

Encouraging the Return of Young Biomedical Scientists to Australia: A Personal Perspective

Kay Double
NHMRC R.D. Wright Awardee
Prince of Wales Medical Research Institute

Abstract

The 'brain drain', the loss of trained young minds overseas on a permanent or semi-permanent basis, is not an exclusively Australian phenomenon. Australians from many academic and professional fields are attracted overseas where they gain experience, skills and contacts highly beneficial to this country. However, our intellectual culture and geographical isolation create particular problems in attracting Australian expatriates home. As biomedical scientists, the major problem perceived by overseas colleagues is the lack of attractive positions in Australia available at a postdoctoral level or higher, and the difficulty of becoming aware of such positions while overseas. This problem is compounded by the attractions of working overseas where facilities and salaries are often superior and researchers have easy access to the world-wide academic community.

Australian scientists have a high reputation that leads to being actively encouraged to pursue careers elsewhere. One solution may be to establish a scheme whereby scientists working overseas can be kept informed about positions available at home. In addition, we must encourage an Australian culture where academic achievement is valued and rewarded in the same way as sporting excellence, as well as promoting the advantages of working in Australia.

Introduction

The 'brain drain', the loss of trained young minds overseas on a permanent or semi-permanent basis, is not an exclusively Australian phenomenon. Our intellectual culture and geographical isolation, however, are associated with particular problems in overcoming this loss. Like many countries, Australian scientists are trained in an environment that encourages and rewards young scientists who leave our shores at the completion of their higher degrees to work for a time in an overseas institution. This in itself is not part of the 'brain drain' and should not be regarded as being negative. Experience in a foreign work environment brings clear advantages not only to the new graduate, but also to Australia. As well as the obvious advantages of acquiring novel techniques, inherent to most new positions, the graduate also has the opportunity to see how other cultures view scientific research, as well as learning valuable new approaches which can be taken back to Australia. Further, most young Australian graduates gravitate towards post-doctoral research in America and Europe, where they have much greater opportunity to attend the large international meetings that are held almost exclusively on these continents. Participation at these meetings and the relative geographical proximity of research groups with interests related to their own, allow them to

meet similar-minded investigators and to form research collaborations and personal relationships from which both they and Australia can only benefit.

The problem, however, is that many of our young graduates are not returning from temporary positions overseas, but rather decide to continue where they are or to take up another position overseas. The question is thus: *If we wish our fledgling scientists to spread their wings, how do we encourage them to return to the nest?* Together with my husband, a Medical Historian, I have spent nearly five of the past seven years working as a medical researcher in Europe. I have worked with researchers from many countries (at one point, I was working with 14 different nationalities in my host laboratory in Germany), but, with few exceptions, nearly all my European, Asian and American colleagues returned to their homelands at the completion of their work contracts. It was not only my husband and I who willingly chose to stay much longer than we had initially planned; e-mail contacts with friends and classmates from university who had also left Australia to take up positions overseas made us aware that few were returning to Australia, or, having done so temporarily, were leaving again to take up a position elsewhere.

Opinions of Other Researchers

In writing this Opinion Piece, I canvassed opinions from other young Australian scientists as well as drawing on my own experiences and those of my husband. The most common reason quoted by expatriates for not returning to Australia was the perceived dearth of available academic and research positions at post-doctoral and senior levels in Australia, and the fierce competition for the few positions available. The National Health and Medical Research Council's (NHMRC) Training (Postdoctoral) Fellowships allow the recipient to work either in Australia for four years or alternatively for two years overseas, followed by two years back in Australia. In 2004, a total of 83 Training Awards were granted, including both those scientists wishing to remain purely in Australia and those intending to pursue the option of working overseas for two years. Compared to the number of PhD students graduating in the

biomedical sciences every year, this number is small and academic positions within the university system are few and becoming scarcer as universities adjust to the economic constraints that have forced such a reliance on fee-paying students.

While only 203 applications were received for the awards this year, this number reflects less a low demand for such positions than the reluctance by many new graduates to apply for these extremely competitive awards, with the perception that the chances of success did not justify the commitment of time and effort required by such a submission. Consequently, many graduates apply directly for an overseas position, usually via a contact made at a conference or through a recommendation made by a more senior colleague or supervisor. Once the graduate is working overseas, it is perceived as more difficult to secure a consecutive postdoctoral position, let alone a more senior post, back in Australia.

NHMRC Awards

The Career Development Award scheme was instituted by the NHMRC as a step on the NHMRC postdoctoral research career ladder, but the pyramid of NHMRC-funded research positions narrow further at this level, with only 39 successful new applicants across Australia in 2004. There is even further narrowing of opportunity at the next level of Research Fellow (the point at which one is finally considered an independent researcher, usually at least 9 years post-doctoral), with the number of new Fellowships offered in 2004 being only 35.

NHMRC-funded Fellowship positions, of course, are only one option for a career in research - apart from teaching or clinical positions that include a research component, it is also possible to work as a Research Officer within an established research group - but the NHMRC path is certainly the most prestigious. Despite the power of the internet, our overseas-based young scientists also experience difficulties in learning about new positions as they become available in Australia. Moreover, they are rarely in a position to attend Australian national and local conferences, where the few available positions are often advertised and recommendations regarding young scientists are exchanged by senior colleagues. In contrast, many expatriates recount that

during their time overseas they were actively approached regarding other positions in their host laboratory or in another laboratory in that country. This is also my experience and that of my husband. It must be remembered that scientists who gain a position overseas have usually already earned a Fellowship, whether Australian or awarded by the host country, or have successfully competed with the local graduates for a position. These individuals have thus already proved their competitiveness in both the national and international arenas. It is my experience that Australian scientists enjoy a reputation overseas as well-educated, hard-working and extremely capable researchers; they are regarded as a bonus to any laboratory in which they work, and are encouraged to extend their stay in their host laboratory or to accept another position in the same country.

A real attraction for many expatriates is the fact that specialised research facilities are more readily available in the US and Europe, no doubt as a result of their larger populations. In addition, major grants provided, for example, by the NIH or the European Union tend to be significantly larger than those usually provided by the NHMRC and ARC, allowing for more ambitious projects and perhaps more job security. Sources of research funding are much more restricted in Australia than in Europe or America where there is both significant investment by industry in biomedical research (almost absent in Australia) and, especially in the US, a greater culture of philanthropy for research. During my time in Germany, I became aware of and was involved in applications for major and accessory research funding to various federal and state (Bavarian) government bodies, European Community institutions, pharmaceutical firms and professional and special interest bodies. As new research ideas and plans evolved, it was often possible to raise funds for a pilot project or even a major piece of work from these alternative sources, whereas in Australia long-term funding is provided primarily by the NHMRC and ARC. The fact that centralised federal funding in Australia plays the almost exclusive major funding role in Australia clearly intensifies the significance of this source, both financially and psychologically.

Another reason Australians remain abroad is the fact that their earning capacity is higher overseas. Because of the difficulties in

comparing levels of different positions between, and even within countries, it is difficult to directly compare salaries, but the following figures illustrate my point. The NHMRC provides a salary package that includes the Fellow's salary, University 'on-costs' (currently about 27%), a travel component and funds to support the Fellow's research (the proportion of which is decided by the university administering the award). The salary for what was until recently called a 'Career Development Award' (usually 3 to 9 years post-doctoral) at UNSW is thus A\$65,000. By way of comparison, a researcher at a similar level in Germany earns approximately 50,000 (A\$ 83,000) and in America (where wages are often negotiable) can earn from US\$ 60,000 to as much as US\$ 110,000 (about A\$ 77,000-141,000).

The standard of living allowed by any wage will obviously vary according to the local cost of living and taxation levels, but comparison of the salaries and living costs - such as rent, health insurance and other essentials - with those of colleagues at a similar level in Germany and the US indicates that my overseas colleagues have more in the hand at the end of the month. This discrepancy reflects, in my opinion, a fundamental difference between Australia and many other countries with respect to how scientists are valued. In Europe, scientists and academics are highly regarded as significant contributors to their societies. In contrast, scientists in Australia tend to be overlooked in a culture that neglects academic achievements in favour of exalting achievements on the sporting field. The salaries paid to scientists also reflect this situation: after 3-4 years undergraduate study, 3-4 years postgraduate study/research and overseas experience, a young researcher typically receives similar remuneration to friends of the same age who hold a Bachelor's degree (for example a secondary teacher), but usually have less job security and work longer hours. An NHMRC Fellow is by definition one of Australia's most promising biomedical researchers, but the fact that our leading national funding body (and our society in general) rewards the work of our best and brightest researchers relatively poorly is sending the dangerous message to young expatriates that they cannot expect to be highly valued in their homeland.

Another perceived disadvantage of Australian science is that the academic community is rather small and geographically isolated, both from one another and the rest of the world. During my time as a C.J. Martin Postdoctoral Fellow, I felt quite cut off from the Australia research community. There is certainly an NHMRC mentoring scheme that can be accessed by Fellows who experience problems during the tenure of their award but, following my letter of offer of the Fellowship, I actually had little further contact with the NHMRC.

I might not even have been conscious of the deficiencies of the Australian situation had I not spent the year prior to my assuming the C.J. Martin Fellowship as an Alexander von Humboldt Research Fellow in the same laboratory. This internationally competitive postdoctoral fellowship is awarded by the Alexander von Humboldt Foundation, which in turn is partly funded by the German government. In contrast to the NHMRC, the Humboldt Foundation maintains a close and personal relationship with all its Fellows, whether foreign scholars coming to work in Germany or German scholars being funded to work overseas, both during and after the tenure of the fellowship. For example, workshops are organised so that new and ex-Fellows - from all possible countries and research areas - can meet and discuss their work, while social events such as dinners were organised throughout Germany and regular mail contact is maintained. These events made me feel a part of the Humboldt family, and thus part of the German academic community, and this contact continues today, nine years later. I suggest that the establishment of a similar organisation in Australia to maintain contact with researchers leaving our shores should be considered. This which would improve communication with overseas scientists about opportunities and the benefits of returning to Australia and assist scientists here who are seeking to fill an available position.

Other reasons for overseas preferences

While there is no doubt that Australian science is of international standard, several expatriates have mentioned the difficulty for Australian scientists attracting international collaborators of a high calibre to Australia,

and the fact that those laboratories that are successful in doing so often subsequently gain significant funding from international funding bodies, vital to their research programs. Again the distance between Australian and many other academic communities is seen as a problem when it comes to the promotion of one's work. International meetings, where academic relationships and collaborative research are initiated and strengthened, are almost always held in the northern hemisphere. Participation in these meetings is acknowledged to be very important, especially for young scientists presenting their own work and meeting other researchers in their area to discuss research developments. Given that the distances are usually too great for a short visit and travel funds, if available at all, are extremely limited, most Australian scientists will struggle to attend one international meeting per year, and often cover a proportion of the costs for doing so from their own pockets. Travel funds are rightly considered an important part of our most prestigious Fellowships, but many other researchers do not have access to such funds as part of their position, and there are only limited possibilities for applying for travel funds via, for example, charity foundations. In contrast, scientists in Europe and America can attend several international meetings each year without losing a significant amount of research time.

Other reasons contributing to the failure of researchers to return to Australia are personal. Scientists who take up positions overseas are almost by definition somewhat more adventurous in spirit than their colleagues; certainly, of those whom I have met, many had previously travelled or worked overseas, and were thus less tied to the idea of living permanently in Australia than those who choose not to seek overseas positions. Further, many are single when they leave Australia as young postdocs but find a partner while working overseas, so that it is not only the Australian who must be attracted home, but also their partner and perhaps a new family. For these reasons, offers of practical assistance in their re-establishing themselves in Australia might be persuasive.

When weighing up the choices of working in Australia or Europe, my husband and I considered many different factors that may not be generally regarded as important by

those who have not undertaken such a step. For example, although no furniture was involved, even the costs of moving our personal items from Germany to Australia was not insignificant, especially as removal costs in Germany are two to three times higher than those in Australia and a shipping time of at least three months must be accepted. The offer from our research institute to cover those moving costs, while not the decisive factor in our decision, helped us to feel as if we were valued members of our institute.

On the other hand but in a similar vein, another colleague was swayed by the subsidised housing scheme and health plan offered by her American university to attract scientists there. Unlike the US or many European countries, health insurance is not a major cost in Australia, but housing costs are significantly higher in Sydney and Melbourne than in other Australian cities or cities overseas, and a similar scheme might also be considered here. It must be remembered the major universities and research centres in Europe are often based in small or medium-sized towns, which can offer reasonably-priced housing and a quality of living superior to our major urban centres where the majority of our universities are located. Returning to Sydney, we reluctantly exchanged a pleasant fifteen minute stroll to our laboratory through a small medieval town in Germany for a one-hour drive through Sydney's peak-hour traffic to our Institute in one of Sydney's most expensive areas. Other 'extras' that might attract young post-doctoral researchers, who are often at a point where a family is for the first time an economic possibility, might be the promotion of paid parental leave entitlements often available at Australian universities and improvements to the availability of child-care facilities.

Concluding Comments

In essence, the major reasons why young researchers do not return to Australia are a lack of suitable positions to which they can return, better research and funding opportunities elsewhere, insufficiency of financial rewards for returning and the distance from the world's academic community dictated by our geographical isolation. While we can't row Australia closer to the northern hemisphere, we can develop a culture where scientific achievement is

encouraged and valued in line with the rest of the world. Australia has proved that we can train and retain world-class sportsmen and women, surely it is time to do the same for those of us who seek to push the boundaries in the field of science? In 2003, my husband and I chose to return to Australia from Europe for the second time to pursue our research. Will we be staying? We are maintaining open minds on that question.