's health innovation sector would arguably be in better shape than it is today.

Clinical trials

One indicator of how well the country's health innovation sector has been performing is commercially funded clinical trials of new interventions, including health technology, devices and new therapies. NZHR's 2020 BIM includes the following graphs which are presented for information.

Although there has been limited overall but latterly declining growth in the number of commercially funded clinical trials undertaken in New Zealand (fuelled by offshore companies contracting with New Zealand based clinical trials organisations), drug trials are showing no growth, the number of trials funded by international pharmaceutical companies which operate in New Zealand has fallen significantly, and New Zealand has been losing its share of the combined Australia New Zealand market.

¹¹ New Zealand Parliament. 2011. Government Response to the Report of the Health Committee on its Enquiry into Improving New Zealand's Environment to Support Innovation through Clinical Trials.
https://www.parliament.nz/resource/en-NZ/49DBHOH_PAP21990_1/087b78a44dd4f336f886bf49b5087569a30514e2



The PCR comments (page 4) that *in target areas, the Government should also take a more proactive and targeted approach to attracting multinational corporations (MNCs) that are knowledge-intensive, oriented to exporting and a source of spillover benefits. The approach should seek both to create conditions that act as a magnet for MNCs and to develop and action attraction programmes to directly attract MNCs, similar to those used successfully in some SAEs.*

Judging by the results of the graph above in the lower right hand corner (which counts the number of international pharmaceutical company funded clinical trials where the company has a New Zealand based operation) the government has not been implementing opportunities to do this in the health innovation sector.

The PCR further comments (page 17) that the pandemic has created opportunities for New Zealand businesses to better engage with overseas markets, given the increased uptake of digital technologies. Anecdotally NZHR’s stakeholders are reporting that New Zealand’s Covid 19 free status combined with a health system which is not overwhelmed with treating Covid 19 patients is proving to be a significant attraction to overseas entities looking for suitable clinical trials sites.

GMO based therapies

GMO based therapies are increasingly becoming the subject of health research initiatives, whether that be through the application of CRISPR techniques for addressing genetic disorders, or the development of new medicines such as vaccine based anti-cancer CAR-T therapies currently being pioneered by the Malaghan Institute of Medical Research.

New Zealand’s current GMO legislation is putting a handbrake on some of this research and in response NZHR has advocated for streamlining of Environmental Protection Agency processes for approving clinical trials of GMO based therapies. This was identified as a key issue by participants



in NZHR's March 2019 "Health and Prosperity through Clinical Trials" workshop¹², was alluded to as a barrier to the conduct of clinical trials in NZHR's Submission on proposed therapeutics product legislation¹³, and was specifically addressed on page 29 of NZHR's BIM (2020).

NZHR has also sought New Zealander's views on the extent to which they agree that genetically modifying organisms is a safe and effective way of making new medicines. About 50% agree that it is, 30% disagree and 20% don't know.^{14 15}

Although these results suggest that there needs to be improved public communications about the safety and efficacy of GMO based therapies NZHR nevertheless supports the PCR recommendation that the Government should review the regulation of GM, in order to bring the legislation up to date and enable New Zealand to grasp the opportunities from new GM technologies in a safe and timely manner (page 6).

The PCR refers to the advantages that gene editing would confer to breeding techniques, biosecurity and climate change. Given the focus of the PCR on health R&D NZHR recommends that the report extends and strengthens its comments to include the benefits to health outcomes.

NZHR constituency

In developing this submission NZHR has consulted with its partners and members as set out below (and from whom we derive 100% of our funding).

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3rd February 2021

¹² NZHR. April 2019. "Health and Prosperity through Clinical Trials" Workshop 22nd March 2019 summary. <https://www.nz4healthresearch.org.nz/wp-content/uploads/2019/04/NZHR-clinical-trials-workshop-22nd-March-summary-010419-002.pdf>

¹³ NZHR. April 2019. Submission on the proposed therapeutics product legislation. <https://www.nz4healthresearch.org.nz/wp-content/uploads/2019/04/NZHR-submission-re-therapeutic-products-legislation-final-180419.pdf>

¹⁴ NZHR. 2019. New Zealand Speaks! 2019 Roy Morgan NZHR Opinion Poll. <https://www.nz4healthresearch.org.nz/wp-content/uploads/2019/09/NZHR-Report-2019-GENERAL-EDITION.pdf>

¹⁵ NZHR. 2020. New Zealand Speaks! 2020 Kantar NZHR Opinion Poll. <https://www.nz4healthresearch.org.nz/wp-content/uploads/2020/08/NZHR-Report-2020-GENERAL-EDITION.pdf>



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