Biomedical research in Australia is largely funded through the National Health and Medical Research Council (NHMRC https://www.nhmrc.gov.au), which is the Australian equivalent of the NIH. Multiple funding schemes are available varying from a standard project grants (equivalent to a R01), program grants (equivalent to a U19) as well as fellowships for early career researchers (equivalent to a K99), mid or senior researchers. Unlike the NIH system, only once a year we can apply for NHMRC funding in Australia, leading to significant delays in performing the research if the proposal is not awarded, which happens very often. The review process is fairly different from the NIH (for more details, see the video https://www.nhmrc.gov.au/grants-funding/peer-review/nhmrc-grant-review-panels-induction).

The main point here is the scoring system of a project grant is as following: The Scientific quality of a proposal contributes to 50% of the score while the significance of expected outcomes/innovation is 25% and the team quality and capability relative to opportunity is scored 25%.

The project grant funding outcomes in Australia

Few weeks ago the NHMRC released the annual funding outcomes for 2015 for all major funding programs including fellowships. For more details, these could be found here: https://www.nhmrc.gov.au/grants-funding/outcomes-funding-rounds. For instance, this year the success for project grants were at its lowest ever rate (13.7%). This low funding rate is steadily declining since the end of the stimulus package post Global Financial Crisis in Australia (2012). It is fair to point out that this decline in funding is not isolated to Australia, but also observed in a similar trend in France, the USA or Canada. Interestingly I've noticed from the list of funded projects in 2015 that a large proportion of the funded grants (48%) went to senior academics (Professors; academic Level E in Australia academic system) while the other funded grants went equally to junior mid-career scientists (assistant professors: Level academic B/C) and mid-career to senior scientists (Associate Professor; Level academic D). For more details of these analyses see https://medium.com/@GaetanBurgio/a-snapshot-of-the-biomedical-research-funding-in-australia-in-2015-9475fbebce833#.2sjq77nta. This indicates that the junior academics in Australia are clearly disadvantaged in getting the competitive funds. There are three explanations for this. Firstly many academic professors over 25 years of research career don’t retire, as the age is not caped to apply for funding in Australia. Secondly, in the Australian system, the track record of the main PI and the research team is an essential component, often over the scientific quality and the innovative aspect of
the project. Thirdly the researchers in Australia can hold as a main or co-PI up to 6 project grants or 1 project + program grant. As many well established PI run large laboratories in Australia, this gives them the ability to apply to many project grants.

Regarding the gender, the results are also dismal for females academic with only 25% of the funded projects were leaded from females PIs. The gender repartition is as following for each academic level: 30% for Level B/C, 35% for Level D and 21% for Level E. Sadly only 6 out of 33 (18%) new investigator grants scheme were funded to female academics. Interestingly the NHRMC has established gender equity policies since 2013–14 at institutional level (see https://www.nhmrc.gov.au/research/women-health-science/institutional-gender-equity-policies) as well for the assessment of project grant (see the career disruption section https://www.nhmrc.gov.au/grants-funding/apply-funding/project-grants). These results are clearly dismal and obviously many measures were not implemented (see for more https://www.nhmrc.gov.au/2015-funding-outcomes-gender-summary-findings) which means that the female academics are certainly disadvantaged to compete for NHMRC project grants.

Biomedical research funding is tight in Australia:

There is no doubt that the level of funding is tight for biomedical researchers in Australia as well as other countries except for instance Switzerland or Germany. In a context of low funding rate, this clearly favors senior and well-established researchers. The reason for this is NHMRC grant review process and fund allocation is manly based on the track record, high impact factor publications or citations. The consequence of this is a small pool of researchers is funded in Australia and this impacts directly on the ability of junior academics to attract national competitive funds. Therefore junior and female academics are right in a funding hole in Australia and this has clear consequences for early-mid career researchers. Many junior academics are not able to establish their own independent research groups in Australia. The direct consequence of this is the system favors ghostwriting applications and many proposals, although impossible to quantify are not written by the main PI.

How to improve this situation?

There are initiatives to fill the funding gap in Australia for biomedical research. The Medical Future research fund (http://www.health.gov.au/internet/main/publishing.nsf/Content/mrff), originating from health savings is one of them. Although, there are too many questions on how the funds will be allocated and whether the investment will be made towards basic science. Recently, the Australian government, under the impulsion of the Chief scientist, has expressed the view to put less emphasis on the “publish and perish” culture and to redirect the university research funds towards research “engagement” and “impact” (http://www.smh.com.au/federal-politics/political-news/academic-publications-to-become-less-important-when-funding-university-research-20151112-gkxkgl.html). However, there are too many uncertainties on how and on which basis the funds will be redirected towards Australian researchers. Additionally these measures will take too long to take place while talented junior academics are dropping of academia or leaving Australia.

There are simple measures to partly fix the situation. Australian reviewers are too risk- adverse as well
as they put too much emphasis on the track record of the applicants and not enough on the scientific quality and innovation of a grant proposal. The scoring system should put more weight on the research proposal and the innovation rather than the pedigree of the PIs. Secondly the number of grants should be capped. This will restrict well establish PIs to apply to too many grants and this will strongly encourage junior academics to apply for their own funding and get funded. As well as capping the number of grant applications, the age should be capped as well to encourage the mentoring and the emergence of talented junior academics and avoid ghostwriting applications and female academics to drop out from academia. Additionally a better engagement towards females academics and the measures already existing should really be implemented, not only be an intent. Finally and importantly the universities have to take their own responsibilities by fostering innovative research, offering stability to talented researchers, cap the number of applications to send to the research agencies.

Conclusion:

It is imperative for the Australian research community and universities to break conservatisms and to foster innovative research and encourage talented scientists to establish their own groups. As the Australian Nobel Laureate and future vice chancellor of the Australian National University, Professor Brian Schmidt pointed out recently in an interview (http://www.smh.com.au/national/education/older-academics-need-to-make-room-for-young-researchers-at-the-money-trough-20151008-gk43b9.html) we should redirect the competitive funding towards junior academics “to nurture talent and to produce the next generation of science leaders”. This is a key for innovation in biomedical research in Australia.