Health and Medical Research in Uncertain Times: The Challenges and Opportunities Ahead

Australia as a nation faces many challenges as a result of the recent worldwide economic slowdown. The Health and Medical Research (HMR) sector will not be immune to budget pressures arising from the difficult economic climate. The value of HMR to Australia is unquestioned in terms of health, wellbeing, and economic returns. However, the current economic uncertainty is creating some anxiety in the HMR sector in terms of future funding, especially as the current NHMRC funding cycle will soon be completed in 2010/11. Of particular concern is the real possibility of a cut to NHMRC funding in the upcoming federal budget. To ensure the strength and diversity of the HMR sector into the future it is vital that the funds committed to the NHMRC in 2006 are protected or we risk losing the significant investment made to date and the continued health and economic returns to Australia. Now more than ever we need to ensure that the value of HMR is crystallized in the minds of the public, politicians and policy makers. Indeed, ASMR over the past month has been working tirelessly with a series of one-on-one meetings with key ministers, advisors and departmental staff.

The necessity to present a robust evidence-based case for continued investment in HMR is essential, particularly at present with the expected budget pressures. ASMR has recently generated a body of quantitative data on (i) the economic value of investing in Australian HMR (see the ASMR-commissioned Access Economics study “Exceptional Returns II”; http://www.asmr.org.au/ExceptII08.pdf), (ii) the views of the workforce on a career in HMR (see http://www.asmr.org.au/WFSvyMJA08.pdf), and (iii) the effect of the monetary gap between host institution salaries and the NHMRC Personnel Salary Packages/Fellowships on research outcomes (see http://www.asmr.org.au/news/Aug08.pdf). It was particularly pleasing to be able to table these documents during the recent meetings and present the hard figures. Rest assured that ASMR will continue the intensive lobbying efforts in the lead-up to the pre-budget planning and 2009/10 budget.

The expected future economic downturn certainly highlights the need for the HMR sector to secure strategies for long-term sustainable funding. The current funding models in Australia are cyclical and vulnerable to fluctuation. A well-defined sustainable funding platform would ensure the HMR sector is safeguarded from funding troughs that could erode investment and lead to the loss of capacity and associated health and economic benefits. ASMR has been actively researching sustainable funding models for the Australian HMR sector, including the innovative Framework 7 reforms of the European Union, where R&D investment in science has been committed to reach 3% of GDP by 2010 (one third of funding from the public sector and two thirds from private sources). Such a model could be attractive for Australia and even the Asia-Pacific region. To achieve this goal, the public sector will clearly be required to play a key ongoing funding role. However, it will be critical to build better collaborative partnerships with industry and attract enhanced local and international philanthropic support.

With the change of federal government this year there has been a suite of reviews to address future strategic directions across a number of areas that will impact directly on how HMR is structured and funded in Australia. These have included the Australia 2020 Summit, The National Innovation Review, The Bradley Review of Higher Education, the Preventative Health Taskforce, and the Inquiry into the Effects of Climate Change on Training and Employment Needs. ASMR has made submissions to many of these reviews...
and we are awaiting the findings of most. However, the results of the National Innovation Review have recently been made public and have particular importance for the HMR sector. Amongst the 72 recommendations to improve Australia’s R&D sector were:

- the urgent restoration of public funding levels for research with the suggested long-term goal that by 2020 Australia should be ranked in the top quartile of OECD countries for expenditure (in 1993/4 spending peaked at 0.75% of GDP but in 2007/8 has dropped to 0.55% GDP);
- a transition to full funding for the cost of research in universities and government research agencies following the recognition that grants often only cover half of the costs;
- the prioritisation of public research in a number of areas including health;
- a re-devised series of R&D tax concessions for private business;
- the formation of a National Innovation Council to co-ordinate and provide strategic leadership for the innovation system (replacing the current Prime Minister’s Science, Engineering, and Innovation Council);
- increasing the stipend for Australian Postgraduate Awards to at least $25K, indexing it to average wages, and extending its duration to 4 years.

Overall, the HMR sector should welcome these recommendations. However, a close eye will need to be kept on the Excellence in Research Australia driven funding of University block grants, particularly with regard to determining the balance between basic and applied research, and the potential barriers to encouraging external collaborations. A white paper is expected by the end of the year and it will be interesting to see how many of the above listed issues will be tackled in the context of the current economic climate.

This year, the NHMRC has also undergone an external review of its strategic directions and funding mechanisms. Amongst the many important issues is that of the future structure and funding levels for the NHMRC fellowship schemes. The total number of fellowships has increased significantly since 2002 and the suggestion has been that the scheme is becoming unsustainable. However, it should be noted that the proportion of NHMRC funding directed towards people support has remained fairly constant at around 20–22% during this period. Thus the ratio of people versus project funding has essentially not changed over the past 5 years — with the increase in fellowship numbers following proportionally the increase in total funding. Achieving the correct balance between NHMRC people and project grant support, as well as defining career structure in the system, is a key issue for the HMR sector. ASMR is making every effort to work with NHMRC to address this important issue.
ASMR welcomes the early announcement of the NHMRC project grant funding outcomes for 2009. These were released on October 16th by the Hon. Nicola Roxon MP, Minister for Health and Aging, and commit $357 million to support 688 projects. This represents an increase on the $336 million that funded 660 projects in 2008. At the time of going to press, the results for the 2009 training awards, career development awards, and fellowships were still pending.

The recently announced Prime Minister’s Science Prizes were a highlight for HMR, with Professor Ian Frazer winning the overall Prime Minister’s Science Prize and Dr Carola Vinuesa, of the John Curtin School of Medical Research, the Prize for Life Scientist of the Year. Both are outstanding Australian medical researchers and richly deserve their awards. I congratulate Ian and Carola on behalf of ASMR.

The ASMR is dedicated to supporting the careers of HMRs, and in August held the 2008 ASMR Professional Development Program. The program followed the successful inaugural event in 2007 and was aimed at providing much-needed training for mid-career researchers. The road show was expanded this year and included for the first time events in Perth and Adelaide in addition to Brisbane, Sydney and Melbourne. I am happy to say that the success of the program has assured it will now become an ASMR fixture in the future. Thanks to Dr Moira Clay for facilitating the events, Sophie Symeou for leading the work/life balance workshops, Dr Andrew Laslett for convening, ASN Events for logistical support, and all the fantastic researchers that generously gave their time to talk to the participants.

I am also pleased to announce that ASMR has launched a new initiative — the Career Development Mentor Program. The program has been developed in response to the disturbing statistic highlighted during the professional development program, that over 50% of mid-career researchers do not have a career mentor. The program offers ASMR members that are 5–12 years postdoctoral an opportunity to be matched with a career development mentor. Applications are now open and for guidelines and forms please see the ASMR website (http://www.asmr.org.au/Mentor.html). Thanks to Dr Sarah Meachem and Cath West for putting the program together.

Finally, I would like to highlight that the scene is now set for another stellar Australian Health and Medical Research Congress that will be held in just a few weeks in Brisbane at the Convention Centre, from November 16–21. An exciting multi-disciplinary scientific program comprising a world-class line-up of over 200 national and 50 international speakers has been finalised. Plenary speakers include international superstars Elaine Fuchs, Josef Penninger, Steve Baylin, Michael Karin, and the recent winner of the Nobel Prize for Chemistry, Roger Tsien. The program also encompasses the national scientific conferences or sessions by 33 societies and organizations, and includes the ASMR National Scientific conference “Epithelial Tissue Dynamics: From Stem Cells to Cancer”. There is still time to register for the Congress (see http://www.ahmrcongress.org.au). This is the first time the Congress has been held outside of Melbourne or Sydney, and I encourage everyone to support ASMR’s initiative to hold it in Brisbane by attending what promises to be a truly outstanding meeting.

Mark Hulett
President

3 November 2008

There’s still a chance to catch international superstars including Roger Tsien, who shared this year’s Nobel Prize for Chemistry for the discovery and development of the valuable molecular tool, green fluorescent protein (GFP), which has revolutionized the study of cell biology.
Memories of ASMR from the 1970s

I was lucky enough to be present at the early informal planning meetings when Barry Firkin, Jim McRae, Alan Skyring, Rod Shearman, and once Gus Nossal during a visit from Princeton, discussed the idea to establish an Australian version of the Young Turks of which they all had experience in the US. At the instigation of Ruthven Blackburn I had joined Barry Firkin at the Clinical Research Unit at Royal Prince Alfred Hospital (RPAH) in 1961 shortly after his return from Washington University at St Louis. Hence, I was immediately exposed to the new wave of talented young people with clinical scientific backgrounds bent on change and invigoration of the local scene. Gus Nossal has elegantly described the first decade in the August newsletter and I am responding to an invitation to comment on the 70s.

I joined the Committee as a Director after our return from France in 1966 and worked closely with Mark Playoust after the death of Tony Edwards. Mark was tireless in the detail of setting up the constitution and running the affairs of the ASMR. It was an inspiration to be with him. Paul Nestel came to the Presidency with a true scientific bent. During his time activities expanded and more participants came from Melbourne and Adelaide and the meetings were more truly national. At the 1969 conference there was lively discussion about support for research and it was agreed to hold a symposium on this topic the following year. So it was my privilege to chair the symposium on “The Economics of Medical Research” (with Barry Firkin, Dr. R. W. Greville, Secretary of NHMRC, Dr. N. Gray, Director of the Anti-Cancer Council of Victoria, and Ralph Reader from the NHMRC). As Gus Nossal points out, this was the first foray into true advocacy which developed momentum in the following years.

After leaving Sydney for the Austin Hospital as a haematologist in 1969, I continued to be active in the affairs of the Society after ceasing as a Director at the end of 1970. John Turtle followed, an accomplished endocrinologist who had early experience of clinical science in the Clinical Research Unit with Barry Firkin and was President in a challenging time of political change. He recently retired from his chair of Medicine at RPAH but retains an ongoing active research commitment.

With the looming political change we sensed the need to lobby in Canberra and a small group was well received by the Labor politicians preparing for government. After the elections, activity increased and big meetings were held around the country to reinforce the impact of the research community.

Jack Martin became President in 1972. He had given the AWT Edwards Oration in 1970 and was an established leader in the field of calcium metabolism. He is still active in the St Vincent’s School of Medical Research, Melbourne, after retirement. He had senior academic appointments in Sheffield, the Repat in Melbourne and at St Vincent’s as head of medicine and of the Research School.

Bill O’Sullivan, President in 1973, had also worked at Sydney University and collaborated in some great research at the Clinical Research Unit with Dick Fox, (still head of Oncology at the Royal Melbourne Hospital) on nucleic acid metabolism. Bill became professor of Biochemistry at the University of NSW and later Dean of the Science Faculty. We meet occasionally to reminisce about those exciting years.

John Healy was a nephrologist working in Brisbane after a productive period in Sydney with Malcolm Whyte and Tony’s brother David Edwards at Sydney Hospital, and then with John Young in Physiology at University of Sydney on tubule function. President in 1974, he was based at Princess Alexandra Hospital and his involvement solidified the connections with medical research in Queensland. His was one of the wise heads that saw such expansion of opportunities and concentration of effort typical of the discipline there at the present time.

John Chalmers, President in 1975, had been intern at RPAH in the Professorial unit with Ruthven Blackburn in 1963 when I was completing a research programme in haemostasis before leaving for France. His mother was French and he challenged my
capacity to get on in the language and we were friends thereafter. John is still active in research at the George Institute with large scale studies in hypertension and vascular disease. He had several senior roles in his career, at Flinders University as Foundation Professor of Medicine, later chair of the NHMRC and President of the Royal Australasian College of Physicians.

“John Chalmers is a polymath and has great organisational drive and vision.”
— Alec Morley

Alec Morley, a haematologist from Adelaide was President in 1976. He continues to work and publish particularly on regenerative anaemias and has been a great influence at Flinders University and in his discipline.

Neville Ardlie who was President in 1977 had worked in the Clinical Science Unit of the ANU at the Canberra Hospital with Malcolm Whyte where he developed his interest in thrombo-vascular research. This he greatly expanded in Toronto with the team of Fraser Mustard and became a leader in the field of platelet function before returning to the Institute of Medical and Veterinary Science in Adelaide. The Society continued to expand with regional meetings and an enhanced national profile.

Tony Basten was a product of the WEHI and brought a new wave of immunology research to Sydney before he became President in 1978. The Society was truly burgeoning with national impact and a pivotal place in the development of young medical scientists. Tony typified that breed and expanded his influence to eventually become Director of the new Centenary Institute at RPAH around the turn of the century.

The last of the 70s presidents was the indominatable John Funder, something of a giant in person as well as in endocrine research. Funder, TJ Martin and John Coghlan (head of the Florey) were a formidable trio on the Melbourne scene and responsible for much of the great strength of the discipline there and in the country at large.

ASMR in the 1970s encapsulated the dynamism and driving top end of clinical and health research. So much depends on such leadership for the continued growth and success of clinical and academic medicine in this country.

Peter Castaldi
ASMR President, 1970

My most vivid memory is from the National Scientific Conference which was held in Surfers Paradise in 1973. I was sitting at the table at the end of the annual dinner and asked if I wished to go for a swim. By chance, I was feeling tired and declined. About 7 people went for a swim. They were standing on a sandbank which was swept away by a freak wave and they got into trouble. One individual was a good swimmer and pulled several people out but two perished — Claire Campion and Marcus Ma. They are remembered in the Campion-Ma-Playoust Memorial Award. (Marc Playoust died in a motor vehicle accident after the National Scientific Conference in 1972 — he was a former director and president in 1967).

Alec Morley
ASMR President, 1976

The second half of the 1970s was the era when ASMR began the metamorphosis from the amateur ranks to one of the first ‘professionally’ run special societies in Australia. This maturation was accompanied by:

• initiation of move to holding the annual scientific meeting outside major centres, i.e. Thredbo in first instance;

• development of a significant role for the Society as an effective lobby group with the Federal Government — a move that was precipitated by a real crisis in NHMRC funding which was overcome by the executive going to Canberra and lobbying vigorously with the then Health Minister, Jim Carlton (Fraser Ministry);

• creation of the Secretariat at the Royal Australasian College of Physicians in Macquarie Street;

• strong move towards further nationalisation with the Executive coming from outside NSW and subsequent creation of State branches.

My one specific recollection of my presidential year was playing golf on that scruffy course at Thredbo during the annual meeting when one of my colleagues hit his drive into the scrub and disturbed a canoodling couple. They fled semi-naked across the fairway and then complained to management about our behaviour.

Tony Basten
ASMR President, 1978
Australian health research has had great impact worldwide. The development of penicillin by Florey, the use of lithium in bipolar disorder, the extermination of smallpox by Fennel and colleagues and the discovery of *Helicobacter pylori* by Warren and Marshall have led to dramatic improvements in global health. In Australia, we have gained some 20 years in life expectancy over the last century, in substantial part due to the fruits of research.

In my lifetime, people with polio lived their lives in iron lungs, people with mental illness were locked away, and those with Tuberculosis languished in sanatoria, while people with ulcers were operated upon. Childhood infections were rampant and sometimes fatal and coronary disease was rife. In 2008, much of this is history. It is not surprising then that Access Economics in 2003 concluded “investment in health R&D surpasses every other source of rising living standards in our time.”

Looking at premature mortality, roughly half can be attributed to unhealthy behaviour, and the rest is divided between biology and the physical environment. In Australia, inadequate health care plays a minor role but other countries are less fortunate. The determinants of health are not just biologic but environmental, economic, social and political. It follows that health policies can have a very significant effect on health outcomes — anti-smoking legislation and regulation is the classic example.

Factors influencing global health in the 21st century include absolute and relative poverty; ageing; the growth of cities (in 2007 for the first time urban equalled rural population); the continuing high influence of infectious diseases; an increasing incidence of non-communicable diseases, injuries and violence; global environmental threats and economic and social globalisation.

Economic, social and political factors have long been important in determining health. Further, the Commission on Macroeconomics and Health found health was central to economic development. The Second Indonesia Family Life Survey, for example, found an association between height and earnings in adult Indonesian males. Investments in health not only help in disease control, but by improving productivity and economic growth, they promote societal stability.

Historically, health sector policy has tended to be ideologically rather than evidence based, or more realistically, evidence informed. The story of the identification and eventual prevention of analgesic nephropathy in Australia is a wonderful example of the use of research evidence on informing policy. Early attempts at prevention with education failed, as did removal of the common constituent. Research showed that in fact all the minor analgesics were toxic but most particularly in combination. In contrast to the early policy failures based on assumptions, measures to control ingestion of compound analgesics based on research evidence were spectacularly successful.

Given the desirability of using public funds for maximum benefit, research evidence should be a key ingredient of policy, particularly in resource poor environments. ‘If you are poor, actually you need more evidence than if you are rich’ (Hassan Mshinda).

In a rapidly changing world where a multiplicity of factors determines health, we can no longer think simply about health and medical research; the time has come for a focus on research for health.

Judith A. Whitworth

John Curtin School of Medical Research

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Professor Judith Whitworth speaking at the ASMR NSW Scientific Conference, June 2008.

Professor Whitworth heads the High Blood Pressure Research Unit at the ANU and is Chair of WHO’s Global Advisory Committee on Health Research.
It is difficult to overstate the suffering caused by malaria, a disease caused by unicellular Plasmodium parasites. The emergence of parasites resistant to the former antimalarial ‘wonder drug’, chloroquine, has been a disaster for malaria control and new drugs are urgently needed. To develop new drugs, biological differences between malaria parasites and our own cells need to be discovered and exploited for drug design. Prof. Geoff McFadden at the University of Melbourne discovered that malaria parasites possess a plant-like organelle that our cells do not — the apicoplast. This organelle has prokaryotic origins, so conventional antibiotics might be expected to inhibit its machinery and kill the parasite. Indeed the McFadden lab, and others, have shown that a number of antibiotics do kill the parasite. Curiously though, many of them don’t kill the parasite that they’re applied to, but rather their daughters, even if the drug is removed before the start of the second generation. The cause of this phenomenon, termed ‘delayed death’, remains unexplained. My interest in delayed death stemmed from the unexpected finding that verapamil, a compound known to sensitisce chloroquine-resistant parasites to chloroquine, causes delayed death. Verapamil, which is used clinically for hypertension and arrhythmia, is different from other delayed death compounds in that it has no obvious apicoplast target. This raises the question of whether there is a target for verapamil in the apicoplast, or whether delayed death is not (or not always) a result of apicoplast disruption. The ASMR Research Award funded my time in the McFadden lab, where I worked with Dr Dean Goodman in an attempt to answer this question. While we eliminated a number of apicoplast pathways from consideration, we also formulated a number of new hypotheses to test. Our collaboration is ongoing as we seek to explain the mechanism by which verapamil causes delayed death.

Adele Lehane
School of Biochemistry and Molecular Biology, ANU

Travelling Roadshow — Professional Development Program, August 2008

The mid-career period has become known as the ‘fright or flight’ (aka sink or swim) moment of a scientific career. Ongoing professional development is an essential ingredient for creating new and better opportunities for development of any career — a process not readily available to Australian mid-career health and medical researchers. ASMR’s answer to this problem was to roll out independent, discipline-specific and affordable professional development coordinated and presented by other health and medical researchers. Last year, the ASMR set itself the goal of providing an informative and stimulating full day program to educate, enthuse and empower Australian health and medical researchers. This year, for the first time, the program was run in five States: Queensland, New South Wales, Victoria, South Australia and Western Australia. The program was divided into four sections: Session 1 — How to setup, run and maintain a successful research group; Session 2 — I have great ideas; how do I fund them?; Session 3 — exploring what ‘Work / Life Balance’ means and how to achieve it; Session 4 — Master class in professional skills with a focus on honing skills for best practice in reviewing grants and manuscripts. Nationally, over 330 paying attendees were treated to a full day of professional development with ample refreshments and time for networking. Expert health and medical researchers and administrators from around the country volunteered their valuable time to both coordinate the day and present in each of the sessions. The day was facilitated by Dr. Moira Clay from the Children’s Cancer Institute Australia in Sydney, whose professionalism, wit and energy were integral to the success of the day. Feedback, provided by an online survey after the events indicated that an overwhelming majority (96%) of participants thought the day lived up to their expectations and thought the program was relevant to their career, and more than three quarters of attendees rated the day as above average or excellent. A quote from a participant summed it up beautifully: “It surpassed my expectations! I came away from the day with a real clarity about what I need to do in my career in order to achieve the results that are important to me, while at the same time maintaining my sanity and my life”. On behalf of ASMR, I thank all of the attendees, speakers, volunteers and organisations that supported their staff’s attendance. The ASMR, building on feedback received from attendees, is planning similar events, covering different relevant topics, in 2009 focusing on the specific training necessary for a life long career in health and medical research.

Andrew Laslett
ASMR Director and Chair Professional Development Program Committee 2008

2008 Victorian Premier’s Award for Health and Medical Research
The winner was Dr Benjamin Wei from the Bionic Research Institute. Commendations went to Ms Hilary Hoare (Department of Biochemistry and Molecular Biology, Monash University), Dr Priscilla Kelly (The Walter and Eliza Hall Institute) and Ms Linda Wakim (Department of Microbiology and Immunology, University of Melbourne).
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Invitation to Members
ASMR Annual General Meeting
November 19th, Brisbane Convention Centre,
12:30pm

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