



From the President

Drug discovery: a case for national coordination

Australia has a long and distinguished history of high-quality biological and chemical research aimed at drug discovery. This research, however, has not led to a series of Australian drug discoveries. (The examples of Relenza and colony stimulating factor (CSF) serve to tantalise the optimist in us all, rather than demonstrate a model of sustainable success!) There have been many strategies proposed to correct this over the years, with no obvious success.

Most of the research has been funded by government through either block funding or competitive grants to various research institutes or universities. It is difficult to find government statements of 'strategy' driving this investment; however, it seems to me that in the post-World War II Australian 'boom', when much of the infrastructure and funding decisions were made, the aim was to increase basic knowledge, presumably with an expectation that this would reduce disease and that this would be a sufficient return. It is clear that the research investment was very much at the basic or starting point of the drug discovery process, leaving the more expensive, critical, later stages of clinical trials and process development for industry funding. Success was defined by research criteria of originality and creativity, not dollars made.

Modern governments have an additional, simpler, measure of success: commercial returns! This is reflected in the requirements of many of our granting schemes where the path to commercial adoption must be clearly and convincingly set out in order to secure the support. The pharmaceutical industry itself has also gone through change, the emergence of the pharma-focused small biotechnology companies over the last decade being the dominant indicator of that change. There have been many press releases from this sector predicting success; however, to date Australia has still not capitalised on the excellent basic research that we undertake; still no drugs!

The fragmented nature of our research effort, spread uniformly throughout the Australian institutes in a typically Australian fair but ineffective manner, has meant that the capabilities needed for successful drug discovery, clearly demonstrated by successful pharmaceutical companies, are not available to any single Australian group. Instead we are still looking for a 'solution' by addressing perceived gaps in the discovery process (preclinical and clinical trials, for example). Chemistry is critical to drug discovery and has sometimes led and sometimes been led

by the latest research technique heralded as the new drug discovery paradigm.

There is no simple linear path available for drug discovery; rather, it is a matter of combining the modern tools of biology and chemistry in a multilateral way, and in part it is a numbers game. That is, the more chemicals we can screen against the more validated biological targets, the greater our chance of success. The path is iterative and a chemical only has potential in this domain if it is actually screened. Of course any chemical never loses its potential value because it can be reassessed as new biological screens become available.

It follows that Australia has a source of great value in the chemical collections kept by each chemical laboratory across the country. The collections have been the object of desire of chemical 'hunters' over the last few years, but generally are not stored in a manner that allows the high-throughput screening, and remain untapped. The higher the robotic capability of pharmaceutical companies, the larger the size of the libraries they can screen, and the further behind Australia may fall in the race to new drugs.

It is my view that we should be encouraging investment in bringing our chemical collections together with our biological and clinical capability to maximise Australia's chance of drug discovery. Problems of ownership and return are of course real but must be overcome. It is not my place, or indeed the role of the RACI, to endorse a particular business model; however, it is greatly encouraging to observe the initiatives of Ron Quinn of Griffith University and Ian Street of the Walter and Eliza Hall Institute. They are coordinating national proposals involving 14 universities, 6 medical research institutes, 6 publicly funded research agencies, 2 major national research facilities, with local biotechs and venture capital providers. The aim is to get drugs through to the market. The creative approaches undertaken are well worthy of support by the broader Australian chemical community.

This perspective concentrates on drug discovery; however, there are many examples where our national research strategy could benefit by greater coordination and cooperation – witness the CRC program. The chemistry community is diverse and does not always represent itself clearly to our governments as a result. The RACI is working to articulate the views of our community and to help see them to reality. Cooperation is the key step.