Laurent Rivory
Pro Vice Chancellor (Strategic Collaborations and Partnerships)

Professor Anne Kelso AO
Chief Executive Officer
National Health & Medical Research Council
e : anne.kelso@nhmrc.gov.au

25 August 2016

Re: Structural Review of NHMRC's Grant Program Public Consultation

Dear Anne,

We have provided a response to the consultation paper regarding the Structural Review of the NHMRC's Grant Program (attached) but wanted to also provide some overarching ideas which, if implemented, could provide some of the required structural relief to the MREA. These ideas do not lend themselves well to the template structure of the consultation document and we have therefore taken the liberty of trying to outline them out more cohesively below.

It is clear from the data presented in the discussion paper that the crisis in the success rate of Project Grants is the result of funding not meeting demand. The increase in funding in the period of 2000 to 2010 (Figure 2) created a stimulus for growth in the capacity of the Health and Medical Research (HMR) sector. This can be seen from the strong growth in number of chief investigators applying for grants in that period (Figure 22) whereas the previous period was characterised by a relatively static number of CIs. This growth in capacity correlates closely with the increase in application numbers and declining success rates (Figure 10). Of concern is the growth in HMR workforce capacity and hence demand for funding continues with record numbers of CIs applying for the first time in 2014 and 2015 (Figure 22). Anecdotal reports suggest that many CIs consider the NHMRC Schemes a "lottery" and that this results in them submitting increased number of applications. However, while Figure 31 shows a slight increase in the number of applications per CI, the pressure on the NHMRC Project Grants scheme appears clearly to be the result of an increase in the size of the HMR sector (as gauged by significant increase in the number of CI applicants).

Clearly, some contraction of the HMR workforce that is supported by the NHMRC is unavoidable in the short-term without a return to growth funding for the MREA. The alternative of simply reducing the funding that can be received "per capita" in the HMR workforce through the imposition of tight caps will not resolve the problem, as it will reduce funding to levels that are unlikely to sustain activity at a meaningful level. This approach would also limit the resources available to high performing researchers, which would compromise the objective of the NHMRC to support research excellence. Hence, **reducing the maximum permitted grant holdings for individual CIs on its own is unlikely to provide optimal outcomes and could actually damage the overall quality and productivity of Australia's HMR sector.** This is a concern for all three models put forward.

NHMRC Fellowships provide critical support for a significant proportion of the highest performing individuals in the HMR workforce. While the synchronisation of NHMRC grants and fellowships contemplated in Models 1 & 2 makes intuitive sense, there is a risk that HMR careers will be further at risk given the difficulty in supporting research-only or research intensive staff outside of Fellowships.

Room 650, Level 6,
Jane Foss Russell Building G02
The University of Sydney
NSW 2006 Australia

T +61 2 8627 0624
F +61 2 8627 8145
E Laurent.rivory@sydney.edu.au
sydney.edu.au

ABN 15 211 513 464
CRICOS 00026A

Although bridging salaries are not contemplated in the review consultation paper, a **relatively simple solution would be for Fellowships to be offered for a period that is 12 months longer than the linked grant**.

The support of PhD scholarships through a People Grants scheme also does not represent an optimal use of funds from the MREA. Rather, we propose that **PhD stipends be incorporated into Team or Investigator grants of 4 or 5 years duration**. In our assessment, this would provide the best environments for the development of post-graduate students. ECR Fellowships that support mobility should continue to be supported to ensure the best talent is able to be trained in a multitude of environments. **People Grants should have International Mobility Fellowships as a high priority. People Grant support should also be considered to support the development of clinician researchers.**

The consultation paper places much emphasis on addressing an imperative to reducing the number of applications to NHMRC schemes. Declining success rates and increasing opportunity cost are certainly concerning and demoralising for researchers and their institutions. However, the principal public policy objective should be to deliver the new funding framework that is most likely, over the next four years, to ensure that Australia sustains its most outstanding HMR researchers and identified pipeline of future talent in areas of agreed national priority. Also absent from the consultation paper is consideration of options for using MREA funds to leverage funding from other sources. Unless the MREA funding can be leveraged more effectively, the HMR sector funded by the NHMRC is likely to contract at a rate that could put the sector in jeopardy just as it awaits the injection of additional growth funding from the MRFF. **Further leveraging of the MREA is not only critical to sustain the HMR workforce, but would also provide for greater translation of research findings into practice.** Translation creates an environment where co-investors with "skin in the game" are engaged in the research and have a vested interest in implementing the findings.

We would, for example, suggest that all grant applications seeking more than say $2.5 M be extensively leveraged through contributions by external partners (for example philanthropy, other health agencies, NGOs, and research organisations such as CRCs). Such leverage will inherently provide some level of self-assessment as external partners undertake their own due diligence of the value of the research. It would be critical that "cash" leverage not be sought from the research providers (i.e. universities and MRIs) as this would serve only to further threaten the sustainability of Australia's "dual funding" system of support for Australian Competitive Grant Research, due to existing shortfalls for the full costs of this research. Encouraging research service providers such as universities to provide "cash" contributions would create an advantage for those institutions which have lower existing research intensity, and correspondingly greater relative discretionary revenues from their teaching and other activities. Universities and MRIs should of course be incentivised and required to provide critical infrastructure and research support, but we need to avoid an auction-like situation. **Rather, with appropriate leveraging of co-investment from partners, there should be a drive towards grants that fully fund the direct costs of research, including salaries**.

Room 650, Level 6,
Jane Foss Russell Building G02
The University of Sydney
NSW 2006 Australia

T +61 2 8627 0624
F +61 2 8627 8145
E Laurent.rivory@sydney.edu.au
sydney.edu.au

ABN 15 211 513 464
CRICOS 00026A

It will be key for any restructure of NHMRC programs to sustain the best HMR workforce. This is required to deliver the health research findings that will improve the health of Australians in the future. In that regard, the Team Grant approach proposed in **Model 1 is most likely to support the multi-disciplinary efforts that are essential to translational research**. We are interested in the proposed requirement for team diversity, but would caution that previous efforts by the NHMRC (e.g. the first rounds of Program Grants) failed to adequately incentivise the participation of younger researchers. The introduction of tighter controls on team diversity could, for example, help incentivise the participation of female CIs. Otherwise, concerns over the sustainability of a career in HMR are set to remain as significant impediments to achieving gender parity in this workforce.

Diversity in the workforce is also required to ensure participation from CIs of various ethnicities including Aboriginal and Torres Strait Islanders researchers. Such diversity of participation is critical as responding to the health challenges in these communities requires active participation. Encouragingly, the number of Aboriginal and Torres Strait Islanders researchers engaged in HMR continues to increase, but this needs to continue in order to impact on indigenous health and participation in the HMR workforce more broadly.

Given the multitude of professions involved in the delivery of health care, diversity of CIs on NHMRC Projects, with real potential for implementation, should be incentivised. This will ensure participation of, for example, nurses, allied health professionals and primary care physicians in research. The benefits of co-design and consumer participation are increasingly apparent and the inclusion of such individuals as Associate Investigators would be worthy of further consideration.

Projects with potential for translation through commercial avenues would require adequate participation of CIs with commercial expertise. Projects with a national scope would similarly require appropriate diversity of CIs from a geographical or jurisdictional perspective. **Assessment of track record for Team Grants should have much more emphasis on the assessment of the team** (ie “fittest for purpose”) rather than being the cumulative assessment of individuals according to traditional metrics that may have little relevance to the outcomes sought. **Attention to multifaceted diversity could be incorporated into that assessment.**

A frequently reported observation is that CIs who have poor connectivity with pathways for translation or who are surrounded by inadequate critical mass, disciplinary strength and/or research infrastructure tend to be over-represented in unsuccessful grant applications. Together with the observations above, our assessment is that there is a strong rationale for supporting projects that are team-based and which leverage research and translational infrastructure together. **We therefore propose requiring a minimum number of CIs on Team Grant applications.** A likely consequence of requiring teams of a certain minimum size is that it will act to discourage applications from CIs that are isolated from appropriate intellectual and infrastructure resources.

There is, however, a risk that the Team Grants structure may not provide the funding needed to sustain the core programs that are important to sustain basic biomedical research. In this regard, the investigator grant of Model 2 may be preferable, suggesting that **a hybrid model in which both Team and Investigator Grants are available may be an effective strategy.**

Room 650, Level 6,
Jane Foss Russell Building G02
The University of Sydney
NSW 2006 Australia

T +61 2 8627 0624
F +61 2 8627 8145
E Laurent.rivory@sydney.edu.au
sydney.edu.au

ABN 15 211 513 464
CRICOS 00026A

Requiring "fit for purpose" diversity of teams of CIs on Team Grants, a minimum team size, and the need for external co-investment or leverage, would **create self-limiting pressures that would constrain the growth of application numbers**. In that regard, these factors would act as "engine governors" and limit expansion of demand. We would indeed expect a significant reduction in grant application numbers even if there was no decrease in the limit of applications able to be held by anyone CI. On the other hand, It is expected that some stricter capping on Investigator Grants would be required with, for example, limiting the number that can be held by the CIA at any one time.

Another area worthy of discussion is the palpable increased conservatism in the NHMRC schemes. As funding shrinks, referees and selection panels are more likely to fund researchers with long and proven track records, even if track record relative to opportunity is actively considered. This tendency is visible from the fact that the average CI age for Project Grants has increased by approximately 10 years since the 1980s (Figure 24) and is even more marked in Program Grants data (Figure 25). There is an ever increasing push for more preliminary data, a bias towards more established researchers and against truly multi-disciplinary and interdisciplinary research. In part, the latter is constrained by the nature of the discipline-focussed peer-review system. Genuinely innovative research, which requires an appetite for high levels of technical risks, has always been at a disadvantage in NHMRC schemes, and is steadily worsening.

In order for innovative research to be incentivised there is a need to increase the appetite of assessors for research which, although having a higher scientific risk of failure, might provide for transformative outcomes. The timeframe for the conduct of such projects must however be correspondingly shorter, at least for the initial high-risk phase. "Ideas" projects (as proposed in Models 1 and 2) could lend themselves well to support such an approach. Limited funding could be provided to support the proof of scientific concept. If successful, these would then be able to be submitted to team-based support in subsequent years, which would be possible in Models 1 and 2. In this regard, such an approach could be akin to the Gates Foundation Grand Challenges Explorations grants which receive $100,000 for 12 months of research on the basis of the innovative features of the research with no need for pilot data. In the Gates scheme, the applicants then become eligible to receive a further $1 M to continue to develop their ideas once the scientific validity of the idea is obtained. An Australian example of such a scheme is the Kathleen Cuningham Novel Concept Awards (now call Innovator grants). Assessment of such a scheme was nevertheless viewed as a significant problem in our own internal deliberations, but it should be possible to conduct this in a manner similar to the examination of patents for which either an inventive step or non-obviousness need to be demonstrated. **In a hybrid model which included both Team and Investigator Grants, a comparatively small (eg 10% of MREA) allocation to such an Ideas Grants scheme could rebalance some of the reduction in innovation seen in the NHMRC schemes**.

An advantage of having a low cost, short-term granting scheme would be that it would balance the risk spectrum of the NHMRC programs. It would inherently be an easier scheme to review, so would possibly lend itself to short applications with possible rolling closing dates and assessment processes. **A rolling and expedited assessment process for Ideas Grants would enable rapid activity on the most daring science.**

Room 650, Level 6,
Jane Foss Russell Building G02
The University of Sydney
NSW 2006 Australia

T +61 2 8627 0624
F +61 2 8627 8145
E Laurent.rivory@sydney.edu.au
sydney.edu.au

ABN 15 211 513 464
CRICOS 00026A

THE UNIVERSITY OF SYDNEY

…5/.

We would be very happy to discuss any of these ideas with you further as we collectively work to ensure that the excellence of the Australian HMR is sustained in these challenging times. We must stress the need for extensive modelling of any proposed reshaping of the NHMRC Program as well as a clear and staggered implementation plan. The recent experience in Canada is a timely reminder of what can go wrong.

We have shared these ideas and observations with the Go8 and Research Australia and hope that we will see some convergence of feedback. We are committed to working with the NHMRC to develop a more sustainable solution.

Yours sincerely,

(Signature removed)

Professor Laurent Rivory
Pro Vice-Chancellor (Strategic Collaborations & Partnerships)

Attachment University of Sydney response to the Structural Review of the NHMRC Grant Program's consultation questions, August 2016

Room 650, Level 6,
Jane Foss Russell Building G02
The University of Sydney
NSW 2006 Australia

T +61 2 8627 0624
F +61 2 8627 8145
E Laurent.rivory@sydney.edu.au
sydney.edu.au

ABN 15 211 513 464
CRICOS 00026A

Structural Review of NHMRC's Grant Program
Public Consultation: University of Sydney Submission

Name:	Professor Laurent Rivory, Pro-Vice Chancellor, Strategic Collaborations and Partnerships
Organisation name:	The University of Sydney
Email address:	Laurent.rivory@sydney.edu.au

Alternative model 1

Question 1.1:
How effectively would the model optimise NHMRC's public investment in health and medical research by meeting the aims of this Review, including the major objectives of NHMRC's grant program found on page 12 of the consultation paper? (500 words max)

It is key for any restructure of NHMRC programs to sustain the best HMR workforce and activities. This in turn will deliver the health research findings that will improve the health of Australians into the future. In that regard, the "Teams" approach proposed in Model 1 is most likely to support the multi-disciplinary efforts that are essential to translational research.

We are interested in the proposed requirement for team diversity but would caution that previous efforts by the NHMRC (eg the first rounds of Program Grants) failed in incentivising the participation of younger researchers. Stricter controls for team diversity would be required and could, for example, help incentivise the participation of female CIs. Otherwise, concerns over the sustainability of a career in HMR are set to remain as significant impediments to the participation of female CIs.

Diversity in the workforce is also required to ensure participation from CIs of various ethnicities including Aboriginal and Torres Strait Islanders researchers as responding to the health challenges in these communities requires active participation. Encouragingly, the number of Aboriginal and Torres Strait Islanders researchers engaged in HMR continues to increase, but this needs to continue in order to make impact on indigenous health and participation in the HMR workforce more broadly. Impact on health will require close attention to the consideration of pathways of translation in projects.

Given the multitude of professions involved in the delivery of health care, diversity of CIs on NHMRC Team Projects should be increased to ensure participation and maximum opportunity for implementation. For example nurses, allied health professionals and primary care physicians should be more active as investigators. With the increasingly benefits of co-design and consumer participation, incentive for inclusion of such individuals as Associate Investigators would be worthy of further consideration. Projects with potential for translation through commercial avenues would require adequate participation of CIs with commercial expertise. Projects with a national perspective would similarly require appropriate diversity of CIs from a geographical or jurisdictional perspective.

A frequently reported observation is that many CIs and in particular those who tend to be unsuccessful NHMRC applicants are surrounded by inadequate critical mass, disciplinary strength, research infrastructure or have poor connectivity with pathways for translation. With these observations there is therefore a strong rationale for supporting projects that are team-based and leverage research and translational infrastructure.

However, there is a risk that a Team Grants structure may not provide the funding needed to sustain the core programs that are important to sustain basic biomedical research, In this respect, the investigator grant of Model 2 may suit better. **This suggests that a hybrid approach of Team and Investigator Grants may be more suitable.**

Question 1.2:

What advantages and disadvantages of this model do you see for you or your organisation if the model was introduced? (For example, what impact would it have on a researcher at your stage of experience? Would it support research in your research area?) (500 words max)

The biggest impact at an institutional level is the possible removal of Fellowships – so we would recommend retaining this as a feature of both Team and Investigator grants. This would otherwise be the death-knell of careers in HMR (although they are arguably already very much in jeopardy). Universities already bear a significant proportion of the direct cost of HMR investigators (including Fellows) and a loss of Fellowships would put further pressure on universities to support long-term research intensive careers (a loss of Fellowships is part of the lack of appeal of model 3). Cessation of Fellowships will be even more problematic for our affiliated Medical Research Institutes which have limited options for the cross-funding of career researchers. While CI salaries are contemplated as part of the Team Grants budget or there is the option of applying for a Fellowship contemporaneously with a grant, it is the sustaining of a career between bouts of project funding that is very challenging.

Likewise, the participation of health workers and clinician researchers will require further scrutiny of the evaluation of track record relative to opportunity in Team Grants in order that these researchers (who are critical to the sustainability of a multi-skilled HMR sector) not be disadvantaged.

Research-intensive careers are not sustainable in Australian universities in the absence of full-time Fellowships. This model is likely to increase the proportion of teaching academics in the system and have a resultant impact on research capacity. On the flip side, one would argue that the participation of mixed-mode academic researchers should be incentivised in order to maximise the likelihood of translating research through the education of undergraduate students. In order for the HMR workforce to be re-engineered to a point of sustainability, it may be useful to consider the award of fractional Fellowships to support mixed-mode academics.

Question 1.3:

Can you identify negative consequences for Australia's health and medical research system if the model was introduced and how might these be mitigated? (500 words max)

Any change runs the risk of being perceived as greater instability in HMR and act as the "final straw" for researchers with vacillating commitment to the sector. It will be vital to ensure that there is significant modelling of the parameters to ensure comfort that perverse outcomes or unforeseen consequences are unlikely. This is a concern that applies to all 3 models. In particular, the removal of a Fellowship career path in HMR may create an exodus of talented researchers. While contraction

of the HMR sector is inevitable in the short term (as the MRFF up-turn is going to take 4-5 years to gain significant traction), it is important that the sector is re-engineered rather than crippled. It is important that phasing in of any model be considered carefully.

The proposed cap limits will be highly problematic for the Team based grants. Researchers who work on multi-disciplinary projects have a tendency to work on multiple projects simultaneously, so limiting CIs to one Team Grant would be unworkable for individuals in areas such as public health or health service researchers and methodologists such as biostatisticians to give a few examples. A likely negative consequence is therefore that although the team grants are an appropriate scheme for translational research that the cap on holdings will not sustain the types of CIs who are leaders in such activities. They will also not sustain those who tend to contribute to a number of projects and who would be unable to do so as a result of caps.

We propose requiring a minimum number of CIs on Team Grant applications. A likely consequence of requiring team of a certain minimum size is that it will act to discourage applications from CIs that are isolated from appropriate intellectual and infrastructure resources.

Another risk will be that large teams may secure very significant slices of the MREA which will effectively limit the participation of the HMR sector more broadly. We propose that all grant applications seeking more than say $2.5 M be extensively leveraged through contributions by external partners (for example philanthropy, other health agencies, NGOs, research organisations such as CRCs). Such leverage will inherently provide some level of self-assessment as external partners undertake their own due diligence of the value of the research. It would be critical that "cash" leverage not be sought from the research providers (i.e. Universities and MRIs) as this will add to the issues regarding unmet direct costs. Co-investment in projects that have translational (including commercial objectives), as contemplated in Model 3, would be very applicable in this regard, particularly in the instance of Team Grants.

The collective effect of requiring "fit for purpose" diversity of teams of CIs on Team Grants, as well as a minimum team size and the need for external co-investment or leverage would be to **create self-limiting pressures that would constrain the growth of application numbers** in a manner that would be more likely to sustain an excellent HMR sector with impact as opposed to the caps on applications and holdings proposed.

Question 1.4:
Could the model be adjusted to optimise its impact? If so, how? (500 words max)

The **Team Grants** will require, as discussed in 1.1, strict scrutiny of diversity as part of their assessment. Although a need for ECR and MCR participation is already contemplated, this should be extended to professional, gender, disciplinary and ethnic diversity. Assessment would need to be broader than proposed (mainly track record) and the structure of the team should be focussed on appropriate content expertise and suitability. In other words, the diversity should be with regards to being "fittest for purpose" and assessment be undertaken with regards to the expertise required for the project. For example, a CI with industry experience and with an aligned role in a project should not be assessed on the basis of grant funding and publications.

A further area needing attention is the proposal that all CIs be considered equal. It will be important that a lead CI, with overarching responsibility, be identified in order for the administrative organisation to be identified. In addition, equal contribution might create an expectation that all

CIs be resourced equally (eg as per Program Grants currently) whereas this is unlikely to be the optimal distribution required for the project.

Track record assessment and structure should ensure appropriate and respectful attention to supporting career transitions for ECR and MCR. It should not encourage patronage by senior team leaders and perpetuate an existing hierarchy of research priorities and directions at the expense of emerging research leaders.

Although the Team-based grants could be compartmentalised as per the proposal in Model 3, it may be possible to have a consolidated panel review system that is broader in expertise (including for example commercial expertise and multi-professional representation) so that the favourable assessment of senior researchers and existing hierarchy of research priorities can be avoided.

As discussed in 1.1, a hybrid of Models 1 and 2 should be considered with the inclusion of Investigator Grants to Model 1 so as to provide an alternative to the Team Grants to support groups led by internationally competitive CIs in focussed areas of basic research. That is, the Investigator grants should be considered to be Group Grants, in which the track record of the rest of the team is a minor component of the assessment which is intentionally biased towards that of the CIA. Such an approach, particularly if combined with Fellowships (for the CIA) could provide support to a core component of the HMR workforce.

People grants should not include PhD scholarships. PhD students should be embedded in teams with critical mass and appropriate disciplinary diversity and translational potential. Scholarships should be incorporated as part of the Team or Investigator grants. This approach will create a significant administrative saving as applications should simply indicate what capacity is required/feasible for PhD students and be funded accordingly. ECRs should also largely be funded through Team grants, with the exception of mobility Fellowships which enable promising ECRs to undergo further training in overseas laboratories. People grants should also include mechanisms of support for clinician researchers, although this could possibly be included as part of the funding in Team and Investigator Grants.

Ideas grants may represent an opportunity to redress the growing conservatism in NHMRC project grants. The timeframe for the conduct of such projects must however be correspondingly shorter. “Ideas” projects (as proposed in Models 1 and 2) could be provided with limited funding to develop scientific proof of concept. If successful, these would then be able to be submitted to Team or Investigator support in subsequent years, which would be possible in Models 1 and 2. An approach akin to the Gates Foundation Grand Challenges Explorations grants should be explored. These grants provide $100,000 for 12 months of research on the basis of the innovative features of the research with no need for pilot data. In this Gates scheme, the applicants then become eligible to receive a further $1 M to continue to develop their ideas once the scientific validity of the idea is obtained. An advantage of having a low cost, short-term granting scheme would be that it would balance the risk spectrum of the NHMRC programs. It could inherently be an easier scheme to review with an emphasis on non-obviousness or inventive step (akin to patent examination), so would lend itself to short applications with possible rolling closing dates and assessment processes. An Australian example of such a scheme is the Kathleen Cuningham Novel Concept Awards (now call Innovator grants).

However, the total funding provided for Ideas Grants should be a much smaller proportion of the MREA than proposed in the schematic. Perhaps a good split of Team: Investigator: People: Ideas Grants would be 40:30:20:10.

Question 1.5: Do you have other comments about the model? (500 words max)
Key elements of this model have appeal although the cap system proposed for Team Grants is arguably unnecessary and could disadvantage some researchers (see Q1.3). We would also propose that an Investigator grant component be included (ie hybrid of Model 1 &2) and Ideas grants be more limited as a proportion of the MREA.

Alternative model 2

Question 2.1: How effectively would the model optimise NHMRC's public investment in health and medical research by meeting the aims of this Review, including the major objectives of NHMRC's grant program found on page 12 of the consultation paper? (500 words max)
The Investigator grants in this option will likely focus funding onto those individuals with the best track records in HMR. While it could be argued that this would ensure that NHMRC funding support excellence, this model would also not suit researchers such as public health and health service researchers and methodologists such as biostatisticians who are more likely to work in multidisciplinary teams. Rather, this mechanism would likely to be the best funding modality to support basic biomedical research and other areas that are less multi-disciplinary. These grants are likely to support the current configuration of medical researchers organised in institutes and universities. While supporting excellent teams for significant time frames (5 years) they are likely to support inherently low-risk and incremental research but sustain, particularly in combination with Fellowships, a core of excellence in the HMR sector. Such grants are unlikely to be optimal for the support of translational research, which is inherently multidisciplinary. Hence, as argued in Q1.3, such a scheme will need to be balanced with alternative funding mechanisms that are suited to translational and multidisciplinary teams. It is not clear how the collaboration bonus would help rectify this. The Investigator grants are unlikely to drive the integration and collaboration supported by team grants but would be a useful adjunct in a hybrid of Models 1&2.

Question 2.2: What advantages and disadvantages of this model do you see for you or your organisation if the model was introduced? (For example, what impact would it have on a researcher at your stage of experience? Would it support research in your research area?) (500 words max)
The Investigator Grants contemplated in this model would benefit groups lead by internationally competitive CIs, particularly in the basic biomedical sciences. However, as indicated above, this would disadvantage CIs from disciplines that are most productive in multidisciplinary teams. It will also not easily provide the basis for research that is translational in nature, regardless of the application of a collaborative bonus. We support the retention of Fellowships as part of the Investigator Grants model as argued in Q1.2.

Question 2.3: Can you identify negative consequences for Australia's health and medical research system if the model was introduced and how might these be mitigated? (500 words max)
This model is unlikely to provide incentives that will drive a less fragmented HMR sector. It is also less likely than Model 1 to provide a more sustainable and diverse HMR sector which provides for translational benefits.

Question 2.4: Could the model be adjusted to optimise its impact? If so, how? (500 words max)
This model is structurally unlikely to deliver on the NHMRC's broader objectives in isolation but some features could be incorporated as a hybrid of models 1 &2.

Question 2.5: Do you have other comments about the model? (500 words max)
No. This is not our preferred model.

Alternative model 3

Refer to information about alternative model 3 in the consultation paper and respond to the consultation questions *below.*

Question 3.1: How effectively would the model optimise NHMRC's public investment in health and medical research by meeting the aims of this Review, including the major objectives of NHMRC's grant program found on page 12 of the consultation paper? (500 words max)
This model proposes a team-based grant approach with many of the attributes of that contained in Model 1. This presents an opportunity for re-engineering of the HMR workforce. The stability provided by the anticipated up to 5 year timeframe is likely to reinforce the trend towards conservatism in projects. The absence of Fellowships is likely to have a significant and destabilising impact on the HMR sector.

Question 3.2: What advantages and disadvantages of this model do you see for you or your organisation if the model was introduced? (For example, what impact would it have on a researcher at your stage of experience? Would it support research in your research area?) (500 words max)
The absence of Fellowships and the impact of this is similar to that discussed in Q1.2.

Question 3.3: Can you identify negative consequences for Australia's health and medical research system if the model was introduced and how might these be mitigated? (500 words max)
As per our response in Q3.1, the Model is likely to perpetuate the growing conservatism in NHMRC schemes. The absence of ECR Fellowships will reduce the ability of Australia's HMR workforce to benefit from ECR mobility.

While the Model has appeal in terms of flexibility, the number of sub-components would appear likely to replicate a number of the existing schemes by the time the sub-components are crystallised (Development Grants, Partnership Grants). Nevertheless, the requirements for partner co-investment and participation contemplated in the commercialisation and implementation sub-components should be implemented in the Team Grants of Model 1. As outlined previously, a requirement for participation and co-investment would be a less artificial constraint on application numbers than the proposed cap limit of 2 grants.

Question 3.4:
Could the model be adjusted to optimise its impact? If so, how? (500 words max)

This model is structurally unlikely to deliver on the NHMRC's outlined objectives. The various emphases on track record in the sub-components means that it would be unlikely to be able to be administered as one flexible scheme. This would result in increased cost of administration for NHMRC and Institutions.

Question 3.5:
Do you have other comments about the model? (500 words max)

No. This is not our preferred model.

General

Question 4:
Do you have comments on the other issues discussed in this paper? (500 words max)

Current grant holdings are subject to complex capping limits. A maximum of 6 Project grants can be applied for or held in the year of award with the exception of Program Grant holders. The proposed models essentially seek to reduce the number of applications per round and the number of grant holdings per CI as a means to alleviating the strain on peer review and provide some equity in the distribution of funding. It should be pointed out that it is not explicitly stated what the maximum holding of Team Grants is contemplated in Model 1, but we have assumed a maximum of 2 , from the limits stated in relation to Model 3.

As outlined in our response to Q1.1, capping limits in itself is unlikely to provide optimal outcomes. Limits on grant holdings should not be "hardwired" but rather be achieved through other structural means. For example, Models 1 and possibly 3, through a requirement for a team-based approach, provides an opportunity for reducing the number of grant applications without changing caps. In the last round of Project Grants, the average number of CIs per application was 3-5 depending on the type of research conducted. A requirement of a minimum of 5 CIs for a team-based grant would result in a reduction of application numbers.

Requirements for diversity on the CI team would likely further reduce the number of applications by creating an incentive for more CIs per application, although this may be offset by the introduction of new and more diverse cohorts of CIs. In itself, the need to construct diverse teams would likely create a disincentive for large numbers of applications.

We would also recommend that stricter definitions of CIs and AIs be imposed as currently track records of project grants are swayed by AIs with superior track records who have exceeded their caps but are effectively CIs "by proxy".

With regards to the supplementary questions on page 20, we provide the following responses:

1. **Honorary Fellowships.** These have limited value in our opinion. The "status" afforded by an Honorary Fellowship is inconsequential relative to the value of a salary that can support a research-intensive career.
2. **Safety nets.** Given the synchronisation of grants and fellowships contemplated in models 1 and 2, there will be a need to support CI salaries in between grants. However, it is not sustainable for institutions to support research-intensive careers in the absence of a fellowship career path. The value of safety nets will be dependent on the structure of fellowship offerings or the conditions under which CIs can draw salary from a pipeline of grants. The extension of Fellowships to an additional year past the corresponding grant would seem a reasonable measure.
3. **Centres and Partnerships**. Centres of Research Excellence have played a very important role in drawing together multi-disciplinary teams of researchers, often representing a range of career stages, to work on thematically important areas of HMR – with an added focus on translation. Given the comments on the Team Grants in Q1, it is likely that CREs could be replaced with Team Grants with a diverse CI mix and a translation focus. CRE funding is used for capacity development and coordination rather than project costs, but an appropriate budget structure could be set up to replace CREs. Partnership grants are a very useful scheme for incentivising implementation and co-investment by those health agencies that are in a position to implement HMR. As per CREs, Team Grants could be modified to encourage participation of such agencies and incentivise co-investment. Indeed, the need for co-investment by external partners would enable the MREA to be leveraged to a greater extent. The need for co-investment would act as a quality filter and therefore greatly reduce the number of applications likely to be submitted in any one round.
4. **Collaboration.** Collaboration is most likely to be incentivised in Team Grants, particularly if they have a translational focus. The collaborative bonus in Model 2 is not sufficiently defined to determine whether it would be of use. Rather a budget line for requisite all projects which outlines what activities are likely to be required to ensure that the collaborative gain for the project is realised should be allowed and funded accordingly.
5. **Institutional Support Schem**es. Support to fund initial commercial activities such as the setting up of spin-offs does not represent a worthwhile investment for the MREA. Funding for such activities may be provided in the future by the MRFF but it is important that the setting up of spin offs occurs with genuine institutions and partners that have "skin in the game" – not NHMRC funds.