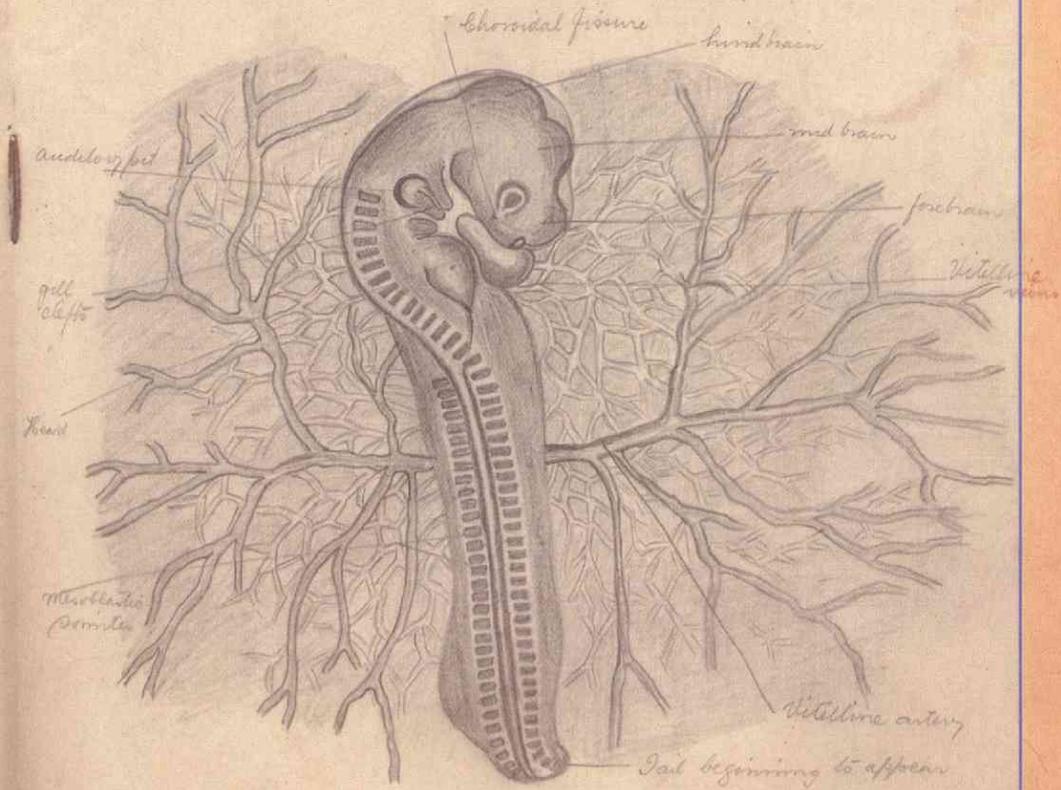


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 **CHIRON**

JOURNAL OF THE UNIVERSITY OF MELBOURNE

MEDICAL SOCIETY VOL 5 NO 1 JUNE 2003



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## CHIRON

CHIRON THE CENTAUR, TEACHER OF MUSIC,  
MEDICINE AND HUNTING

VOL 5 No 1

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## EDITORIAL

Richard Graeme Larkins

AO, MDBS, MD, PHD (LON), FRACP, FRCP, FRCPI

**O**UR WIDELY ACCLAIMED dean of five years, Professor Richard Larkins, is set to take up a new challenge as vice-chancellor of Monash University in September 2003.

He leaves the faculty with our deepest gratitude for his inspiring leadership and unwavering selfless commitment to advance the faculty and the university. Richard is a 'can do' dynamo with a healthy spark of cynicism for any unnecessary bureaucracy. He demonstrated his capacity to lead on many fronts simultaneously; as dean of the largest faculty in Australia, as chairman of the NHMRC (1997-2000), and as president of the Royal Australasian College of Physicians (2000-2002). But many readers may not know of Richard's stellar career.

After an early childhood in Corryong, where his father was a general practitioner, Richard was dux (aeq) at Melbourne Grammar School before entering medicine at Melbourne. In his final year (1966), Richard was awarded thirteen of the fifteen special prizes, before taking training positions at Royal Melbourne Hospital. His specialist clinical and research interests are in endocrinology, especially in relation to diabetes and microvascular disease. He was awarded an MD in 1972 from research at the Royal Melbourne, and a PhD in 1974 following a Churchill and MRC Fellowship at the Royal Postgraduate Medical School at Hammersmith Hospital, London. By the end of 1974 Richard had published nine papers, two in *Nature*, both as first author. He now has over 190 refereed papers and book chapters, and has supervised twenty research higher degree scholars.

Richard was appointed director of the Endocrine and Metabolic Unit at the Repatriation General Hospital in 1979, before returning to the Royal Melbourne Hospital in 1984 as the James Stewart Professor of Medicine and head of the Department of Medicine, Royal Melbourne/Western Hospital, aged forty-one. In addition Richard led an NHMRC program in diabetes research and directed the hospital Department of Diabetes and Endocrinology over the next thirteen years, the last two as deputy dean to Professor Gordon Clunie. Richard succeeded Gordon as dean in January 1998.

Over the last five years, Richard has led the faculty through a remarkable period of growth and change in research and teaching programs. In every facet of our complex faculty, with Richard at the helm there has been no time to 'smell the roses'. An example is the remarkably smooth transition from the old curriculum, in which departments were responsible for teaching subjects, to an integrated pre-clinical/clinical curriculum based primarily on problem-based learning, first in the School of Medicine but now fully implemented in the schools of Dentistry and Physiotherapy. Richard has carefully nurtured the internationalisation of our student cohort, with both undergraduate and graduate entry. His interest in the development of 'clinician scientists' had much to do with his ability to persuade the faculty and affiliated research institutes to take the entire undergraduate cohort through the Advanced Medical Science year of research training. This has been a resounding success. The faculty has now expanded to include the School of Nursing, School of Population Health, and School of Rural Health based at Shepparton, a particularly important initiative for the faculty and the university.

Our faculty's recent efforts in curriculum development owe much to the establishment and work of the Faculty Education Unit and Faculty IT Unit, both championed by our dean nationally and internationally through his leadership role of the Deans of Medical and Health Science Group in Universitas 21, and strengthening relationships with neighbouring countries. In our research and research training programs the faculty has enjoyed extraordinary success through the support and commitment of the dean in the establishment of Bio21 Australia Ltd, the Bio21 Molecular Science and Biotechnology Institute, new CRCs, NHMRC



RICHARD LARKINS (CENTRE) WITH UNIVERSITY OF MELBOURNE VICE-CHANCELLOR ALAN GILBERT (LEFT) AND NOBEL LAUREATE PETER DOHERTY (RIGHT)  
(photo: Michael Silver)

programs and state Science Technology Innovation (STI) grants. The establishment of the faculty's Centre for Neuroscience together with Neuroscience Victoria and Neuroscience Australia are important new initiatives.

In recognition of his distinguished services to medicine in Australia, Richard was awarded the Sir William Upjohn Medal in 2002. Last year he was also made an Officer in the Order of Australia for service to medicine and health as an advocate for increased investment in research, as a contributor to health policy reform and an initiator of innovative medical programs, and the provision of training opportunities for medical officers in the Oceania region.

Richard has been a universally admired dean for his high intelligence, mature and decisive judgment, his consultative style and his warm, friendly manner, despite his enormous workload often self-imposed by his generosity of spirit. Richard always gives due reference to his colleagues for their support and loyalty. I would also like to pay tribute to Mrs Caroline Larkins for her support of Richard and her participation in many a Dean's Lecture.

What I have always found remarkable is Richard's deliberately slow, super-controlled, A-grade golf swing; the antithesis of the pace that this truly great Australian demands of himself. I am sure I can speak for all present and past students and staff of the faculty in wishing Richard every success and personal fulfillment at Monash University. We thank him for his superb contribution to medicine, the faculty and the university.

Professor James A Angus  
Deputy Dean, Faculty of Medicine, Dentistry & Health Sciences

### CHANGES IN MEDICAL EDUCATION

**Front cover:** Chick embryo, stage N, about three days, drawn from specimen, 1905. Histology notebook of Alfred John Trinca (graduated 1907) showing his meticulous standard of illustration for embryology.

**Back cover:** Image of a twelve-week old foetus with bone stained, from *an@tomedia* (Eizenberg, Briggs, Barker & Grkovic), a CD-ROM program ([www.anatomedia.com](http://www.anatomedia.com)) developed by the university's Department of Anatomy & Cell Biology.

## SEMINAR

26 July 2002

## CLONING AND EMBRYONIC STEM CELL RESEARCH: DOES AUSTRALIA NEED A MORATORIUM?

## CONVENER

Professor Graham Brown

James Stewart Professor of Medicine and Head, Department of Medicine,  
The Royal Melbourne Hospital and Western Hospital, The University of Melbourne

## Introduction

GRAHAM BROWN



GRAHAM BROWN

**I**N 2001 PRESIDENT George W Bush announced that federal United States law would not allow taxpayers' money to be used to finance embryonic stem cell research. The decision was applauded in many areas, but opposition arose from patient support groups, who recognised the potential future benefits of the technology, and from researchers, who highlighted the knowledge and increased understanding of disease that could emerge from this line of research.

Australian scientists at the forefront of stem cell research became engaged in a similar debate in Australia. In July 2001 the Council of Australian Governments indicated a desire to legislate against human cloning and to develop a national approach to human embryonic stem cell research. In September 2001 Mr Kevin Andrews chaired a House of Representatives committee to advise parliament on human cloning and stem cell research. Six members of the committee believed that embryos created for the purpose of *in vitro* fertilisation (that would otherwise be discarded) could be made available for use for stem cell research, whereas four other members opposed this position. Mr Andrews recommended the minority opinion to Cabinet, with resultant opposition occurring in the daily press.

Embryo ban hits research. Federal Cabinet yesterday decided to ban the use of spare IVF human embryos for research, sparking predictions of an exodus of elite Australian scientists overseas.

Louise Dodson, Darren Grey, Canberra. *The Age*, 26 February 2002.

Also from *The Age*:

Think of the future and think of us, plead brothers on embryo research... A proposed ban on stem cell research has exasperated the Brown family...

wrote Julie Szego in reference to two brothers with cystic fibrosis.

Strong vested interests appeared on both sides of this debate. Australian scientists at the leading edge of this technology commented on the potential for the technology to increase understanding of cellular development, whereas other groups were equally opposed. The language used on both sides of the debate characterised the views of those who supported a particular position. Great interest was generated in the media,

with editorial opinion and leading articles promoting the debate to an extent rarely seen for ethical issues.

Approximately one month following this symposium, members of parliament were asked to vote on the *Research Involving Embryos and Prohibition of Human Cloning Bill 2002*, the purpose of which Mr Howard, Prime Minister, described as, '...to ban human cloning and other unacceptable practices associated with reproductive technology, and to regulate research involving human embryos'. In re-reading the Bill Mr Howard said: 'It is because the Bill traverses areas involving complex and moral ethical judgements, where inevitably Australians will take a variety of attitudes, that senators and members of the Liberal and National parties will exercise a free vote on the Bill as a whole and on all of its provisions'.

Public debate has now recognised that widespread discussion is required to assist parliamentarians in their personal decisions on the key issues. The questions for us today are similar to those facing our politicians and readers of the lay press.

Is it wrong to destroy a six-day-old embryo if it is a step towards helping save the lives of people living with terrible diseases? Is it wrong to use for research, an embryo that would otherwise be discarded after an IVF program? Is it wrong to produce embryos with the purpose of destroying them? *The Age*, 17 July 2002.

There is also considerable uncertainty about scientific aspects of stem cell research and we will hear the latest information as to whether adult stem cells have the potential functions for which others claim the need for embryonic cells.

With these major issues before us as citizens, scientists or members of ethics committees, it seemed an appropriate topic for our ethics seminar this year. Our goal is to inform those involved in undertaking research, and those in the community who will decide whether it is appropriate for particular research activities to be undertaken.

## DEAN'S LECTURE SERIES—2003 SEMINAR

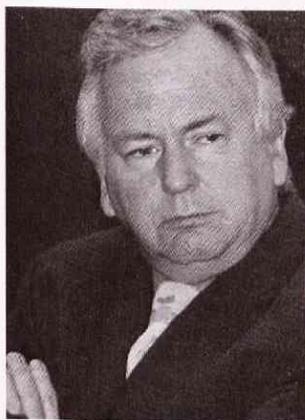
### Who Pays for Lunch? Ethics Committees and Conflict of Interest

Case studies of conflict of interest involving committee members, principal investigators of trials, commercial conflicts of interest for host institutions and appropriate mechanisms for dealing with perceptions of conflict.

Friday 25 July 2003, 2.00 – 5.00pm  
Sunderland Lecture Theatre, The University of Melbourne  
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<http://www.medfac.unimelb.edu.au/med/deanlect.asp>

## How Can Stem Cells be Used to Treat Disease?

PERRY BARTLETT



PERRY BARTLETT

ONE OF THE major reasons that the public debate about stem cell research has become extremely polarised is a lack of substantive scientific information which can be critically assessed. For example, I think that if embryonic stem (ES) cells were shown, unequivocally, to cure a major disease or even show proof-of-principle in an animal model of disease, then the tenor of the debate would change remarkably. So at what stage is stem cell research and what are the current obstacles?

First of all, what is a stem cell? It is defined by possessing three features, the most important of which is that it can self-renew: when a stem cell divides one of the daughter cells remains a stem cell while the other is set on the road to making a differentiated cell, such as a nerve cell. Thus, stem cells are present throughout the life of an animal, even into old age, although their number may decrease; the degree of diminution, however, has not been well documented in most tissues.

The second important characteristic of the stem cell is that it can divide extensively to give rise to a very large number of cells. Finally, the third characteristic is that its progeny differentiate into a broad range of cell types.

### Embryonic stem cells

The ability to give rise to different types of cells is best exemplified by the embryonic stem cell. It was just over twenty years ago that Martin and Kaufman first isolated and grew a stem cell from an early mouse embryo. Mouse ES cells were subsequently grown as single cells and their self-renewal properties and pluripotential capacity were confirmed—this has not been formally demonstrated for human ES cells since, as yet, they cannot be grown *in vitro* as single cells.

### Adult stem cells

Adult or tissue-derived stem cells are present, as would be expected, in nearly all mature tissues in the body, and some have been extensively characterised. For example, stem cells that produce new nerve cells can be found in the lining of the ventricles in the brain, and are actively producing neurons to populate the olfactory bulb (up to 10 000 per day in the adult human) and the hippocampus (a few hundred per day). Neural stem cells were recently isolated and characterised by my group in the mouse; however, they have not been characterised in the human. The neural stem cells have also been shown to be capable of producing non-neural cells such as muscle and blood cells, suggesting that they have many of the properties of ES cells.

Stem cells with the capacity to make a broad range of tissue types have also been obtained from bone marrow. Although not well characterised, clonally derived populations of mouse and human mesenchymal stem cells have recently been reported to give rise to a wide range of cell types. These observations raise questions of whether the stem cell derived from adult tissue is very similar to the ES cell. Preliminary gene-microarray data comparing stem cells derived from nerve and blood with ES cells suggest they express a large number of similar genes.

One tissue where stem cells have not been identified is in cardiac muscle. Although stem cells for skeletal muscle have been well characterised, it is still unclear whether these stem cells can give rise to cardiac muscle.

The best-characterised tissue-derived stem cell is the haemopoietic stem cell which, of course, is the core of bone marrow replacement therapy. A problem, however, with blood stem cells is that they can't be significantly expanded *in vitro*, whereas most of the other stem cells can. Again, there are reports that haemopoietic stem cells are also pluripotential and give rise to many tissue types, including nerve and muscle.

### Stem cell therapy

The simplest form of therapy is to find drugs to activate the stem cells present in the tissues to replace damaged or lost cells. This form of therapy, which exists already in the blood system where CSFs (colony stimulating factors; discovered by Metcalf's group at the Walter and Eliza Hall Institute in Melbourne) are routinely given following surgery to stimulate precursor cells to make new blood cells, has none of the potential problems associated with transplanting stem cells.

If transplanted stem cells are not obtained from a patient's own tissues or from an identical twin then immunological rejection will eventually occur. This, of course, has been overcome to a large degree by tissue typing in bone marrow transplantation, but this requires a bank of many, many thousands to obtain a suitable match—in the present climate, a bank of this size seems unlikely for ES cells.

In order to overcome this specific problem, nuclear transplantation or therapeutic cloning, whereby the host's nucleus replaces the donor nucleus, has been proposed; however, this seems unlikely ever to become a routine procedure. Thus, any proposed ES cell therapy at present has to be combined with immunosuppressive treatment.

Another problem with ES cell therapy is that these cells always form tumours when transplanted. To overcome this potential, ES cells would have to be terminally differentiated (unable to divide) prior to transplantation. While this may be feasible for cells such as islet cells in diabetes, there is very little evidence that fully differentiated nerve cells can be successfully transplanted and integrated into the adult nervous system. This appears to be an insurmountable problem at present.

To overcome the problems of rejection and tumour formation the use of tissue-derived cells from the patient's bone marrow or blood has been proposed, and given their apparent broad potential this seems to be a real alternative.

Setting aside the above problems, what evidence do we currently have for the success of stem cell therapy based on stem cell transplantation outside of bone marrow replacement? Although there have been reports of successful use of ES cells to replace cells in animal models of Parkinson's disease and diabetes, these have been relatively short-term experiments and require long-term follow up before success can be determined. Recently, even the ability of ES cells to differentiate into insulin-secreting cells has been questioned, with a startling report in *Science* showing that this was due almost entirely to ES cells concentrating insulin present in the medium in which they grew. Reports of stem cells, especially ES-like cells, repairing damaged spinal cords appear not to be due to their ability to make new nerve cells, but more to their ability to secrete factors which may activate reflexes in the hind limbs that lead to improvement in locomotion. Thus, at the time of writing this piece, there is no unequivocal evidence for successful long-term replacement of functional tissue by ES cells.

Let me close by returning to my area, the brain. Over the past ten years there has been a revolutionary shift in our thinking about the brain's ability to respond to environmental cues. We now know that new nerve cell production, derived from endogenous stem cells, can be activated by environmental stimuli, including exercise, in areas associated with memory formation. In addition, over the last two years we have learnt that significant numbers of nerve cells can be produced by the same endogenous stem cell population to replace nerve cells lost following diseases such as stroke (a recent report suggests up to fifty per cent replacement). Thus, it appears that the endogenous stem cell system has enormous potential to repair the damaged or diseased brain. The big question is how to activate it. With our recent isolation of the stem cell from the adult brain, we have begun to examine the nature of the

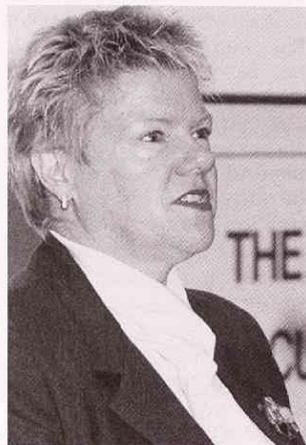
receptors on the surface of the stem cell in search of the ligand, which can activate nerve cell production. Such molecules will become the CSFs of the CNS and have the potential to revolutionise the therapeutic treatment of neurological disease in the next decade.

In summary, stem cell therapy is moving ahead on several fronts and the future course is now dependent on obtaining unequivocal proof-of-principle for functional repair and comparing the relative effectiveness of each form of therapy. Given the drawbacks identified with ES cell therapy, this path can only be followed to the clinic if it demonstrates, unequivocally, its comparative advantages.

*Professor Perry Bartlett, Foundation Professor of Molecular Neuroscience, University of Queensland; former Head of Development and Neurobiology, Walter and Eliza Hall Institute of Medical Research*

## A Legal Perspective on Stem Cell Research and Cloning

LOANE SKENE AND BRENDAN GOGARTY\*



LOANE SKENE

**A** COMMON RESPONSE by people opposed to human cloning and embryo research is 'there should be a law against it'. However, there are serious drawbacks when legislative bans are proposed in a rapidly developing scientific area. Such legislation is difficult to draft, especially when we do not know what is ahead. It can capture things we don't intend and miss things we do. If we make a mistake, it can be hard to change the legislation.

### Bans and moratoria on cloning and embryo research

The Andrews Committee recommended that cloning for

reproductive purposes should be made a criminal offence and that anyone attempting to do it should lose their licence, but that embryo research should be permitted on 'spare' embryos (i.e. embryos not created specifically for research).

Early in 2002 the federal government proposed the *Research Involving Embryos and Prohibition of Human Cloning Bill 2002* (Cth)—making it lawful to use in research embryos created for use in an assisted reproductive technology (ART) program before 5 April 2002, provided that all 'responsible persons' consent, but banning the use of embryos created after that date.

Most of the debate has centred on whether we should allow this type of research and not about the real challenge—how bans and moratoria can be imposed and enforced.

### Current legislative provisions and proposals

The *Commonwealth Gene Technology Act 2000* states that it is a crime for a person to 'knowingly or recklessly undertake an activity which will result in the cloning of a whole human being'. 'Cloning of a whole human being' means 'the use of technology for the purpose of producing, from one original, a duplicate or descendant that is ...genetically identical to the original'. This legislation fails because the cloned child is not 'genetically identical' to the progenitor. The DNA in a cloned embryo comes not only from the nucleus of the donor but also from the egg into which it is implanted—the mitochondrial DNA. Indeed, it will not be as close genetically as a naturally occurring monozygotic twin. Furthermore, during early development the cells of the embryo divide at a rapid and exponential rate. This may cause mutations in the genetic code of that life-form resulting in small

genetic differences from the parent. Hence, it is unlikely that any clone can be said to be 'genetically identical' to its clonal parent.

The *Victorian Infertility Treatment Act 1995* prohibits cloning which it defines as to 'form, outside the human body, a human embryo that is genetically identical to another human embryo or person'.

This legislation is ineffective for two reasons. A cloned embryo, like a cloned child, has mitochondrial DNA from the egg from which it is formed. Also, the definition of an embryo in terms of the male and female pronuclei means that an embryo formed by somatic cell nuclear transfer (SCNT) is not covered. In cloning by SCNT, only the cells from one sex are used, not two. Hence the resulting embryo may be a 'clone' but it will not be a 'cloned' embryo for the purposes of the Act.

Nor does this definition prohibit the cloning of a zygote—the stage of human development from the commencement of penetration of an oocyte by sperm up to but not including syngamy. Research involving the use of cloned zygotes may be permissible subject to approval by the Infertility Treatment Authority. Also, zygotes seem to fall entirely outside the regulation of the Act if they are created without the use of sperm, such as in somatic cell nuclear transfer, and if the zygote is destroyed before syngamy occurs.

The *South Australian Reproductive Technology Code of Ethical Research Practice Regulations 1995* also forbid cloning which they define as 'any procedure directed at producing two or more genetically identical embryos from the division of one embryo'.

When this Act was first passed, cloning could only be done by splitting an embryo to create artificial twins. The South Australian Act does not prohibit SCNT cloning.

The *Western Australian Human Reproductive Technology Act 1991* prohibits 'human cloning': s 7(1)(d)(i). 'Cloning' means 'the use of reproductive technology for the purpose of producing, from one original, a duplicate or descendant that is, or duplicates or descendants that are, genetically identical, live born and viable'.

This Act has the same problems as the Commonwealth Act in the definition of 'genetically identical'; it allows the creation of a cloned zygote, embryo and foetus. This would be extremely objectionable to those who feel that early life deserves absolute protection. Indeed on a literal reading, the Act does not prevent the creation of cloned foetuses for tissue mining.

*Most of the debate has centred on whether we should allow this type of research and not about the real challenge—how bans and moratoria can be imposed and enforced.*

Clearly the focus on a clone being 'born live and viable' was intended to allow therapeutic cloning but to stop reproductive cloning. However, the preamble to the Act makes it clear that any reproductive technologies must be used for the purpose of creating a pregnancy in a woman. It also requires that embryos be given 'all reasonable opportunities' for implanting. This leads to the strange situation that, should a cloned embryo be created, it would have to be implanted and brought to term. That is, of course, illegal. So while it may have been intended that the Act allow therapeutic cloning and ban reproductive cloning, in reality all such activities are banned.

The National Health and Medical Research Council (NHMRC) guidelines recommend that human cloning not be undertaken. Cloning means producing 'two or more genetically identical individuals, including development of human embryonal stem-cell lines with the aim of producing a clone of individuals'. This is subject to the same definitional problems as those above in the meaning of 'genetically identical'.

The Australian Academy of Science, in its paper *Human Stem Cell Research*, states that cloning should not be undertaken. Its definition of cloning is 'creating an organism with the same nuclear genome as another cell or organism'.

This definition avoids some of the difficulties of the legislative definitions by focusing on the outcome of the cloning process, rather than the method by which it is achieved. Also, an 'organism' would presumably include a zygote and an embryo, as well as a child. But it is not difficult to imagine methods of avoiding this ban by altering the 'junk DNA' so the genome is no longer identical but the person is the same in all material ways.

The *Commonwealth Research Involving Embryos and Prohibition of Human Cloning Bill 2002*, will prohibit the 'creat[ion of] a human clone by means of a technological or other artificial process'. A 'human clone' is 'a human that is a genetic copy of another living or dead human...'. However 'it is not necessary to establish that the copy is an identical genetic copy'. '[I]t is sufficient to establish that the set of genes in the nuclei of the cells of the living or dead human has been copied'. 'Organism' includes a two-cell zygote.

In order to provide a failsafe mechanism, the Act further proscribes the creation of an embryo by any means other than fertilisation. Furthermore every embryo must be developed for the purpose of achieving pregnancy in a woman.

Overall, the new Act seems to overcome most definitional issues above, but in order to do this the Commonwealth has cast its net as widely as possible and banned absolutely everything, regardless of the intention or the purpose of the creator of the embryo. This will prohibit therapeutic cloning, which requires the creation of an embryo from which to remove histocompatible cells. It will also ban research aimed at therapeutic cloning.

One might question whether the Bill does in fact ban everything. Some words will always be prone to multiple interpretations. For example, a clone merely needs to be a 'genetic copy', but what exactly is a copy? What about something that is substantially genetically different but physically identical? What about *creating* twins by IVF? It is arguable that you are not creating a new embryo because you are taking an existing embryo and merely splitting it into two. Perhaps it could be said that you are 'developing' two new embryos, but is that true? Conversely, should couples be banned from having twins by IVF? If in fact the legislation does include embryo splitting, was it intended that it prohibit this sort of activity? These factors serve to cause uncertainty in legislation which was clearly designed to overcome such uncertainties.

### Problems of enforcement

Even if the problems of definition can be overcome and if we can phrase legislation that covers developments we cannot yet predict, the issue remains whether there is really the will—or the practical means—to carry through the machinery of legislation.

We may want to restrict human reproductive cloning. But is this one single act enough to create a whole regime with the requisite administrators, police and infrastructure, and all the costs of that process? Maybe if a large group of 'renegade doctors' wanted to do this we could justify it. But there is near unanimous condemnation of the practice among the medical community. Only on the very fringes do we find anyone who wants to undertake this activity and has even the slightest idea how.

Do we want a team of scientific police sent into laboratories to investigate? Would that be possible? If we find a breach of the legislation, do we want to impose criminal penalties on the scientists and doctors striving to find new tools of diagnosis and therapy? What if we find a cloned child? We can't put the child down, lock the child away or chastise the child for the sins of his or her 'creator'. We have many legislative provisions imposing criminal penalties on doctors for breach of statutory provisions. Doctors are almost never prosecuted. It is not difficult to understand why this is so.

In addition, we live in an international community where countries have different ideas of what is right and wrong. We cannot enforce our laws on them any more than they can enforce their laws on us. In such an environment those who want to clone, or undertake research on embryos, or produce stem cells, will simply 'forum shop' for the friendliest, most

supportive country. What is to stop someone going overseas and being impregnated with a clone? Will we force them to have an abortion when they come back to Australia?

And while the newly proposed Commonwealth regime prohibits the import of embryos, it does not prohibit the import of stem cells. So we could very easily see a situation where those wishing to undertake therapeutic cloning could send their cells to Singapore, extract the histocompatible stem cells and ship them back to Australia. In the end an embryo will be destroyed, and the embryo is really an Australian embryo because, if you believe it is an entity, it is an entity that has been 'born' overseas. There is little we can do to stop such conduct.

*Only on the very fringes do we find anyone who wants to undertake this activity and has even the slightest idea how.*

### Advantages of voluntary regulation and the common law

There are many advantages in using voluntary guidelines such as those published by the NHMRC to regulate new medical technology. The NHMRC has a long history of regulating medical research and the development of new technology. It can undertake community consultation, its guidelines are flexible and it can make changes slowly, focusing directly on issues that arise as new discoveries are made. Legal disputes can be resolved by the courts. The law stated in the courts is likely to be similar throughout Australia. Judges consider what has been said in other jurisdictions and are likely to follow those decisions. Cases heard by the High Court of Australia have authority throughout the country. The law developed by judges takes account of other areas of law so that the whole system of the law is more likely to be consistent and coherent. It enables sensitive issues to be dealt with outside the political arena.

However, the current NHMRC guidelines dealing with embryo research are at least as problematic as the legislative provisions described above. They have not been changed since 1996 and contain what is perhaps the worst definition on cloning. If the *Human Cloning and Research Involving Embryos Bill 2002* (Cth) is passed, the NHMRC will become the body responsible for overseeing and policing embryo research in Australia. Should the NHMRC take on this role? If it does, it will be both the industry spokesman and the industry watchdog; the setter of guidelines and the overseer of regulations. It will move from being the intermediary between the medical community and government, as an advisory body, to part of the government itself, as a statutory office holder. How can it ensure the information used in hearing and granting funding applications does not prejudice the decisions it has to make as to whether to allow that activity in its role as regulatory official? The new role given to the NHMRC will substantially change its nature, purpose and impartiality, especially in relation to embryo research.

Finally, guidelines will not necessarily assuage community concern, especially about 'renegade' clinicians who are privately funded and outside traditional research institutions. For this reason, it may be advisable to legislate to prevent certain conduct that is universally or generally agreed to be undesirable (reproductive cloning) while leaving the wider field of embryo research to be regulated by guidelines, perhaps giving the guidelines legislative force.

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*This is an abridged version of Professor Skene's paper.  
For the full text please contact the editor.*

## Stem Cell Research—A Guide to the Issues

LYNN GILLAM



LYNN GILLAM

**P**UBLIC DEBATE AROUND the use of embryonic stem (ES) cells for research, and ultimately therapy, is concentrating more on questions of how to regulate these activities than on the rights and wrongs of the matter. I too will focus on questions of regulation.

Regulation of ES cell use may take place on at least two levels: the governmental level, where legislation may be enacted to control or limit such use in some way, or the level of human research ethics committees (HRECs). Provided the Commonwealth Government does not totally prohibit ES cell

research, research projects will need to be approved by HRECs before they can proceed. The issues at these two levels may well be different, and need to be considered separately. I concentrate here on regulation at the governmental area.

*It is often simply assumed that the government is making a moral decision—that it is seeking to discover the moral rights and wrongs of using ES cells in research.*

At the governmental level, the first issue is what sort of decision the government is making in relation to ES cells. It is often simply assumed that the government is making a moral decision—that it is seeking to discover the moral rights and wrongs of using ES cells in research. Much of the public discussion focuses on moral issues, such as the moral status of early embryos, and in treating the matter as one for a conscience vote, the federal government also seems to be taking this view.

If it is a moral decision that is to be made by the government, some of the key issues are as follows:

- What is the *moral* status of early embryos—how much does embryo death matter? Embryos are inevitably killed when used for stem cell research or therapy—whether the embryo has been created in an IVF program, or through a cloning procedure. The key moral issue is how much the embryo death matters. If embryos are the moral equivalent of you and I, then killing embryos in medical experiments, or even for therapeutic purposes, cannot be justified, since these purposes would not justify killing us. Only if the embryo has a moral status lower than a person can discussion about the circumstances in which it could justifiably be killed even arise. There is deep division in moral philosophy, theology and public opinion on this matter.
- How strong is the obligation to save lives? Those in favour of ES cell research and therapy sometimes argue that we are obliged to use ES cells, because we are obliged to help people who are suffering from diseases which stem cell therapy might cure or alleviate. Even if there is such an obligation, it does not necessarily mean that we may, or should, use whatever method is necessary to provide help. This obligation to help only comes into play if it is accepted that embryos have less than full moral status and can legitimately be killed for some purposes. Even then, it would have to be shown that using embryonic, as opposed to adult, stem cells, was the best way to provide this help—again there is considerable scientific disagreement about this.

- Is it worse to create embryos specifically in order to destroy them? Obtaining ES cells from spare IVF embryos is thought by some to be morally preferable to obtaining them from embryos created specifically for this purpose (whether by cloning or not). The question here is whether there is an extra moral issue related to respect for human life, over and above the killing of embryos.

*The only approach apparently left to the government is to make a pragmatic political decision involving some sort of compromise . . .*

These are complex moral issues. Whilst individuals may resolve them to their own satisfaction, it is highly unlikely that a group of parliamentarians will agree, let alone find a position that all members of our multicultural and multifaith community would agree to. In a pluralistic society there is no principled basis on which a government can enforce one particular moral position on an issue. Hence, it is better to abandon the view that the government's task is to make a *moral* decision.

Another approach is to see the task as being to make a principled political decision. Under a position of classic political liberalism the state does not dispute notions of good and bad or right and wrong, but stays neutral, and regulates in a way that allows individuals to do what they want, provided they don't harm others. In many instances where there is community disagreement on an issue, this is a good solution. However, in this case it is highly problematic, because the dispute is precisely about whether embryos are people who can be harmed. Under one view, allowing stem cell research would be tantamount to legally permitting mass murder. Regulating to permit stem cell research would be endorsing one view or morality over another and this is completely contrary to liberal neutrality. This suggests that adopting a principled political stance of liberalism will not be productive in relation to stem cell research.

The only approach apparently left to the government is to make a pragmatic political decision involving some sort of compromise, possibly along the following lines.

1. Limiting the numbers and sources of embryos to be used (no embryos to be created specifically for research purposes, and possibly capping the numbers of existing embryos to be used). This would leave open the chance to gain benefits, but minimise the amount of embryo deaths that would occur in the process. The embryos to be used would be spare IVF embryos, which in the current legislative environment have to be discarded anyway. Hence there is no change in the actual number of embryo deaths, just that some deaths will occur when stem cells are extracted, rather than when the embryos are discarded.
2. Deferring the decision on therapeutic cloning (which might be done by a short-term ban or moratorium). This allows time for community debate, but also permits relevant scientific research to occur, since at this stage cloned embryos are not needed. The importance of cloned embryos is in relation to therapy, because embryos cloned from the person to be treated will not cause any tissue rejection problems, but no clinical trials are envisaged in the short term.

Such a compromise is not based on a single, internally consistent moral theory or set of moral principles and would not stand up to scrutiny as a coherent moral position. But if we are clear that this is not the aim, then any criticism that it fails to achieve this is beside the point. It is vital not to criticise whatever policy decision is finally made for failing to be morally coherent, when this is not what the government should be trying to achieve. The result of such misguided criticism might be to produce an even less justifiable policy.

*Dr Lynn Gillam, Lecturer in Health Ethics, Centre for the Study of Health and Society; Research Fellow, Centre for Applied Philosophy and Public Ethics, The University of Melbourne*

## Ethical Questions about the Embryonic Stem Cell Panacea

ANTHONY FISHER OP

### Stem cell hype: a hidden agenda



ANTHONY FISHER

WHILE EMBRYONIC STEM (ES) cells have still not demonstrated any therapeutic benefit to anyone, adult stem cells have already helped thousands of patients, and new clinical uses expand every week. So while the media and politicians remain smitten with ES cells, a few brave researchers wonder publicly why so much of the limited medical research budget is pumped into such projects.

Even with fabulous grants the embryo industry has its problems. For one thing, it has saturated its market. Not only are some infertile couples

already having dozens of IVF cycles, but so are some fertile ones never properly investigated. Extending assisted reproductive technologies (ART) to surrogates, singles, lesbians, widows, the 'psychologically infertile', people who want tissue-matched babies or deaf babies... none of this will raise demand nearly enough to satisfy the industry.

Another problem is that women and couples, given the burdens and risks to them, are reluctant to donate their eggs and embryos to ART programs. If that is to change, a new social responsibility to give up your eggs and your embryos for others will need to be promoted.

A third problem has been excessive egg collection, zygote production and embryo banking—mostly at public expense. There is now considerable unease about this in the community. What are we to do with the 'frozen generation' left in freezers without parents? If the industry is to keep expanding, it needs to find new uses for embryos, and fast. 'Turn them into therapies', it whispers seductively, 'then you needn't feel so bad about the frozen generation'.

Not that these embryos are going to be much use for therapies: immune rejection and uncontrollable tumorous growth make their stem cells untransferable to anyone. But if people can be sold on killing a few excess embryos, it will be so much easier down the track to sell them on manufacturing new, better, designer embryos to use for parts. That's the hidden agenda.

*What is different about these human beings is that they have been declared 'excess' and marked for disposal.*

The really big markets for embryos are in drug testing and toxicology, the creation of new abortifacients, and lab training. This will yield the industry the big profits it craves. That's why the Bill presently before parliament does not even mention stem cells, let alone limit embryo destruction to such uses. But the public will still be sold the Bill with promises of cures for Christopher Reeve and Michael J Fox and patients in Sydney spinal wards, which no scientist really believes.

### But why not embryonic stem cells?

Were ES cells the panacea some say they are, would there still be a problem? Yes. The only one way to get such cells is by killing the 'donors'. The donors are very small, 120 cells or so. They are very young, perhaps a week old in some Petri dish, or

a few years old in a freezer. They've not had a long life: for all the promises at the time they were made, they've never been given that chance. But they are human and they are alive—at least until we remove vital parts.

Some people will say these embryos are too young or tiny or powerless to be human beings. That flies in the face of the science that testifies that every human life begins this way, and the philosophy that recognises that they are beings continuous with fetuses, children and adults. They are the opening pages of someone's biography. Unlike any other organism, human embryos have the inherent nature, organisation, 'soul' as some call it, which means they grow up as human beings do, as embryologists do, and never as kangaroos or roses do.

What is different about these human beings is that they have been declared 'excess' and marked for disposal. Shouldn't we use them for *something*? Many frail elderly people, prisoners on death row and unconscious patients are 'going to die soon anyway'. We hold back from killing and using them because we are convinced human dignity deserves better. History is already sufficiently littered with stories of people declared 'unworthy of respect', 'lacking the requisite capacities'; it is full of 'unwanted', 'spare', 'leftover' people whom others thought could be disposed of.

*Though it is untrue to say that we couldn't care less, it is true to say that we care less than we should.*

Sometimes, of course, doctors must let people die. There is a limit to what we can and should do to save life. But that is very different from actively killing. We only dare entrust ourselves to doctors when we are at our most vulnerable because we trust them not to kill. Not all doctors fulfil that trust, as the shocking case of Harold Shipman is reminding us. So medicine must never tire of repeating its founding principle: *primum non nocere*, first do no harm.

### What kind of a society?

What is driving the push for cloning and embryo destruction? A 'results are all that count' mentality? Political fears about the fallout from scientists moving offshore? A technological imperative by which technology dictates the terms to humanity? The logic of the market with its seductive promises of a 'stem cell led recovery' not just for patients but for the economy? An attitude that sees embryos as commodities?

We are being asked to consent to the designation of a laboratory underclass: there are now to be the *wanted* embryos, protected for what they already are and respected for what they will become, and the *second class* embryos, usable and disposable, whether leftovers or deliberately cloned for the purpose. Do we really want to go there?

Killing harms not only the victim but the perpetrator and the society. Admittedly we have been desensitised to this in recent years. Though it is untrue to say that we couldn't care less, it is true to say that we care less than we should. How will we be able to resist incremental pressure in the future to allow more and more repugnant proposals, having so hastily agreed to embryo destruction back in 2002?

Before jumping headlong into a brave new world of cloning, embryo farming and harvesting for stem cells and other parts, we should pause for thought. Pause long enough, at least, to ensure that ordinary people and their leaders understand the language, the science, the issues and the costs. Long enough to ask: what kinds of science do we want our brightest and best to engage in? What kinds of projects do we want our limited resources invested in? What kinds of manipulation of human life do we want to be complicit in?

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## Are we Ready for Therapeutic Cloning?

T JACK MARTIN



JACK MARTIN

THE FEDERAL government will shortly consider whether it should permit the generation of embryos specifically to grow embryonic stem (ES) cells for research into potential therapies. However, the science in this field is not yet clear enough to the broader community and progress is so rapid that today's legislation could quickly become outdated.

Human ES cells can be established in cell culture by growing them from the embryo shortly after fertilisation. Currently embryos are gathered from those that are in 'excess' to *in vitro* fertilisation (IVF)

programs. Embryonic stem cells are valuable because they are capable of developing into virtually any cell of the body, given appropriate conditions, and can divide indefinitely. They can also be derived by 'nuclear transfer': by removing the nucleus from a cell—a muscle cell or a skin cell—and placing it inside an ovum provided by a donor, and from which the nucleus has been removed. This is the approach that yielded the now famous sheep, Dolly, in the process known popularly as cloning. Each of these approaches to deriving embryonic stem cells involves destruction of the embryo, and it is here that some major ethical questions arise.

### *Reproductive cloning carried out by nuclear transfer is fraught with difficulties.*

The nuclear transfer process has become known as 'therapeutic cloning', and has been proposed as a means of generating embryonic stem cells that might potentially be used in the treatment of diseases such as Parkinson's disease, heart-muscle damage, strokes, Alzheimer's, diabetes etc. There is much pressure to do this, with the expectation that cells could be generated from an individual and used in that same individual, thereby avoiding the very substantial immunological problems inherent in using stem cells from another source.

Reproductive cloning carried out by nuclear transfer is fraught with difficulties. The success of Dolly was achieved after 277 failed attempts. The failures are often seen from the earliest development and are associated with very serious abnormalities that can become evident even some time after birth.

The Edinburgh scientist who led the Dolly cloning has been prominent in pointing out this problem, indicating that it likely results from errors in the programming and imprinting of genes when embryos are formed in this abnormal way. This high incidence of serious abnormalities must call into question the use of cells derived from such embryos. Even embryonic stem cells prepared from 'normal' IVF embryos show an extremely high incidence of tumour formation when they are transplanted into other animals. Consequently, cells from this source will require lengthy studies to see if they are safe. Even if this method of 'therapeutic cloning' were to reach a stage that is not inherently dangerous, it would be hopelessly impractical and expensive, with the requirements for donor eggs alone making it virtually impossible.

Why, then, should cloning be undertaken to generate human ES cells? The usual argument is not the pursuit of natural knowledge, but that work on human ES cells is absolutely essential and urgent in order to discover new treatments for previously untreatable chronic diseases. There is currently

no evidence through human subject research to support any of these claims, and very little in animal models of disease. Some of the proposed cures are highly unlikely, and others are only potentially viable on a very long timeframe. For example, Alzheimer's disease is a global disorder of the brain and highly unlikely to be amenable to any form of cell therapy.

If there were no other possible way of finding stem cells that are capable of taking on functions other than those of their tissue of origin, then perhaps the pressure to undertake human ES cell work would be much greater. That is not the case, however, since research with 'adult' stem cells has seen great advances in the last three years.

### *It will be a long time before we might see any therapeutic success with stem cell therapy.*

Evidence suggests all the tissues of the body contain a number of stem cells. For many years it has been known that the haemopoietic stem cell (HSC) is able to generate all the cell types of the blood and immune system, and this has been put to great therapeutic use. We know also that a primitive mesenchymal stem cell (MSC) of the bone marrow is able to develop into muscle, cartilage, fat or bone, depending upon conditions. Indeed, these cells are now known to be capable of much broader changes into other specialised cells. The science of adult stem cells is moving at a fast pace; its successes so far in experimental treatment regimes are greater than with embryonic stem cells.

It will be a long time before we might see any therapeutic success with stem cell therapy. The most optimistic of the protagonists put this at ten years. A great deal of pre-clinical study in animal models of disease, using embryonic stem cells derived from animals, is needed before any clinical approaches can even be contemplated. This clearly requires a very long timeframe, a fact that calls into serious question the urgency of the pressure to undertake HES cell research now. Embryonic stem cell proponents have persistently claimed that adult stem cell properties are greatly over-rated. The fact is that they are both at an early stage, but right now progress with adult cells is very real indeed.

Unfortunately, the way this subject is treated in the daily press, in Australia and elsewhere, suggests that cures are just around the corner. This does the community a great disservice. It is important that the general population understands exactly what is meant by somatic cell cloning and the generation of human ES cells and what would have to be done to find them a place in treatment, so that public debate on the matter can be truly informed.

On the other hand, rapid progress in the study of adult stem cells offers the prospect of solving the key questions in appropriate animal models in a relatively short timeframe. As a community we have a long way to go before we can answer the complex scientific and sociological questions that are raised by human cloning. The level of public understanding is such that genuinely informed discussion simply is not taking place.

We need to set out three central questions concerning the use of human ES cells in research/therapy:

1. Should it be done? Moral debates are at the centre of this. How can we ensure that the community is properly informed so that realistic estimates of its views can be obtained?
2. Does it need to be done? Do the advances with adult stem cells give us cause to wait and see? Rather than being influenced by exaggerated claims of the therapeutic possibilities of stem cells, let's see whether either embryonic or adult stem cells work in at least a few experimental models in animals.
3. Is it contraindicated? Given the propensity of ES cells to form tumours, and the genetic abnormalities associated with somatic cell cloning, there is an obvious need for research to ensure that ES cells from such a source are themselves safe in the long term.

*Emeritus Professor Jack Martin, former Director, St Vincent's Institute of Medical Research, Melbourne*

## How do Current Laws Limit Embryonic Stem Cell Research

ALAN TROUNSON



ALAN TROUNSON

**L**EGISLATION AND regulations that have some influence on stem cell research in Australia vary across states, from minimalist influence to the ban of any embryo research, including the derivation of embryonic stem cells. It is essential that laws reflect the majority view in the community, but in the case of embryo research there is no correlation between community support (for example Morgan Poll statistics) and laws that completely ban any research on embryos.

There are laws in Victoria, South Australia and Western Australia governing assisted

reproductive technologies (ART) but no specific laws in other states or territories. Some Commonwealth laws have limited or little influence on ART or stem cell research, including the *Donation and Transplantation of Human Tissue Act* and the *Gene Technology Act*. Victorian initiatives include the Victorian Biotechnology Ethics Advisory Committee, a Working Group on Stem Cells and a Draft Code of Ethical Practice for the Production and Use of Approved Human Stem Cell Lines. The Victorian Infertility Treatment Authority has also considered whether embryonic stem cell research should be included in its portfolio. NHMRC regulations require institutional ethics committee approval of research involving human embryonic stem cells. The Reproductive Technology Accreditation Committee, a regulatory body that audits ART clinics for the Fertility Society of Australia, also has some influence on relevant quality assurance systems.

In Victoria the *Infertility Treatment Act 1995* is administered by the Infertility Treatment Authority and bans destructive embryo research which includes anything that makes an embryo unfit for transfer to the patients. This prevents the formation of embryonic stem cells from donated embryos that are left over from ART treatment—even if this is the stated priority for the couple donating the embryos. The Act also bans the formation of genetically identical embryos—intended to prevent reproductive cloning. The ‘embryo’ is defined by fertilisation of an egg by a sperm. Consequently, somatic cell nuclear transfer (SCNT) is not included within this definition. It is therefore possible that ‘therapeutic cloning’ could be lawful in Victoria because of the definition of an embryo.

In Western Australia the *Human Reproductive Technology Act 1991* bans nuclear transfer procedures directed towards reproductive cloning but doesn’t specifically prevent stem cell research. The Act directs all research to be therapeutic for the embryo with a view to future implantation. This would make unlawful any attempt to derive embryonic stem cells.

In South Australia the *Reproductive Technology Regulations 1995* (RT Act 1988) ban the production of two or more genetically identical embryos, the mixing of human and animal reproductive material (sperm and eggs), nuclear transfer procedures—hence ‘therapeutic cloning’, and replacing cells extracted from an embryo into the body of a person. The last exclusion could prevent the application of cell therapies if the graft is derived from human embryonic stem cells.

NHMRC regulations require that non-therapeutic research on embryos should only be approved in exceptional circumstances. This includes the gain of significant advances in knowledge or technologies and restricts the number of embryos to be used. The regulations ban production of genetically identical persons (reproductive cloning) including development of human embryonic stem cell lines with the aim of producing a clone of

an individual. The regulations also require institutional ethics approval of research involving embryonic stem cells, including those restricted to laboratory experiments.

The variability of laws between states is generally unhelpful for an integrated national approach to determining the clinical benefits of embryonic stem cells and fragments any national research initiatives. The mosaic legislative or absence of laws means that research in some states can flourish, while that in other states is handicapped, difficult or even unlawful. Under these circumstances, researchers would be likely to move to less inhibiting environments to pursue their research interests in stem cell biology and medicine.

The cloning of persons (reproductive cloning) has no relationship to stem cell research and does not depend on access to embryonic stem cells. Reproductive cloning is strongly opposed by almost every research scientist as unsafe and ethically unacceptable. Most scientific societies, e.g. Australian Society for Reproductive Biology and Fertility Society of Australia, have announced their opposition to reproductive cloning.

SCNT or ‘therapeutic cloning’ has been shown by proof-of-concept studies in mice to be possible for the derivation of embryonic stem cells from adult cells of an individual animal. The embryonic stem cells derived by SCNT appear to differentiate into mature functional tissues in the same way as those of fertilised embryos. This approach is strongly supported by some researchers and patient support groups. However, it is not the only approach for the application of cell therapies that involve embryonic stem derivatives. These include:

1. It is possible that embryonic stem cell derived tissues do not induce severe graft versus host disease following transplantation. Differentiated cells do express histocompatibility antigens on their surface, but it is possible that with immune suppression, grafts will survive.
2. A bank of embryonic stem cells could be established with sufficient HLA types to enable cell therapies where some mismatching can be tolerated with or without immune suppression. This is evident for transplantation of human cord blood stem cells.
3. The embryonic stem cells could be treated to reduce the inflammatory response when transplanted.
4. Pluripotential stem cells could be derived from embryonic stem cell-somatic cell fusions. These cells may have the same genotype as the patient donating the somatic cells. Experimental data is being derived for this approach including the induction of pluripotentiality using embryonic stem cell cytoplasm transfer into somatic cells and adult stem cells.
5. The induction of graft tolerance across histocompatibility barriers. Evidence for this approach is shown in studies inducing tolerance by haematopoietic cell therapy prior to bone marrow grafting. Proof-of-concept studies in rodents indicate that an intact thymus is necessary for the induction of tolerance by embryonic stem cell-like cells. This approach warrants further exploration.

Australia’s leadership in stem cells and tissue repair will depend on a consensus approach by state and Commonwealth governments. Laws need to protect individual patients but there is little support for extending these rights to the pre-implantation embryo. In Australia abortion is permitted, the intrauterine device is widely used that prevents implantation, and the ‘morning-after’ pill is available which prevents development of the embryo. ART treatment is available in all Australian states. Access to ART embryos that are no longer needed by patients willing to consent to their use for research, should be enabled to explore the considerable potential of embryonic stem cells for tissue replacement and repair. This would be preferable to their enforced destruction under state and Australian laws and regulations after five to ten years of cryopreservation.

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## SEXUAL HEALTH

What is it?

16 July 2002

BY PROFESSOR CHRISTOPHER FAIRLEY

PROFESSOR OF SEXUAL HEALTH, DEPARTMENT OF PUBLIC HEALTH,  
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ONE MIGHT EXPECT the levels of sexual health in Australia to be similar to other developed countries, but they are not. We do very well in some areas and appallingly badly in others. In this paper I will compare the sexual health of Australians with similar Western countries, suggest reasons for the differences and outline what is being done to address these issues.

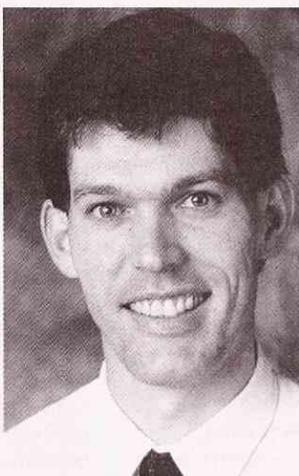
Of course, how we measure sexual health is critical to any comparison. I have chosen three measures that reflect important conditions for which there is readily available and reliable information. This is not to say that other conditions, like sexual dysfunction for example, are not important, only that comparisons between countries are not possible because of inadequate data.

To measure sexual health I will use the rates of gonorrhoea in women, rates of teenage pregnancy and rates of HIV infection. Gonorrhoea is a useful measure to use because it is neither easy nor difficult to control and is therefore excellent for discriminating between countries with adequate and inadequate control measures. Teenage pregnancy rates are important because of the significant long-term consequences on both the children and parents.<sup>1</sup> The importance of HIV control is self-evident.

### Rates of gonorrhoea in women

Rates of gonorrhoea in women are a better guide to sexually transmitted infection (STI) control in the overall community because rates in men are often greatly influenced by rates in men who have sex with men (MSM). The rates in MSM are almost universally high across all developed countries and therefore provide little discriminatory value between countries.

There were fifty-eight cases of gonorrhoea in women in Victoria between June 2001 and 2002 (rate of two per 100 000) (fig. 1).<sup>2</sup> The overall rate for men and women in Australia is 32 per 100 000, but this includes a substantial contribution from MSM and from remote indigenous communities.<sup>3</sup> What is



CHRISTOPHER FAIRLEY

also interesting, in Victoria, is that a substantial number of cases in women are often linked to recent overseas travel, either directly or through a partner, or because the isolates are frequently ciprofloxacin resistant.<sup>2</sup> The close link to overseas travel suggests that it is difficult for gonorrhoea to be transmitted among heterosexuals for more than a few generations before it 'dies out'. This indicates that in Victoria the control measures for gonorrhoea are effective enough to prevent sustained endemic transmission among heterosexuals.

In contrast, the rate per 100 000 in the United States (US) as a whole is 134 and varies from as low as six in the north-east states to as high as 392 in the south-west states.<sup>4</sup> There is a marked racial difference with rates of 770 in African American women compared to 27 in white women.<sup>4</sup> These rates indicate that, in the US, gonorrhoea is endemic among heterosexuals at levels very much higher than Australia.

One might expect that rates in the United Kingdom (UK) would be low because of access to good quality health care through general practitioners (GPs). Surprisingly, the levels of gonorrhoea in women in the UK are substantially higher than in Victoria and are rising. In the UK the rate is 26 per 100 000 in females, more than ten times higher than Victoria.<sup>5</sup> Unlike Australia there are no geographically isolated communities to explain the high rates and indeed the rates are highest in London (74 per 100 000), one of the most accessible locations. Rates in the UK have been rising over the last five years and indicate that control measures over this time have been deteriorating rather than improving.<sup>5</sup> This has important implications for HIV control in heterosexuals.

### What determines the rates of gonorrhoea in the community?

The rate of any sexually transmitted infection in the community is principally determined by three things: average number of sexual partners in the community; the probability that an infection is transmitted per sexual partnership; and the average duration of the infection.<sup>6</sup> In most developed countries the number of sexual partners is relatively similar, as are the characteristics of the organism.<sup>7</sup> The principle determinant of the prevalence of an STI is duration of the infection, which is essentially about access to health care.<sup>6</sup> This is why, for example, the prevalence of STIs in isolated indigenous communities is so much higher than other parts of Australia.<sup>6</sup>

Medicare and sexual health centres provide most Australians with accessible health care. People with symptomatic cases of gonorrhoea can access treatment rapidly allowing transmission to be stopped early on.

At first glance, the UK would appear to have a similar system. However, instead of accessing GPs for the treatment of STIs, people in the UK go to separately funded genitourinary medicine (GUM) clinics.<sup>8</sup> These clinics are chronically underfunded, have long waiting lists and often cannot see urgent

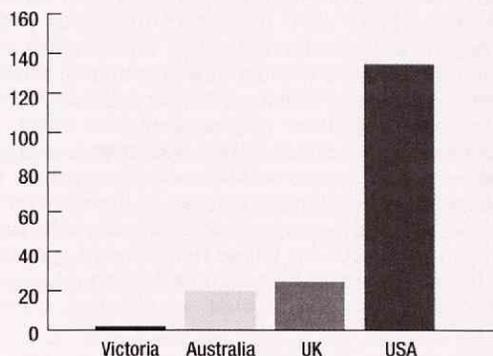


FIGURE 1: RATE OF GONORRHOEA NOTIFICATIONS PER 100 000 WOMEN (2001)

cases immediately.<sup>8</sup> Between 1990 and 2000 the number of clients visiting these clinics doubled, and the last five years has seen more than a 100 per cent increase in gonorrhoea, chlamydia and syphilis.<sup>9</sup> Interestingly, the rate of conditions for which there is no effective treatment to prevent transmission, such as warts and herpes, has not changed, suggesting that STI control measures in the UK are failing under the strain and that the mean duration of the bacterial infections in the community is rising because of inadequate control measures.

The US has a principally private medical system, with access to health care determined largely by the ability to pay for it. Rates of gonorrhoea in the US are very much higher in African Americans than in white Americans, suggesting a strong economic influence.<sup>4</sup>

### Teenage pregnancy

Rates of live births in teenagers vary greatly in developed countries.<sup>1</sup> World's best practice is in the Netherlands, with about four live births per 1000 women aged 15-19 years old.<sup>1</sup> One of the highest rates is in the US, with rates over 50 per 1000. Australia has a rate of about 20 per 1000, which is among the highest in the developed world. Most European countries are below 10 per 1000. In general the rates of abortion parallel the rates of teenage pregnancy, although this data is more difficult to obtain.

Teenage pregnancy is associated with significant social disadvantage. In the forward to an excellent review of these issues in the UK, Tony Blair wrote:

Some of these teenagers, and some of their children, live happy and fulfilled lives. But far too many do not.

Teenage mothers are less likely to finish their education, less likely to find a good job, and more likely to end up both as single parents and bringing up their children in poverty. The children themselves run a much greater risk of poor health, and have a much higher chance of becoming teenage mothers themselves. Our failure to tackle this problem has cost the teenagers, their children and the country dear.<sup>1</sup>

### What determines the rates of teenage pregnancy in the community?

Complicated factors determine the rate of teenage pregnancy within countries. Studies have found higher rates in countries with more urbanised populations, more maternity leave and benefits, less openness about sexuality (e.g. media nudity), less equitable income distribution and less access to contraception.<sup>10</sup> One interesting factor associated with higher birth rates, in a univariate analysis, is a higher religiosity index.<sup>10</sup> Associations do not mean these factors are causally associated but do provide insight into what factors should be tested in more rigorous studies.

Analysis of changes in the Netherlands over the last forty years provides further insight into the causes of high teenage pregnancy rates.<sup>11</sup> The Netherlands has changed from one of the most traditional societies in Western Europe in 1965 to a highly progressive country with the lowest teenage pregnancy rate in Europe. An excellent article by Ketting and Visser describes the changes that occurred after 1965.<sup>11</sup> These include widespread education in schools and the mass media, and a substantial lowering of financial, geographic, social and psychological barriers to contraceptive services. The proportion of unplanned first births in the Netherlands decreased from 44.5 per cent in the late 1960s to six per cent more recently.<sup>11</sup>

The need for a doctor's prescription for emergency contraception is a simple example of a barrier to contraceptive services. If taken within 24 hours of intercourse it is 95 per cent effective in preventing pregnancy, but if taken between 48 to 72 hours after intercourse it is only 58 per cent effective.<sup>12</sup> Many countries have removed the need to see a doctor, obtain a prescription and then visit a chemist to get it filled, by providing it over the counter through pharmacies.<sup>12</sup> Given that the instructions are easy to follow, it is safer than aspirin and its

effectiveness is critically dependent on when it is taken, this would seem an eminently sensible move and one Australia should rapidly adopt.<sup>12</sup>

Sex education in schools is often mentioned, almost as if it is the single most important intervention for preventing teenage pregnancy. Considering the amount of effort and money spent on these programs there has been surprisingly little rigorous research into their effectiveness.<sup>13</sup> A recent meta-analysis identified only twenty-six randomised studies over the last thirty years.<sup>13</sup> These studies did not identify an effect from the interventions on the three outcomes they assessed: delay in initiation of sexual intercourse, improved use of contraceptives and reduced pregnancy rates. Possible reasons for the meta-analysis not showing a benefit from school-based programs, when many observational studies have demonstrated positive effects, include: poor quality of the studies; substantial changes in the actual interventions over thirty years; the high quality of the placebo arms to which the interventions were compared; and the possibility that such programs may need to begin earlier in school life. The meta-analysis did, however, demonstrate that abstinence programs resulted in a 54 per cent rise in teenage pregnancy.<sup>13</sup>

An effective program to reduce teenage pregnancies will require many different interventions along the lines of what was adopted in the Netherlands.<sup>11</sup> The measures are relatively straightforward. What is not straightforward, however, is convincing the community of the importance of these issues and the need for their debate. If you ask your neighbours how they would feel about making condoms and emergency contraception available to their teenage children at home, you may be surprised at the response.

The UK is to be applauded for its moves towards addressing this issue. Tragically, the US is moving in the opposite direction. A recent editorial in the *New York Times* (12 January 2003) entitled 'The War Against Women', outlines the moves being taken in the US to undermine women's reproductive freedom ([www.nytimes.com](http://www.nytimes.com)). The editorial describes the Bush administration's efforts to restrict access to contraceptives, sex education and abortion. This includes restricting sex education in schools to programs involving abstinence without mention of other ways to prevent pregnancy and sexually transmitted infections.

### Rates of HIV infection

Australia has done exceptionally well with HIV control, particularly in curtailing transmission beyond MSM.<sup>14</sup> Rates of HIV infection in women in Australia remain low, as do rates in injecting drug users (IDUs). The number of newly diagnosed cases of HIV in IDUs each year fluctuated between 26 and 43 between 1993 and 2001.<sup>14</sup> The rate of notification of HIV infection in women was one per 100 000 women in Australia in 2001. This has remained relatively constant over the last ten years with less than 100 new diagnoses each year.<sup>14</sup>

Rates in MSM remain high across Australia but have only increased in Victoria<sup>2</sup> where the number of infections in MSM rose from 80 in 1999 to 150 in 2001.<sup>15</sup> Similar rises have been seen in many developed countries and coincide with trends for less protected intercourse and high rates of bacterial STIs over recent years.

The most marked differences between Australia and the US are in the rates of HIV infection in women (fig. 2) and IDUs. In 2001 the rate of HIV infection in women in the US was more than eight per 100 000—although this is an underestimate because HIV reporting does not occur in all US states ([www.cdc.gov](http://www.cdc.gov)). In some southern states, such as Texas and Florida, the rates of HIV infection in women are twelve and twenty-five times higher respectively. Tragically the rate of HIV infection in children in some states of the US is more than forty times higher than Australia ([www.cdc.gov](http://www.cdc.gov)).

Injecting drug users in the US also suffer from a substantially higher proportion of all HIV infections than in Australia (25 per cent vs. five per cent).<sup>14,16</sup>

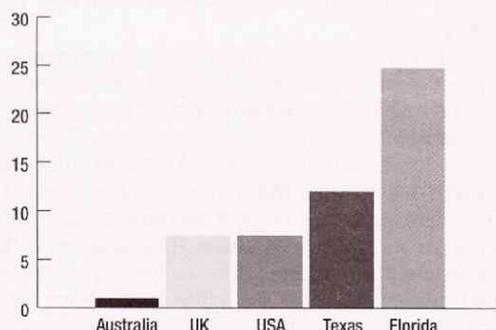


FIGURE 2: RATE OF NEW HIV NOTIFICATIONS PER 100 000 WOMEN (2001)

The difference between the UK and Australia is less marked than the difference between the US and Australia. Heterosexual sex is now the most common reported risk factor in the UK, which has increased as a proportion of all notified cases from four per cent of cases in 1986, to 61 per cent of cases in 2001<sup>17</sup>([www.phls.co.uk](http://www.phls.co.uk)). Many of these cases, however, represent HIV probably acquired overseas, in particular Africa, and diagnosed in the UK.<sup>17</sup> However, in the UK there has also been a substantial increase in HIV acquired by heterosexual sex and the larger number of infections will make control of transmission more difficult for the UK.

#### What determines the incidence of HIV infection?

The incidence of sexually transmitted HIV is dependent on the rate of partner change and the probability of transmission per sexual partnership. As HIV infection is incurable, the duration of infection is not relevant to control. The number of new cases is also influenced by how many existing cases there are, hence the critical importance of intervening early in an epidemic.

Probably the single most important determinant of sexually transmitted HIV in heterosexuals is the background prevalence of other STIs.<sup>18</sup> Other STIs such as gonorrhoea greatly facilitate HIV transmission at an individual level by 2-4 fold, which translates, at a population level, to exponential increases. Given that the rate of gonorrhoea in some US states is 100 fold higher than in Victoria, it doesn't take much to appreciate how important the background rate of STI is for HIV control.

#### What is being done?

Australia is doing well with STI control and much of its focus is in areas with the highest prevalence. Screening programs for STIs are in place in many indigenous communities and have resulted in very substantial falls in the prevalence of STI, although rates remain much higher than other parts of Australia.<sup>14,19</sup> It is critically important to reduce these rates to levels that will help control heterosexual HIV transmission.

I have not discussed chlamydia, but Australia is falling behind in control of this infection. An asymptomatic infection with substantial long-term consequences, chlamydia is easily diagnosed and treated. Many countries including, rather surprisingly, the US, have instituted screening programs that have been shown to be effective in randomised trials.<sup>20</sup> A recent Victorian report has recommended screening but to date Australia does not have a screening program.<sup>21</sup>

Teenage pregnancy remains at unnecessarily high levels in Australia. Simple changes, like making the morning after pill available over the counter, automatic individual Medicare cards for adolescents, and more widely available condoms through vending machines, will all have an impact. More pronounced changes in the attitude of the Australian community will require clever public education programs such as those used in the Netherlands.<sup>12</sup> Such changes require the political will to improve our system.

The UK is investing substantial political will and money in turning around their appalling STI and pregnancy rates.<sup>9</sup> Much greater access to health care through GPs, as well as their GUM clinics, and similar structural reforms providing access to contraception are planned.<sup>9</sup>

The Bush administration's current direction will only make the US situation worse. The recent *New York Times* article mentioned above outlines why teenage pregnancy rates in the US will continue to exceed other countries. Similar fundamentalist attitudes will obstruct proven strategies for reducing HIV transmission in injecting drug users, which are unlikely to be adopted in the US at present. There seems little likelihood of substantial change in the health care infrastructure for those unable to pay. So for US citizens with less resources and their children, the situation is truly bleak.

What is perhaps even more disturbing is the substantial influence that the religious far right is having in resource-poor countries. On 22 January 2001, the Bush administration reinstated the Regan era 'global gag rule', which cut off US international aid money from any family planning organisation engaged, directly or indirectly, in abortion-related activities ([www.ippf.org](http://www.ippf.org)).

So, by some measures Australia's sexual health rates very well, yet in others we are as bad as the worst. Improving what we do badly will require substantial resources, as will continuing to excel in what we do well. The overall benefit to the many generations who follow us will be substantial.

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# BIO21 AUSTRALIA LTD

BY DR STELLA CLARK

**T**HE FACULTY'S CURRENT research strengths in the neurosciences, microbiology and immunology, cancer research, protein science and cell and molecular biology, have grown out of its developing national and international collaborations, and its expanding relationships with affiliated organisations such as Bio21, the State Government-sponsored biotechnology flagship for the university and for Victoria.

## Bio21—the company

Bio21 Australia Ltd is a not-for-profit company, limited by guarantee, founded by Melbourne Health, the University of Melbourne and the Walter and Eliza Hall Institute of Medical Research (WEHI). A number of other leading research organisations have joined since the start of 2003. Bio21 Australia Ltd is the governing body of a collaborative cluster of vigorous research institutions whose purpose is to develop Victoria as a leading academic centre for fundamental areas of biology, medicine, science and technology. The company, via the Bio21 project, will advance basic biomedical science, translational clinical research and biotechnology; training in research of the highest order; science communication and education; and commercialisation of biotechnology discoveries.

The Victorian State Government approved Bio21 Australia Ltd's five-year business plan in October 2002, capping off the company's redevelopment and paving the way for new directions. Its new chair, Professor David Penington AC, is a former dean of medicine and former vice-chancellor of the University of Melbourne. Nobel laureate, Professor Peter Doherty, has agreed to chair the Scientific Advisory Council, the major subcommittee responsible for making recommendations on future projects to be funded from State Government Science Technology Innovation (STI) funds.

The company does not 'own' the facilities or individual projects. These are owned, managed and operated by one or more of the Bio21 members. However, the company is responsible for making recommendations to the State Government on projects to be supported from the STI funds. It is also responsible for ensuring proper management of the projects, and for monitoring and reporting on project outcomes.

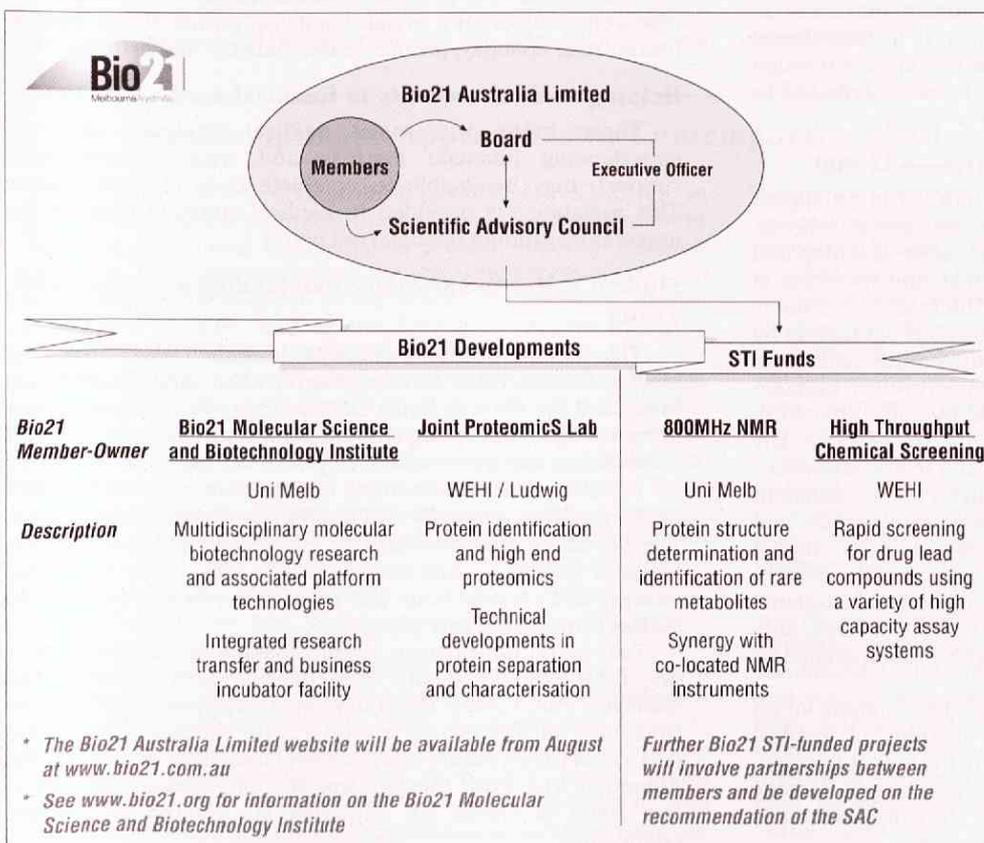
The newly reconstituted Scientific Advisory Council advises the Bio21 board on future scientific projects and developments. One of its key roles is to develop collaborative research projects between members and to facilitate member access to the special facilities funded from State Government STI funds allocated under the Bio21 funding agreement. To date this has included funds to contribute to the construction of the Bio21 Molecular Science and Biotechnology Institute (the majority of funds were provided by the University of Melbourne and the USA-based Atlantic Philanthropies), the move of the Joint Proteomics Facility to a new location within the Royal Melbourne Hospital (WEHI/Ludwig), STI funds to purchase an 800MHz NMR (University of Melbourne), and a High Throughput Chemical Screening facility (WEHI). Most of the research institutes and hospitals associated with the University of Melbourne are now members of Bio21 Australia Ltd.

## The Bio21 Molecular Science and Biotechnology Institute

The Bio21 Institute is of particular relevance to the faculty. The new building of over 21 000 square metres, costing \$95 million, is owned by the University of Melbourne and its foundation director, Professor Dick Wettenhall, was previously the faculty's deputy dean. It will house large multidisciplinary research groups from several departments of the faculty (particularly Biochemistry and Molecular Biology, Pharmacology, Dental Science and the Department of Medicine), and other faculties of the university, especially Science (Chemistry and Genetics) and affiliated research institutes. The institute will support industry collaborations and operate an 'incubator facility' for early phase start-up companies, with a platform technology emphasis on structural biology, functional proteomics, analytical and medicinal chemistry and molecular drug design. It will also form collaborations across Melbourne, Australia and overseas to work on major new drug discovery, molecular diagnostics and multidisciplinary health research programs. The incubator facility will be operational in 2003 and the new building will be ready for occupancy in early 2004. The faculty looks forward with considerable enthusiasm to participating in and benefiting from these exciting developments.

*Stella Clark, Executive Officer,  
Bio21 Australia Ltd*

Additional information was provided by Professor Dick Wettenhall, Professor Richard Larkins and Ms Meryl Fullerton





## THANK YOU FOR YOUR SUPPORT

**T**HANK YOU ONCE again to all who have given financial support to the School of Medicine over the last year. Your donations have contributed to important initiatives in teaching, student support and medical research. In 2002 alumni donated over \$56 000 through UMMS membership and through the University Annual Appeal. Donations have contributed to the following priority areas:

### **Equipping clinical skills resource centres—\$32 800**

Funds raised from alumni have been critical in equipping clinical skills resource centres in each of the clinical schools. The new medical curriculum features innovative teaching and learning methods to facilitate student uptake and retention of essential knowledge, skills and attitudes. Increasing the focus on quality and safety has led to the use of medical simulators by medical students to learn practical and procedural skills such as intravenous cannula insertion, lumbar puncture and intimate examinations. The resource centres, staffed by nurse educators and medical practitioners, allow students to practise key clinical and procedural skills on manikins and fellow students.

Equipment purchased includes airway management trainers, suturing and wound care models, venesection and IV cannulation models, lumbar puncture manikins, digital rectal examination manikins, and male and female urinary catheter insertion models. The simulators provide students with the opportunity to learn these skills in a supervised, non-threatening environment before improving their competence by real-life clinical practice.

Alumni funds have also supported the development of an essential resource for the teaching and learning of medical imaging. This CD-based resource is aligned to the new curriculum and incorporates thousands of images. As well as self-learning materials and tutorial preparation tasks for students, it includes tutorial material for use in small-group tutorials.

### **Supporting important new research—\$11 620**

This income will provide essential resources for important research projects in areas such as immunology, cancer, paediatrics, epilepsy, primary care, diabetes and arthritis.

### **Helping medical students in financial need—\$10 377**

These funds will assist medical students who are experiencing financial distress and who, without such support, may be unable to complete their medical course. This assistance is provided to medical students through the university's student financial aid office.

### **Student prizes to encourage outstanding achievement—\$1295**

This income will fund prizes such as the UMMS Advanced Medical Science Prize, formerly the Bachelor of Medical Science Prize, and the Peter G Jones Elective Essay Prize. These prizes acknowledge outstanding student achievement in research and professional and personal development during their electives.

Donations and benefactions help to ensure the high quality of the teaching, research and student programs in the school. The School of Medicine and the UMMS committee thank you for your generous support. We greatly value your continued interest and contributions and hope that you will continue to support the school this year.

For more information about making a donation or a bequest to the University of Melbourne, please contact the Manager, Fundraising Coordination, Development Office, the University of Melbourne, Victoria 3010, Australia. Telephone (+61 3) 8344 0896, email [bequests-development@unimelb.edu.au](mailto:bequests-development@unimelb.edu.au). Alumni in the USA, Mexico and the UK, please see p43 in this issue of *Chiron*. All enquiries are treated in strictest confidence.

## FROM THE DEAN

BY PROFESSOR RICHARD LARKINS AO

DEAN, FACULTY OF MEDICINE, DENTISTRY AND HEALTH SCIENCES, HEAD, SCHOOL OF MEDICINE

**T**HE SCHOOL OF Medicine is flourishing. The new curriculum is now into its fifth year and has been an outstanding success. Most notably, the students have found the new approaches to learning intellectually stimulating and enjoyable. They have acquired the generic skills of problem solving, self-directed learning, communication and teamwork, while being as soundly grounded in scientific understanding and clinical skills as ever. They are remaining as enthusiastic, idealistic and committed as they were when they began their course, something that could not always be said in the past.

The Advanced Medical Science year for the undergraduate entry students, with its high content of research, has been very well received, and the blend of undergraduate and graduate entry students has been most successful. The program of introducing more diversity into our international medical student cohort has been advanced by arrangements with the University of Botswana for a regular cohort of well-credentialed Botswanan students, who will enter the course from 2004, a substantial cohort of medical students from the English-language course at the University of Indonesia to undertake our Advanced Medical Science year, and a very popular, two-way exchange with the University of Oslo in the paediatrics and obstetrics and gynaecology components of our respective programs. These activities are all heavily dependent on the outstanding work of our three faculty academic support units: the Education Unit, the International Unit and the Information Technology Unit.

The Rural Clinical School has taken its first students, superb new accommodation has been built for them and we look forward to the school building up to its full strength in the next couple of years. Professor Dawn De Witt has been recruited from the University of Washington to head the School of Rural Health and this will lead to an active program of collaboration with the University of Washington. We are introducing a new



RICHARD LARKINS

strategy to enhance the recruitment and retention of indigenous students into health professional courses.

Research activities are also going well, with the research income (publicly- and industry-funded) increasing dramatically over the last couple of years. Professor Peter Doherty's return to the faculty as the Laureate Professor in Immunology has provided a great boost, and we are also delighted that our other Nobel laureate, Professor Bert Sakmann, has chosen to extend his part-time association with the faculty beyond its original three-year term because he is finding the research collaboration so fruitful. The Bio21 Molecular Science and Biotechnology Institute, to be directed by our former deputy dean, Professor Dick Wettenhall, is now well under construction. It will provide great infrastructure

for multidisciplinary research in the university, and with collaborating research institutes and industry. Bio21 Australia Limited has been restructured to better address its original objectives of enhancing collaborative research activity between the university and its affiliated research institutes, hospitals and other institutions, and providing platform technologies for scientific discovery, drug development, translational research and commercialisation of research.

It is with mixed feelings that I write my last report as head of this great medical school and Dean of the Faculty of Medicine, Dentistry and Health Sciences. I leave in August to take up the position of vice-chancellor of Monash University, a challenge I look forward to with an eagerness that takes nothing away from the sadness I feel at leaving the University of Melbourne and a professional lifetime in medicine, medical education and medical research. I have been blessed to work with wonderful colleagues in each of these spheres of activity, and words cannot adequately express my gratitude to them for making my time as professor of medicine and the last five and a half years as dean so enjoyable and rewarding. I know I leave the School of Medicine in the very best of hands.

## Interdisciplinary Approaches to Contemporary Challenges in Health Research

**C**OLLABORATIVE, INTERDISCIPLINARY APPROACHES in medical research enable the best use of limited resources and specialised knowledge to achieve superior research outcomes. Such approaches are an increasing aspect of research in the faculty, for example in the School of Population Health, established in 2001, and in the Centre for Sports Medicine Research and Education, established in 2000.

**The School of Population Health**—Health systems internationally are grappling to maintain effective responses to the changing needs of culturally and economically diverse populations. The School of Population Health combines the interdisciplinary strengths of seven centres and units to focus on population health, in areas such as urban health, indigenous health, mental health, and the links between genomics and public health. The school has considerable strengths in traditional health sciences and in social sciences, ethics, medical humanities, and in the newer molecular and genetic epidemiologic disciplines.

Research in the school aims to define changing health needs and evaluate the effectiveness, efficiency and quality of health care responses to guide future developments. As such, the school's research agenda emphasises the need for quality research in epidemiology, health economics, health social sciences and ethics. Research and teaching is expected to help strengthen health care system capacities and services, improve

quality and equity of care generally and help to enhance rural and indigenous health. The school also has an important role in promoting health in Asia and other regions. *For more information see: <http://www.sph.unimelb.edu.au/>*

**The Centre for Sports Medicine Research and Education** merges the strengths of high calibre clinical and research personnel from a number of disciplines including medicine, physiotherapy, exercise science and epidemiology. The centre aims to improve quality of life through research and education that focuses on the role of physical activity in preventing and managing chronic diseases. In tackling the growing health problems of Western societies such as obesity, heart disease, osteoarthritis and osteoporosis, there is a paradigm shift away from the traditional medical model to one that incorporates lifestyle change and self-management.

The centre has a major research focus on musculoskeletal conditions, in particular knee osteoarthritis and osteoporosis. Clinical research into strategies to prevent and manage these conditions is interdisciplinary with drug therapies, exercise and patient education playing a role. This is supported by basic science research to understand causes and mechanisms underpinning treatment effects. Other major areas of research interest are anterior knee pain, concussion, and hip and groin pain. *For more information see: <http://www.physioth.unimelb.edu.au/csmre/index.html>*

## ACADEMIC DEPARTURES

## Professor David Simmons

**D**AVID SIMMONS WAS appointed as the foundation chair of rural health in 1999, based in Shepparton. At that time the staff consisted of one project officer and there were no physical facilities. He leaves after just over three years with the university's Department of Rural Health now the centre of a thriving teaching and research School of Rural Health, which includes the Rural Clinical School. There are now over forty staff in Shepparton, and teaching and research activities extend across northern Victoria, with major additional nodes of the clinical school in Wangaratta and Ballarat. The school is housed in state-of-the-art facilities next to Goulburn Valley Hospital. The school budget will soon exceed \$5 million per annum. There is a very active research program including the ground-breaking Crossroads Household Survey. Active programs have been established with the local indigenous community including plans for an academy of sports health and education. David Simmons was also the head of the Victorian Universities Rural Health Consortium, a statewide program established to ensure coordination of the various research and education programs, involving five Victorian universities.

This amazing record of achievement was the result of initiatives by the Commonwealth Department of Health and Ageing, supported by the Victorian Department of Human Services, but could not have been accomplished without the single-minded enthusiasm of David Simmons. With an intensity of purpose, resolve and passionate advocacy he was able to accomplish what seemed a distant dream at the time of his appointment. He has continued to pursue an active research agenda in his own field of diabetes and has also been president of the Australian Diabetes in Pregnancy Society.

Professor Simmons previously had an active research career at the University of Auckland. He has received a number of awards for his research achievements and he is returning to a research chair in diabetes at the University of Auckland, where he is attracted by the opportunity to devote more time to research and less to administration. He will continue to maintain an association with the University of Melbourne, with continued involvement in research collaboration and postgraduate student supervision.

The period from 1999 to 2002 will be remembered in the history of the School of Rural Health as a period of frenetic activity and great achievement. The university has cause to be very grateful for the singular contribution and leadership of David Simmons over this time.

*Professor Richard Larkins*

## Professor Daine Alcorn

**D**AINE ALCORN COMMENCED her long and fruitful association with the University of Melbourne as an undergraduate student, graduating with a BSc(Hons) in 1971. That same year she commenced employment with the university as a casual demonstrator in the Department of Physiology, marking the beginning of a career that would span thirty years and see her rise through the academic ranks to become head of the most successful department of anatomy and cell biology in Australia at the time.

Daine completed an MSc in 1973, followed five years later by a PhD in the field of lung development. Shortly thereafter she joined Graeme Ryan's group working on the kidney, and is still active in that field. Daine is an avid researcher, having attracted over \$3 million in research funding. Her publication list is extensive and she regularly presented her work both nationally and internationally. She served on many NHMRC committees from 1989 and the esteem in which she was held by the council was highlighted by her appointment to the chair of the Research Fellowships Committee in 2000.

A dedicated teacher, Daine enjoys student contact and has always been a popular lecturer, tutor and laboratory demonstrator. Her contribution to teaching went beyond the classroom and she played a pivotal role as chair of many departmental teaching committees. In addition to her undergraduate teaching, Daine has supervised many honours, masters and PhD students. Her interest in, and commitment to, scholarship led to an active role on the university's Academic Board. She participated in many committees of the board and became chair of the Teaching and Learning (Multimedia and Educational Technologies) Committee in 1998 and chair of the Academic Programs Committee in 2001.

In addition to Daine's academic and administrative activities at the University of Melbourne, which are too numerous to detail here, her professional and community activities are also numerous and varied. For example, in 2001 she was invited to become a member of the boards of both the Baker Medical Research Institute and Bionic Ear Institute.

Daine resigned from the University of Melbourne to take yet another step up the career ladder, becoming Dean of the Faculty of Life Sciences at RMIT, and she has recently been appointed a pro-vice chancellor. Daine's contribution to the Faculty of Medicine, Dentistry and Health Sciences has been outstanding and she will be greatly missed.

*Professor Tony Goodwin*

## ROBERT L SIMPSON MEMORIAL PRIZES 2002/2003

The Robert L Simpson Memorial Fund was established after Robert Simpson's (MB BS 1977) death in 1994. The fund supports students undertaking elective attachments in public health and also occasional memorial lectures.

Three prizes were awarded to students for 2002/2003: to Laurel Bennett, who spent her elective at the

Nalkanbuy Health Centre, Galiwinku, on Elcho Island, 140 km north west of Nhulunbuy and 500 km east of Darwin; to Kenneth Law, who travelled to the rural province of Yunnan in China for his elective; and to Shobana Krishnamoorthy, who spent her elective at St John's Hospital in Bangalore, India.

## A Slight Taste for Adventure

BY CLARE LOOKER

**I**N JULY 2002, I was among the first group of medical students who arrived at the Rural Clinical School in Shepparton to spend at least eighteen months of our clinical training based at the Goulburn Valley Base Hospital. From here we also rotate to Wangaratta and Ballarat, to ensure we get a broad base to our clinical experience in rural locations. As pre-clinical students choosing clinical schools, many aspects of rural medicine were heavily marketed to us: a great hospital environment, new opportunities, the 'relaxed' country lifestyle, and accommodation conveniently located over the road from the hospital! For most of the twelve students who took the plunge and decided to 'go rural', Shepparton has more than met these promises.

In my personal experience, living and working in Shepparton has not only provided academic opportunities, but also the challenge of exploring medicine in a different social and clinical context. The different lifestyles, exposures and access to health care in rural areas often make the community and social context of an illness much more apparent for a student. We have come to learn about the role of isolation and doctor shortages in the late presentation of spinal metastases. We have come to appreciate the exciting potential in grey clouds and overcast days, and know that when the rains fall the paddocks might finally grow some feed, orchardists will again be able to wash in fresh tank water instead of channel water, and local scouts will be able to revive their annual car wash.

For most students the move from Melbourne was not without its hurdles. We were all leaving established friendship groups, many were moving out of the family home, and we were all continually reminded of the Melbourne culture and 'latte belts' we were abandoning. For students who had been living at home there was the new world of financial independence to fathom, the cost of car travel to and from Melbourne, and the uncertainty about part-time work opportunities in the country. There was much gnashing of teeth about delays in the building of our accommodation as alternative rooms were sourced and many months were spent living out of boxes and bags. However, from our very first 'welcome week', the staff at the Department of Rural Health and the hospital provided constant support and assistance with many of these obstacles. When we arrived there were already lists compiled of local businesses willing to employ new students. We had been placed on the local arts and entertainment complex mailing list, and many local contacts had offered private rooms for accommodation.

After six months in Shepparton, instead of racing back to Melbourne every Friday, we are now scheduling visits from family and friends. Many of us relish the weekends when we do not have to 'descend' to Melbourne for various functions. We have a new home that we can invite people into and a new base in town from which we can stroll to the hospital, shop or pub. Many took fright at the prospect of medical students living, studying, working and breathing together, however, with time, each of us has developed our own little niche in the town. Last night one student had touch-footy practise, two went to yoga



CLARE LOOKER IN HER ROOM IN THE NEWLY BUILT STUDENT ACCOMMODATION AT THE RURAL CLINICAL SCHOOL IN SHEPPARTON  
(Photo courtesy of Shepparton News)

together, our two devoted runners were pounding the bike paths, and we all convened for a Pancake Tuesday feast at 10pm. We have found that Shepparton is not a place lacking in space or activities.

When we first arrived in Shepparton a mentor program was established. Aside from providing a frank review of local eateries, shopping strips and essential town gossip, this has allowed another avenue for us to meet people in the town outside the medical environment. These friendships have shown us the possibilities for practising in the country and provided support during the more challenging aspects of the city-country transition.

The culturally diverse community in Shepparton has also exposed us to many experiences not afforded elsewhere. The area of Shepparton is privileged to be based on lands that traditionally belonged to the Yorta Yorta nation and now has the largest Koori population outside Melbourne. As students we have many opportunities to see Shepparton's strong Koori health team at work.

The City of Greater Shepparton is the fourth largest provincial city in Victoria, and according to most economic indicators one of the fastest growing regions in the state. It is a region of intensive agriculture and food processing (yes, the SPC cannery) and is responsible for twenty-five per cent of Victoria's agricultural production. It is a dynamic town with extensive sporting, art and cultural events.

When I return to Melbourne my brothers scoff at my fascination with low pressure systems over 'the Valley'. I know that many acknowledge the lifestyle advantages of the country but puzzle over whether students get comparable training to that of their city counterparts. We have not finished our course and have not yet been unleashed into the world, however, if the current standard of education (currently indicated best in exam results!), exposure to patients and, above all, enthusiasm continue, I can promise that the first group of graduates from the Rural Clinical School will be competent, motivated clinicians with just a slight taste for adventure!

*Clare Looker, fifth year medical student*

## A 'Ripe' Time for Interprofessional Education

BY JOSEPH PAIVA

**I**T WAS THE first time I had seen a dog treated in an emergency department, as Molly (the local GP's labrador, just bitten by a tiger snake) was cannulated and injected with anti-venom. It was an educational and heart-warming experience, as everyone united to help their colleague save his pet. It was also a unique demonstration of good interprofessional practice (IPP).

The Rural Interprofessional Education Project (RIPE) is a pilot project managed by the Department of General Practice that educates undergraduate health science students in IPP. It involves a two-week placement for volunteer nursing, medical and allied health students, who are placed in interdisciplinary pairs in rural primary health care services. The students work through the placement together, guided by preceptors in their respective disciplines, collaborating in the clinical setting and completing a community-based project. A tutorial at the beginning orientates students to the placement objectives and another at the end evaluates and debriefs the placement. An online forum provides feedback and reflections throughout the two weeks.

My co-student, Nikki (a nursing graduate), and I were sent to Apollo Bay for what we thought would be a nice 'holiday by the beach'. We were placed at the Otway Health and Community Services (OHCS), an impressive multi-purpose centre boasting a strong acute nursing and aged care service, general practice, physiotherapy, occupational therapy, HACC services, adult education, child care and a three-trolley urgent care centre emergency department. We spent most of our time gaining clinical experience in the various facets of the service.

The nursing experience, which included showering and feeding patients, making beds, dressing wounds and pressure point care, was particularly eye-opening and mortifying for me. After almost four years of medicine, it brought home to me the importance of tending to such basic patient needs as hygiene, dignity and the need for company. The informal, yet intellectually charged, discussions with other students on the southwest placement and our preceptors were particularly stimulating. I learned as much from these as from the clinical experience, and found my impressions and attitudes towards nursing, physiotherapy, pharmacy, and even medicine, challenged and changed. What lingered was how passionate everyone was about their own disciplines and how eager they were to learn about others.

The focal component of the RIPE placement is the project, designed to increase the community's capacity to manage its health in some way. After much initial uncertainty we pursued a skating injury prevention program, endorsed through the local school in the form of a pamphlet for a new beachside skate park, launched very successfully as I write this article. This involved researching local incidences of skating injuries and collaborating with the local council's recreation committee, the school, school nurse, youth worker, and with the children to gauge their attitudes to safety when skating, then devising an effective form through which to disseminate our injury prevention promotion. The limited timeframe, resources and infrastructure meant clear direction, effective organisation, understanding and cohesion



L-R: CLAIRE SCHMEIRER (DIRECTOR OF NURSING), NIKKI PELL (NURSING CO-STUDENT), JOSEPH PAIVA AND JEANETTE GREEN (CEO) OUTSIDE OTWAY HEALTH AND COMMUNITY SERVICES. JOSEPH AND NIKKI ARE HOLDING THE SKATING INJURY PREVENTION PAMPHLET DEVELOPED AS PART OF THEIR RIPE PROJECT

were vital. Nikki and I found our ability to collaborate effectively and motivate each other was most tested here. The support and enthusiasm of the community towards the project and the RIPE concept were overwhelming.

Stepping out of my 'medical comfort zone' gave me a rich knowledge of the nature of other health professions. It furthered my understanding of rural practice and its benefits (continuity of care, connectedness to the community, community empowerment), and gave me strategies to overcome its disadvantages such as professional isolation. I gained an insight into the nature of good IPP: the complete lack of hierarchies; a strong awareness of each team member's role; open admiration for colleagues; and the ability to openly criticise and motivate when needed, transcending normal team expectations and ways of interacting and communicating, for example through humour and patience, to negotiate difficult situations. This insight will be invaluable in the relatively hierarchical institutions where I will undertake the bulk of my training. On reflection, part of the IPP learning experience was also being thrown together with someone I had never met before. Combining general social interaction while developing as a cohesive working unit in the clinical setting and collaborating with other groups to produce a comprehensive project within a two-week deadline, was a steep learning curve we negotiated with surprising ease.

I believe an initiative such as RIPE should be a core module in all health science courses, delivered, for example, within the context of a rural health term. RIPE students are volunteers and therefore likely to be interested in IPP but I believe developing such a perspective in those who wouldn't necessarily seek out such training is more important. That optimal patient care is dependent on effective multi-disciplinary collaboration is almost a cliché today. Developing a strong understanding of this concept early in our training would auger well for the professional development, awareness and future job satisfaction of any future health professional.

In parting, graced by the gorgeous sights of the southwest and the Great Ocean Road, RIPE was a 'holiday on the beach', as expected. However, I don't think I expected such a rich educational experience.

More information on the RIPE project can be found at <http://www.gp.unimelb.edu.au/research/ripe>.

*Joseph Paiva, fifth year medical student*

## THE AMS EXPERIENCE

### A History of Reproductive Anatomy

BY SIMON JOOSTEN

THE ADVANCED MEDICAL Science (AMS) year is described by coordinator, Stephen Farish, as 'a year of research, often with supporting coursework, in a field related to medicine'. The year is undertaken in semesters six and seven by all undergraduate entrants into the 'new' medical curriculum. As part of the first cohort to undertake the AMS year I completed my project, *A History of Reproductive Anatomy*, in June 2002.

The broad scope of the AMS year meant that a diverse range of projects and topics were investigated in the program's first year. In choosing a research project I aimed to consolidate my university-based medical experience, whilst taking the opportunity to broaden my knowledge in a number of areas of personal interest. The project was weighted so that two-thirds of my time was devoted to my research project and one-third to supportive coursework.

The coursework consisted of two subjects. The first was an advanced anatomy course, provided by the School of Medicine, consisting of a full-body dissection and clinical teaching at the Royal Melbourne Hospital. The second subject, 'Science Reason and Reality', was a second year philosophy subject provided through the Faculty of Arts. I selected the subjects on the basis that they would add depth to my research project.

The main aims of my research project were to establish a relationship between theories of gender and sexuality and the anatomical description of male and female sexual organs, and to broaden my knowledge of the history of medicine. Through the research process I came part of the way to understanding the fluidity of medical knowledge and the influential role that popular belief plays in the formation of that knowledge.

My research showed that the relationship between medical knowledge and society is particularly evident in the science of anatomy. In many ways, when we look at the history of anatomy, we are also, unavoidably, seeing the history of the culture that produced the anatomical description. For example, the subordinate role of women in Roman society is reflected in Galen's speculative theory that male sperm should predominate over female seed. Furthermore, Galen's anatomy (in which the

female is seen to be an imperfect version of the male) largely ignores one of the most important sexual organs, the clitoris. We cannot possibly doubt that, were a woman to produce an anatomy of female reproductive organs, she would give considerable importance to the clitoris. However, the values of Roman society meant that such a description would have been virtually impossible.

It was extremely rewarding to track the dynamics of female anatomical descriptions throughout history and attempt to crudely correlate them with contemporary sexual and reproductive theory. The enormous differences in what is now considered a purely observational science were somewhat astounding for someone who prescribes strongly to scientific method and analysis.

Despite the underlying influences of society's view of women, scholars of the Renaissance (continuing the work of medieval scholars) were able to produce an anatomical description of the reproductive organs that was grossly accurate. However, although Renaissance anatomy was largely correct, the speculative theories underlying the inverse model of sexuality were maintained in the face of contradictory empirical evidence. The extra-observational and extra-anatomical influences that were largely responsible for maintaining the fluidity of the understanding of reproductive anatomy for 2000 years leading up to the Renaissance, would maintain a model of sexuality that reflected social values, in which woman was subordinate, for a further 200 years.

Although there were no wide-reaching implications or breakthroughs in my research project, my investigations have left me with a healthy skepticism about the way in which society and the medical community interact. Although the University of Melbourne is a biomedical research Mecca, offering all sorts of laboratory-based research opportunities, I believe that a broader understanding of the place of medicine in society is one of the most important lessons one can take from the AMS year.

*Simon Joosten, fifth year medical student*

### A Guinea Pig Among Lab Rats

BY KATE STANTON

I AM NOT sure why I chose lab research for my AMS year. Perhaps it was the allure of being on the 'cutting edge', powered by the insatiable, unrelenting vigour of scientific inquiry. Or the hope that I might contribute to the ocean of knowledge, my discovery featuring proudly on page 437, paragraph three, of a biochemistry textbook that would become the bane of every medical student's existence. Or maybe the chance that a glimpse of the mysterious microcosm contained inside a test tube would open the door on a world where minds endlessly probe, question and, of course, try to publish as many papers as they can in the shortest possible time.

I spent my AMS year in the cancer biology laboratory at the Peter MacCallum Cancer Institute, under the supervision of Dr Robin Anderson. My project was entitled 'The Role of Heat Shock Protein 72 In Breast Cancer Progression'. The fundamental aim of my research was to determine whether over-expression of Hsp72, a protein known for its protective function against cell stress and found to be up-regulated in many cancers, confers a positive or negative prognosis in breast cancer. Clinical evidence suggests the latter, though many animal studies have found a strong role for this protein in initiating an immune response against cancer. Does it protect cells against stress and promote breast cancer progression, or is it an easy target for the immune system to defeat the tumour? This project involved a spectrum of experimental techniques—everything from molecular cloning to *in vitro* protein assays to live tissue culture and, finally, to *in vivo* mouse work.

Unfortunately, nine months later, my paragraph on page

437 was still a dream. I struggled with an invincible strain of mycoplasma in my precious cancer cells, assays that were yet to be perfected and techniques that were found to be flawed just when I needed them.

From this frustration, however, grew an admiration and respect for science. I learned to completely redevelop my notion of a good and a bad day. The people who surrounded me had an unshakable tenacity to pursue knowledge despite repeated failure. My concept of a laboratory was no longer a black box to which I would send FBEs and LFTs.

Perhaps, initially, I would have been sad to know that the answer to the Hsp72 paradox would elude me. However, I gained some equally rewarding things from my AMS experience. I learned many important laboratory techniques, including the local 'lab lingo' and the finer points of holding a mouse. I gained an appreciation of scientific research that will be carried into my future as a doctor; I can read *and* understand a scientific paper, and I know how to write a thesis! I made wonderful friends and developed my friendships with other AMS students at Peter Mac. Finally, with some trepidation, I'm awaiting a call from my supervisor regarding a review article we are to write together.

As I traded in my pipette and collected my stethoscope on the final day, I felt a wave of sadness and nostalgia to think that my glimpse inside the test tube had come to an end—albeit perhaps a temporary one.

*Kate Stanton, fifth year medical student*

## BENEATH THE BEANIES

### The University of Oslo Student Exchange Program

BY EDWINA HOLBEACH AND DANIEL LENAGHAN

**L**AST YEAR, FOR the first time, four University of Melbourne medical students were given the opportunity to undertake some of the medical curriculum in another country. The University of Oslo was an excellent partner for this new program. They are enthusiastic about the value of cultural exchange, and teach one of their semesters entirely in English to facilitate such exchanges.

Our exchange was bilateral. Melbourne students studied their paediatrics and obstetrics/gynaecology terms in Oslo, while four Norwegian students took their place in Melbourne. We attended the autumn/winter semester, with temperatures ranging between positive and negative twenty-five degrees centigrade over the length of our stay. Curious Norwegians often asked us why we chose to study in Norway, given its colder climate and great distance from Australia. We now know that there are many special reasons to choose Norway, but our original motivation was simply the unique opportunity to live and study medicine in a different culture.

We found a number of interesting differences between medical practice in Norway and Australia. Norway is a strongly socialist state, with an extensive welfare system funded by high taxes and rich oil supplies. Basically, there is no private health care system. The medical infrastructure is excellent, as are the working conditions for doctors, who receive scooters to negotiate the hospital wards. Other differences include less concern for medico-legal issues (litigation being relatively uncommon), attention to responsible use of antibiotics (consequently Norway has almost no MRSA), and a compulsive obsession for performing CRP estimations.

The language barrier presented the greatest practical obstacle to learning medicine in Norwegian hospitals. However, English is widely spoken as a second language in Norway and many of the patients and almost all of the doctors were willing and able to speak to us in (often flawless) English. This, combined with our very limited Norwegian, usually enabled us to communicate well. Our experience was that Norwegians are mostly very hospitable, helpful and generous, and this was the most important factor in helping us to settle into life and study in Oslo.

The exchange has, of course, been as much about the experience as the medicine: living in another country,



EDWINA HOLBEACH AND DANIEL LENAGHAN AT THE LOFOTEN ISLANDS

experiencing different people, different food, a different language, and very different weather! Norway is amazingly beautiful. It is scattered with breathtaking fjords, and tiny little fishing and farming villages that seem to survive largely on the generosity of the welfare state. Most unforgettable was our trip to Lofoten, a magnificent group of islands in the Arctic Circle whose sharp peaks rise steeply from the sea to create a breathtaking landscape.

Oslo also brought its own activities and challenges. The student residences were loaded with international and Norwegian students, and provided some of our closest friends and skiing instructors. The location was perfect, being right on the edge of the forest, which meant we could trek, cycle, slide, ski and swim our way around, over and through the beautiful lake Sognsvann at different times during our stay. It is no surprise that outdoor activities are a central part of the traditional Norwegian lifestyle.

The Norway exchange has simply been the best thing we have done in our medical degree. While prices were high, temperatures low and our uptake of Norwegian slow, the friends we made and the experiences shared were fantastic. We have learnt a lot and hope that in future the experience of international medical education can become more commonplace for Australian medical students.

N.B. Due to the success of its first year and the strong interest from students of both nationalities, the number of students participating in the Oslo-Melbourne exchange in 2003/04 will be doubled.

*Edwina Holbeach and Daniel Lenaghan  
final year medical students*

### 2002 EXCELLENCE IN TEACHING AWARDS

The 2002 School of Medicine Excellence in Teaching Awards were recently presented to the three winners—Dr David Ebert, Biochemistry and Molecular Biology (First Year); Dr Craig Adams, Anatomy and Cell Biology (Second Year); and Ms Sandra Uren, Microbiology and Immunology (Third Year).

The awards were presented by Professor Neville Yeomans, Associate Dean (Academic Programs) and Professor James Angus, Deputy Dean, Faculty of Medicine, Dentistry & Health Sciences. Professor Angus told students that one of the aims of the university's strategic plan is to engage outstanding students and create and maintain a superb campus-based teaching and learning environment offering undergraduate and postgraduate education of the highest quality. In congratulating the winners on their outstanding achievement he finished with a quote by Aristotle: 'The touchstone of knowledge is the ability to teach'. The awards are based on a ballot in which students in the first three years of the medical course nominate their best teachers.



TOP TEACHERS: DAVID EBERT AND SANDRA UREN WITH THEIR EXCELLENCE IN TEACHING AWARDS (ABSENT: CRAIG ADAMS)

## 2002 PETER G JONES ELECTIVE ESSAYS

The UMMS Elective Essay Prize was established in 1993 and renamed the Peter G Jones Elective Essay Prize in 1996. Prizes of \$100 are offered annually to final year students for the best essays of up to 1500 words describing the students' professional and personal experiences during their elective. Winning essays are also

considered for publication in *Chiron*. In 2002, prizes were awarded to Ka Chun Tse for his essay *The Tao of Medical Practice*, to Kelly Bertram for her essay *Tango, Incas and the Economics of Health* and to Gidon Winter for his essay *Jerusalem—Eye of the Universe*. Edited versions of all three essays are published here.

### The Tao of Medical Practice

*Two Electives in Rural Victoria*

BY KA CHUN TSE

**T**HERE IS, OF course, no single act that constitutes professional medical practice, and no single parameter that determines whether medicine is a personally rewarding path for someone to take. Instead, there are myriad factors that influence how gainful, personally and professionally, medicine is for any person.

In Chinese philosophy there is a concept used to describe whether a system will work constructively and harmoniously, or destroy itself in internal and external conflict. 'Tao', or 'the way', teaches that co-operation and growth will ensue if what is 'natural' is done. Tao tends to be humanist, pro-social, moderate, effortless and flexible. Throughout my few years of medicine, I have found Tao a helpful framework in which to evaluate myself and others.

**Confucius said, 'To rule the state, one must first rule oneself'**

The doctors in the hospitals where I did my electives often had to work unreasonably long hours. In my first placement, the medical registrar was criticised on several occasions for arriving in the ward after 8.30am, despite being on night duty the previous day. In my second placement, a more prompt medical intern tallied up ninety hours in one week. This cannot be healthy for a young doctor's physical, psychological and social wellbeing. Is it a wonder that, in the eyes of many, doctors are mostly uncommunicative and hurried drones, interested only in jargon, drugs and procedures?

**Confucius then said, 'To rule the state, one must then rule the family'**

Our federal and state governments have recognised that most rural areas are suffering from a shortage of doctors and are pursuing promising solutions such as increasing funding for country hospitals and establishing rural clinical schools. However, our governments have neglected to consider the personal pros and cons for doctors and their families of working in the country. These are as important as the work environment in determining where doctors choose to work. During both my electives, permanent health care staff were chronically stressed or had left the areas due to long working hours that left little time for their families, a lack of educational opportunities for their children, unsatisfactory employment prospects for their partners, and isolation from financial, retail, entertainment and other services. The medical personnel shortfall was partly compensated for by rotating metropolitan hospital medical officers to rural hospitals. However, these same problems were then imposed upon the temporary medical staff and their families. In addition, because the temporary medical staff generally only stay for three to six months, relocating their families is impractical. As the Tao of doctors' relationships with their families is sidelined in this way, no amount of funding for rural hospitals and clinical schools is likely to solve the problem of doctor shortages in the country.

Confucius's concept of family can be used as a metaphor for the family of doctors, nurses and other health care professionals who work together. Whether these people work together harmoniously and efficiently depends largely on the personalities of the individuals concerned.

Individuals interact with each other within a broader socio-political environment. During both electives a divide was obvious between the nursing and allied health care staff, who are generally permanent, well-unionised and live locally, and the resident medical staff, who are generally temporary, non-unionised and come from Melbourne. The relationship between these two groups during my first elective was friendly: advice flowed freely from permanent staff to medical staff about the organisation of the hospital and local medical protocols, and medical staff felt confident telling nurses about their preferences for patient management and latest practices in metropolitan hospitals. In my second elective, however, the relationship between nursing and medical staff was sometimes hostile: nursing staff collectively obstructed certain management decisions made by medical staff, while medical staff paid little attention to nurses' preferences and suggestions. In both my electives there was a division between Australian medical graduates, who work in the country hospitals for three to six months, and overseas medical graduates, who work there for at least one year. The current system of rotating hospital medical officers from Melbourne to country hospitals for relatively short periods of time counters the Tao of relationships, including the relationships that exist within the workplace.

**Confucius concluded, 'Once you have ruled yourself and your family, you may rule the state'**

The state is my metaphor for the social, economic and political environment in which doctors work. While this is controlled either by hospital and government bureaucrats or by the general public, it has a profound effect on the way doctors work. For example, the hospital of my first elective serves a larger population, has a rural clinical school attached to it and receives more funding than the hospital of my second elective. Consequently, compared with the second hospital the first has more specialists, facilities and educational resources and doctors have few troubles managing and referring patients and obtaining training. Although managing with limited resources is challenging and can be professionally and personally rewarding, given the choice most doctors would prefer to have the specialists, facilities and educational resources at their disposal.

Patient population is another dimension of the social context in which medicine is practised. The patient populations in my two electives shared numerous features that distinguish them from metropolitan patient populations: higher rates of cardiovascular diseases among middle-aged and elderly men, and higher rates of suicide among young men. These are amenable to preventive

health measures which, unfortunately, are hindered by the geographical isolation, economic disadvantage and poor health-seeking behaviour of the 'typical' rural male. There were also unique sub-populations in each elective. My first contained a large sub-population of Australians born in continental Europe who were not economically disadvantaged but still suffered the legacy of discrimination from the early and mid-twentieth century. My second elective contained a large sub-population of indigenous Australians geographically and socially estranged from the white part of the township where the hospital was

situated. The continuing impoverishment of and discrimination against the indigenous Australians not only generated a barrage of health problems, but also made it difficult for them to trust the staff of the white hospital and adhere to treatment.

My rural Victorian medical electives have encouraged me to think about factors that will affect my career, the kind of doctor and the person I will be. They were a step in my preparation for the forces that will greatly influence me. As Sun Tzu said in *The Art of War*: 'If you know yourself and you know others, you will fight a hundred times and win a hundred times'.

## Tango, Incas and the Economics of Health

BY KELLY BERTRAM

MY FIRST DRIVE through Buenos Aires was quite an eye-opener. The road from the airport passed through green fields on its way to the impressive city centre. We headed west into Buenos Aires province, a small area in which half the 32 million Argentinians live. On our way we drove through the city of Evita, a *Villa Miserable* (literally 'miserable village'): a ramshackle collection of houses crudely constructed of stone, wood, corrugated iron and old street signs, littered with old cars and piles of rubbish. Not quite the 'Paris of the south' referred to in travel books.

My elective placement was divided between Clinica Catan and Hospital Nacional Professor Alejandro Posadas. Clinica Catan is a private clinic in one of the poorest areas of west Buenos Aires. About half an hour north is Hospital Posadas, the only hospital in all Buenos Aires that provides completely free treatment. Ironically, it is situated in the city of Moron, with its clean wide streets and fashionably dressed people. Patients walk up to five hours, many without appointments, to crowd the corridors, hoping for attention.

My first patient was Nerida, a thirty-eight-year-old woman with cerebral toxoplasmosis, a complication of AIDS. Over the coming weeks we watched her improve, then suddenly become thrombocytopenic. The uncontrollable spread of HIV throughout Argentina is fuelled by a lack of public health measures. Anti-retrovirals are expensive and many people are not diagnosed until they are dying in hospital. With bilateral intracerebral haemorrhages and neutropaenia, Nerida deteriorated terribly. After sepsis, atelectasis and ulcers, she passed away on my last day.

At Posadas I spent two weeks each in oncology, diabetes and nutrition, *nefrologia* and *neumonologia*. Most oncology patients presented with end-stage disease, including breast, skin and cervical cancers. At least seventy-five per cent of diabetes clinic patients had amputations, often high level, sometimes bilateral.

In Argentina unemployment was officially twenty-three per cent. The only government assistance was the (very) occasional food package and access for pensioners to the government *Obra Social*—a health fund provided to groups of workers, paid for by compulsory contributions from one's income. In October 2001 independent reports found that a further twenty-two per

cent of the population were not in full-time employment. Though many of the unemployed were uneducated, a number were professionals (including doctors, dentists and nurses). There is no middle class in Argentina.

I arrived in Buenos Aires at the start of the *Corralito*. Meaning 'little prison', *Corralito* is a name coined for the banks, which restricted people's access to their own savings, capped at 250 pesos per week. Popular discontent with the political situation was growing and, too long without food, huge groups of unemployed people gathered and riots began.

Crowds destroyed many buildings in the city and marched on the houses of government leaders. The economic minister quickly resigned and fled the country; the president took two days then declared a state of siege—thirty days without civil rights and the police and military had the power to detain anyone without trial. Very unsettled times followed. Argentina had five presidents in ten days, the banks closed and the *Cacerolaza* was born. *Cacerolaza* means casserole dish—originally used in demonstrations to make noise, they became a symbol of national unity.

By the time I began on the renal unit, the economic crisis was having a major effect on the practice of medicine. We constantly ran out of medications as patients died of sepsis and thrombosis. In Catan the residents had been without pay for four months. For two weeks there were no blood products in the whole country as the serology lab closed. Diabetics demonstrated in the Plaza de Mayo, desperate for insulin no longer available. At Posadas we had to start choosing which of our renal patients had the best chance with dialysis.

A mini-epidemic of an uncommon form of respiratory leptospirosis affected young people who had been swimming in a contaminated lake inside a cemetery. The first boy, who presented with profound respiratory distress, died before diagnosis. That concerned doctors about the possibility of another virus—Hanta. Hantavirus exists in two forms. In Asia it produces a haemorrhagic renal disease that is rapid, but the patient generally recovers. In the Americas it is a respiratory disease that quickly leads to non-cardiac oedema and haemorrhage, usually requiring artificial respiration for a week—at which point the lucky fifty per cent who survive will recover completely.



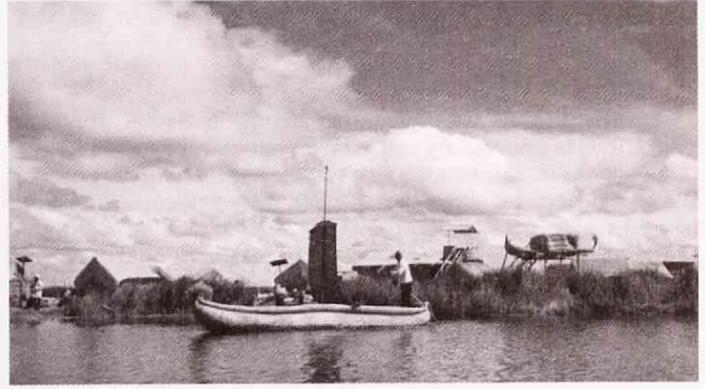
RESIDENTS, STUDENTS AND KELLY, SECOND FROM RIGHT, AT CLINICA CATAN



MACHU PICCHU, PERU, SACRED CITY OF THE INCAS NOT DISCOVERED UNTIL 1911

At Catan I spent short but valuable periods of time with the paediatrician and obstetrician. One of the children we put back together with glue after a cut to the forehead—not an uncommon practice, though I hadn't seen it done before with ordinary wood glue, bought by the doctor as the patient had no money. We performed a caesarean on a woman who had presented only once for antenatal care and had gained fifty kilograms during her pregnancy. She was found on ultrasound to have polyhydramnios and after carefully opening the uterus we suctioned six litres of fluid before delivering a 5.3kg baby, who required many minutes of resuscitation, but still died two hours later.

An hour by plane, yet what seemed like a world away, I stood at the edge of the massive Devil's Throat of the Iguazu Falls, on the border of Argentina and Brazil, and began my travels through South America. I investigated the Inca and other ancient cultures, explored the ruins of Sacsaywaman, Pisac and legendary Machu Picchu in Peru, and found myself part of the parade at the Puno festival. I visited the mysterious Uros people,



ONE OF THE UROS ISLANDS MADE ENTIRELY OF THE TOTORA REED GROWING AROUND THE ISLAND. THE GROUND IS REPLACED EVERY FEW WEEKS, THE TOTORA HOUSES SIMPLY LIFTED UP AS THE ISLAND IS REBUILT BELOW THEM. THE BOAT IN THE FOREGROUND IS ALSO MADE OF TOTORA

living on their handmade floating reed islands on Lake Titicaca, and the island of Taquille, where six families have intermarried for centuries until the present generation. I met some fascinating people, including tourists from all corners of the globe, and locals who had never left their village. After zigzagging my way through the Andes I returned to Argentina.

In the weeks I was away, Argentina had continued to decline. After the end of a ten-year government policy holding the Argentine peso 1:1 with the American dollar, devaluation had led to an exchange rate of between 1:1.95 and 1:2.5, depending on how desperate people were to get their hands on greenbacks. Inflation was threatening to escalate. Catan had lost staff, and Posadas had closed 150 beds.

Argentina occupies that mysterious second world, half of it trying desperately to keep up with United States and Europe, half of it slipping into the third world. With the depth of the problems facing the country, and little interest from the United States and the World Bank, it is difficult to see how its situation can improve.

## Jerusalem—Eye of the Universe

BY GIDON WINTER

*Abba Issi said in the name of Samuel the Lesser:  
The world is like a human eyeball.  
The white of the eye  
is the ocean surrounding the world,  
The iris is this continent,  
The pupil is Jerusalem,  
And the image in the pupil is the Temple of The Holy One  
Blessed Be He...*

(Kabbalistic text)

ISRAEL IS A country at a crossroad. Geographically, it straddles the convergence of Asia, Europe and Africa; economically, it exports as many hi-tech products as primary produce; historically, it is as ancient as it is new; religiously, it is a country holy to Jews, Christians and Moslems alike; and politically, since its inception in 1948, it is a country torn by the dichotomy of being both a democratic state and the national and religious homeland of the Jewish people.

Medicine grants us the privilege of seeing people in their most essential hours. We often see elements of personality that people sometimes refuse to share with their most beloved. An elective at Sha'arei Tzedek Hospital in Jerusalem taught me a lot about the ties that bind us together under the banner of humanity and, in the process, a lot about myself.

\* \* \*

'Because of the inherently superstitious nature of Middle-Eastern people, there is a huge stigma associated with mental illness amongst Jew and Arab alike in Israel. Anyone labelled with schizophrenia has very little chance of ever finding a husband or wife, and in religious circles this is almost worse than death.' A Freudian by nature, Dr Adler emigrated from Germany in the 1970s. 'If you like people, psychiatry is great. The thing is, though, it's more difficult with delusions and paranoia in Israel...why is that? Firstly, the stress and realities of life are such that there may well be a conspiracy to murder some of our Arab patients, and for all I know King David may well have appeared to that man over there telling him that he is the Messiah. That's the problem with this country. The whole country runs on faith. Anywhere else, half of our society would be committed to delusions of grandeur—some chosen people! Chosen for what?! If you ask me, all religious people are crazy!'

\* \* \*

'I am a good husband. I'm not sure why she keeps doing this to me.' He grinned. His face was dirty with grease and mud. 'Three times she has done this to me...I don't understand why.' Brought in by his mother-in-law, Mahmoud had been found sitting naked in his kitchen, a rope around his neck and wrists. 'I wasn't trying to kill myself—just showing her that I love her, and that I need her to come back to me. I would never want to hurt myself. Why should I? I have a good job, I am very successful,

we live only a short walk from Al-Aqsa (Dome of the Rock)... I pray to Allah that she will return...I am feeling well, can I go home?'  
\* \* \*

On the odd occasion when it rains in the Israeli winter, it pours. Rain is a necessary evil, vital for agriculture and for living, but it wreaks havoc with the city's roads and dusty open spaces. Water spills in all directions. The Kinneret (Sea of Galilee), Israel's major water reservoir, is more than six metres below the adjusted redline—an arbitrary cut-off for the introduction of water restrictions, which is lowered almost annually by the government as the Kinneret's waterline recedes. The governing principle of Israeli politics is largely one of faithful inaction—do nothing until a miracle doesn't happen.

There were no miracles in Jerusalem today. Shards of glass and blown-out shop fronts in central Jerusalem bear witness. Onlookers scurry past, bracing themselves for this new reality.  
\* \* \*

'What happened when you woke up?'

The girl still shook. Her long brown curls bobbed up and down with each word. Her green eyes stared coldly. 'I looked around the shop. There were shards of glass everywhere. I could hear gunshots, very close by. But the shop was empty. No one else was there. I lay there on the floor, shaking. I was petrified. I could have been dead. I looked around for the bullet holes. There were none...he was standing just outside the shop.' She broke down.

'Were you angry with the people who had left you inside, alone?'

'I don't know...'

'Are you angry with them now?'

'I don't know...'

Her brother sits across from her, brandishing an M-16. He is dressed in army fatigues. 'I need to head back to the base by one o'clock. Maybe we can try another time,' he suggests. He leaves the room, gun in hand. The girl follows.

'You can call the hospital when you can't sleep at night.'

She nods.  
\* \* \*

'Hello, young man, have we met before? Was it at the Bible conference a number of years ago? Ah that's it—no, Cairo 1983 ...yes, yes, no, Damascus '78. The Bible says...'

'Sorry to interrupt Professor Wilkinson, but we've come to ask you how you're feeling. Besides, I don't think this young man,' motioning to me, 'was alive in 1978...'

Professor Wilkinson was a robust man of seventy-four years, 'a rather jolly chap' in his own words.

'I'm glad you came...I'm working on an extraordinary thesis at the moment. It's about the role of Jerusalem in shaping Jesus ...did you know Jesus received much of his formative education around the site of the Jewish temple. It was there that he began his preaching in the market place during Roman times. In fact, documents I am translating have recently led me to believe that Jesus may have lived just opposite our offices at the International Bible Centre...oh, these are very exciting times. You see, it all began only a few months ago, with the delivery of these rare manuscripts previously...hidden, you know...'

Three of his helpers were constantly by his bedside, doting over his every need. 'He's been waking overnight, we think he may need some medication to help him sleep.'

'We'll see what we can do.'

We leave the room as Professor Wilkinson begins his exegesis.  
\* \* \*

*A song of ascents by David  
I rejoiced when they said,  
'Let us go up to God's House'  
Our feet would stand  
Within your gates, O Jerusalem,  
Jerusalem is built  
Like a city that it bound together...  
Seek peace for Jerusalem  
May those who love you prosper.  
Peace be within your ramparts,  
Prosperity in your palaces.  
For the sake of my brother and friends  
I say, 'Peace be within you.'  
For the sake of House of the Lord our God,  
I will seek your good.*

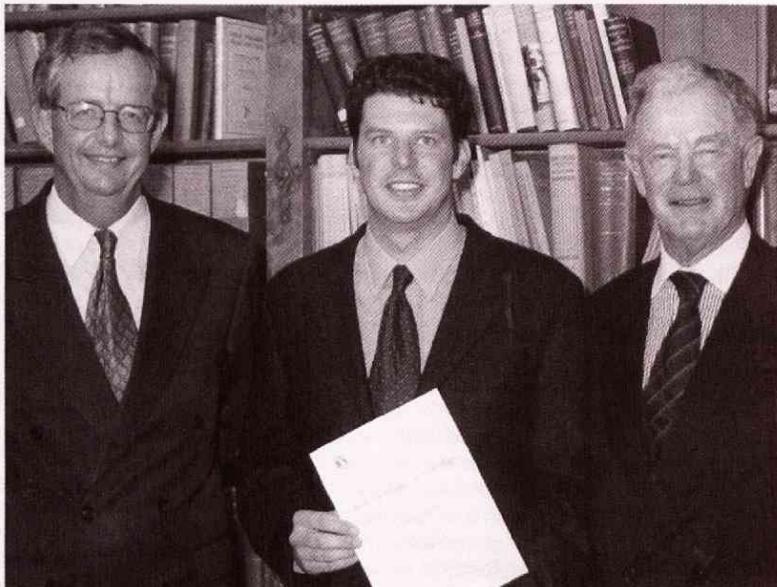
from Psalm 122

## 2003 MELVILLE HUGHES SCHOLARSHIP

This year's Melville Hughes Scholarship has been awarded to Dr James Thomas (MB BS 1996), who is undertaking his Doctor of Medicine candidature in 2003 under the supervision of Professor Wayne Morrison at the Bernard O'Brien Institute of Microsurgery.

The title of Dr Thomas's proposed research is *The Role of Hypoxia Inducible Factor (HIF) in Vascular Outgrowth in a Tissue Engineering Model*. He will study the role of HIF in an *in vivo* tissue-engineering model that has been developed at the Bernard O'Brien Institute. By inhibiting the breakdown of HIF within this model an increased volume of new blood vessels and tissue should be produced, which will have applications for reconstruction of tissue and organ defects.

The valuable scholarship is offered to medical graduates undergoing further research training in the discipline of surgery. It was bequeathed to the university in honour of Florence Hughes and her brother, Melville Rule Hughes. Florence died in 1962 and Melville, an alumnus of the School of Medicine (MB BS 1915), was killed in action in France in 1916.



L-R: RICHARD LARKINS, JAMES THOMAS AND LANCE DIMSEY, TRUSTEE OF THE FLORENCE AND MELVILLE HUGHES TRUST

## ST VINCENT'S INSTITUTE OF MEDICAL RESEARCH

BY PROFESSOR TOM KAY

DIRECTOR, ST VINCENT'S INSTITUTE OF MEDICAL RESEARCH

**S**T VINCENT'S INSTITUTE of Medical Research (SVIMR) is a key part of the remarkably strong tradition of medical research in Melbourne. For its size it is right at the top of medical research institutes in Australia, based on output of highly cited publications as well as success in winning competitive grants from NHMRC and elsewhere. The institute is poised to continue its growth as a centre of research for Australia in health priority areas such as cancer, diabetes, bone and cardiovascular disease.

SVIMR is an independent medical research institute on the St Vincent's Hospital campus. It is part of the Sisters of Charity Health Service and has close ties with the hospital and the University of Melbourne, recently becoming a joining member of Bio21. It was established through a generous bequest of £200 000 pounds left by Jack Holt, a well-known and successful racehorse trainer and philanthropist of the 1930s and 1940s.

The institute began in 1957 with the appointment of its first director, the Swedish biochemist Pehr Edman. It was a remarkable coup for St Vincent's that such a famous European biochemist chose to work at the institute. In 1949 he had described the Edman degradation reaction, a method of breaking off the last amino acid of proteins and allowing amino acids to be sequentially identified. This technique became widely used in early efforts to sequence proteins. During his tenure the institute was a centre of protein chemistry research, which resulted in the development of automated peptide sequencing using a technology called 'spinning cup' that was invented (but not patented) by Edman. The protein to be sequenced was applied as a thin film to the inner surface of the cup where it was accessible to the chemicals used in the sequencing reactions. Edman returned to Europe in 1972. He left a rich legacy of expertise in protein chemistry and SVIMR is still regarded as Australia's leading protein science institute.

Following his departure Frank Morgan, another protein chemist, was appointed director and the institute continued its successful work on protein structure, shape and function. Towards the end of his tenure plans were made for a new institute—to stand-alone outside the pathology building—and



SVIMR'S FOUNDING DIRECTOR, SWEDISH BIOCHEMIST, PEHR EDMAN  
(photo courtesy of SVIMR)

this was completed in 1986. Professor TJ (Jack) Martin moved to the institute in 1988 and gave it today's shape, which is centred around his bone biology group, regarded as one of the three best in the world.

### Bone Biology

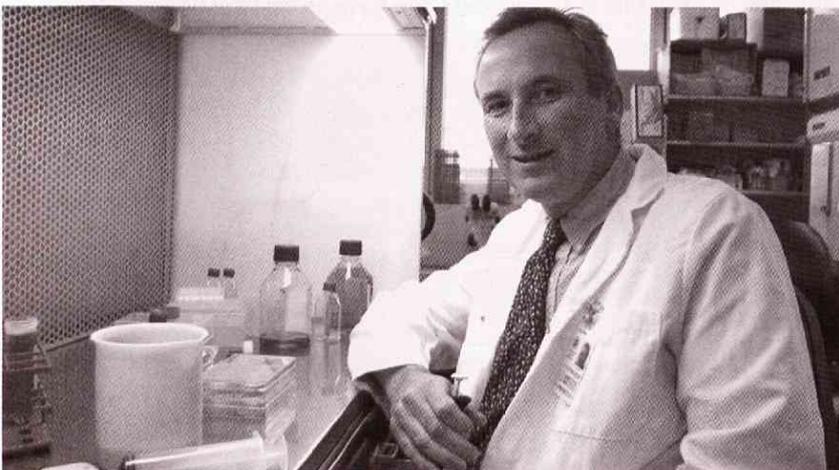
Jack Martin's group had isolated and cloned a molecule called Parathyroid Hormone-related Protein (PTHrP) that causes elevated blood calcium levels in people with cancer. This was a major landmark in understanding the interaction between bone and cancer and was published in the journal *Science*. The work done by the institute in the area of bone disease since has focused on understanding the biology of PTHrP and the effects on bone of the spread of cancer (metastasis), arthritis and osteoporosis. PTHrP was a novel gene product, but was related in evolution to PTH. This developed the novel concept that two major calcium regulating

hormones existed that may have redundant actions, with PTH being produced by the parathyroid glands and PTHrP produced from a variety of tissues with the potential for local (paracrine and autocrine) actions. In normal physiology PTHrP has a role in calcium regulation in breast milk and the foetus, and in relaxation of smooth muscle in the uterus and blood vessels. Studies at SVIMR and elsewhere have shown that breast cancer production of PTHrP confers on breast cancers the ability to grow as metastases in bone, as well as being responsible for hypercalcaemia, a common complication of breast cancer. PTHrP has been licenced to the Japanese pharmaceutical company Chugai, which has prepared a humanised monoclonal antibody against PTHrP that is currently being tested in clinical trial in Japan and the USA. SVIMR scientists have also identified many other regulators of bone growth and turnover that are involved in arthritis and osteoporosis as well as cancer of bones. They have developed the concept that intercellular communication by proteins is essential for the normal regulation of bone resorption and formation. This work on cancer is underpinned by basic studies in cancer biology. Studies on metastasis of breast cancer are carried out by Associate Professor Erik Thompson's group, funded by the Victorian Breast Cancer Consortium, in collaboration

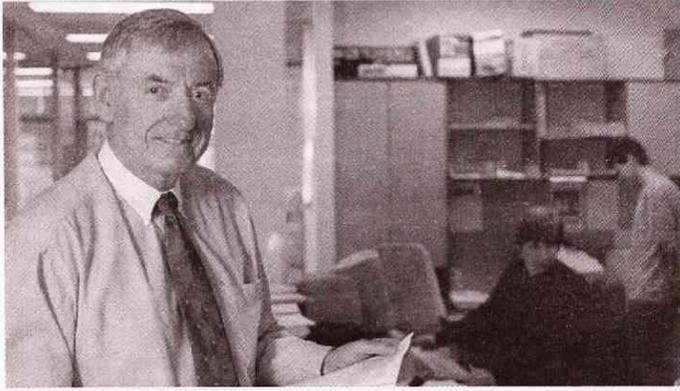
with the university's Department of Surgery. Dr Jorg Heierhorst's laboratory at the institute carries out more basic studies on cell cycle control. Bone biology and disease, led now by Associate Professor Matthew Gillespie following the retirement of Jack Martin, will remain a strong focus of the institute. Matthew has an outstanding record in bone research and is a past-president of the Australian Society for Medical Research.

### Protein Chemistry

Professor Bruce Kemp came to the institute with Jack Martin and established a highly successful protein chemistry group that studies the molecular basis of intra cellular signalling by protein kinases, a family of proteins that add phosphate groups to highly specific substrates. With colleagues including Dr David Stapleton at SVIMR and Dr Lee Witters in the USA, he has identified the molecule AMP-dependent protein kinase (AMPK), a serine-threonine kinase involved



DIRECTOR TOM KAY, WHO IS EXPANDING THE INSTITUTE'S ROLE IN DIABETES RESEARCH  
(photo courtesy of SVIMR)



FORMER DIRECTOR JACK MARTIN, WHOSE FOCUS ON BONE BIOLOGY HELPED SHAPED TODAY'S INSTITUTE  
(photo courtesy of SVIMR)

in exercise physiology and metabolism. This protein plays an important role in responses to energy demand (exercise) and energy supply (food intake). For example, in exercise AMPK accelerates the uptake of glucose by cells and the burning of fat. AMPK is likely to be important in obesity, type 2 diabetes and cardiovascular disease. It is already known to be the target of the drug metformin, used to treat type 2 diabetes. The cardiovascular implications of AMPK are being investigated by Associate Professor Jock Campbell, who has worked at the institute for several years on heart function and disease.

Bruce, who was recently awarded a prestigious Federation Fellowship, also has interests in diagnostic testing and virology. These interests saw the relocation of the National Serology Reference Laboratory (NRL) to SVIMR from Fairfield Hospital. The NRL, under the leadership of Associate Professor Elizabeth Dax, is assessing efficacy of diagnostic tests for HIV and Hepatitis C and developing new tests. Basic virology is also well represented in the institute by analysis of the structure and function of hepatitis C and HIV proteins, in Dr Andy Pombourios' laboratory.

### Biota Structural Biology Laboratory

Crystallography offers the means to determine the 3D structure of proteins at the atomic level, which is essential to fully understanding its function. The field has undergone a massive worldwide expansion in the last decade, driven by the use of the 3D atomic structures of proteins to design drugs for a variety of diseases.

The Protein Crystallography Unit at SVIMR was founded by Dr Neil Isaacs in 1978 and was the first crystallography group located in a medical research institute in Australia. The establishment of the unit was a natural progression from the institute's early strengths in protein chemistry and structure, built up by Pehr Edman. Neil worked at the institute for nine years before taking up a new chair of protein crystallography at the University of Glasgow, Scotland. At the institute, Neil solved the structure of a 'goose-type' lysozyme and crystallised human chorionic gonadotropin, a hormone involved in early pregnancy. He went on to solve the structure of the hormone in his new lab and the results were published in the prestigious journal *Nature*.

The unit was re-established in 1991, with Michael Parker as its head. The position was generously supported by a Senior Research Fellowship from the Wellcome Trust, and an early pressing need for state-of-the-art instrumentation was met through generous financial support of the BHP Community Trust, the Jack Brockhoff Foundation and the Ian Potter Foundation. The unit has had outstanding productivity and success solving numerous protein structures since its inception.

It has concentrated on three major areas of biology over the last ten years: membrane-interacting proteins (including bacterial toxins that cause channels in membranes and cell surface receptors), detoxifying enzymes (glutathione

transferases) and protein kinases. Current interests are focused on proteins involved in neurobiological problems such as Alzheimer's disease, memory deficiencies and epilepsy. More recently the group has become interested in drug discovery, taking structural data from crystallographic studies (often performed with the University of Chicago's synchrotron) and, using computer modelling, to perform 'in silico' screening of small molecules for the likelihood of interaction with the protein being studied. An alliance with the biotechnology company Biota was established to discover new drugs using this technology.

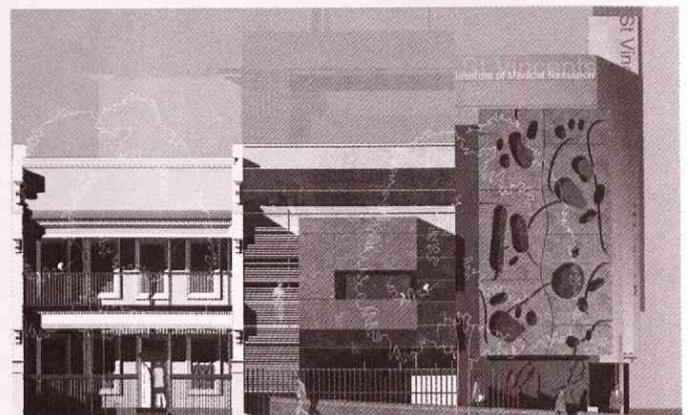
### Diabetes

Our most recent major focus is in diabetes, with the appointment in 2002 of Professor Tom Kay as the new director. This research group focuses on the role of the immune system in causing type 1 diabetes, particularly how the insulin-producing beta cells of the pancreas are killed by the immune system. The identification of several proteins that cause beta cells to self-destruct provides new approaches to the treatment and prevention of type 1 diabetes. The group has helped define which immune system proteins contribute to beta cell death by making genetically modified mice with beta cells that are protected from candidate mechanisms. An important application of this work is to improve ways of replacing beta cells in patients with diabetes by transplantation, and clinical islet transplantation is being established at St Vincent's Hospital. Diabetes research has become prominent, with groups in the institute, the university departments and the hospital combining to form a Diabetes Centre of Excellence.

### The Future

SVIMR is again re-building. It was recently awarded an NHMRC capital works grant of \$3.5 million, and a Victorian State Government Science Technology Initiative (STI) grant of \$2 million. With a further \$0.75 million from the Sisters of Charity, work has begun on an extension to the current building that will almost double the floor space and provide a state-of-the-art transgenic mouse facility. This will provide much needed space for existing groups and an opportunity to recruit young scientists back from overseas.

The institute's goal is to change the future of medicine by discovering new knowledge to improve health, quality of life and treatment of disease. It does this through basic laboratory research in bone disease, diabetes and cardiovascular disease, coupled with outstanding enabling technology in protein chemistry and crystallography. Leads discovered in this way are handed on to clinical researchers and industry for further development and application. While this path can sometimes seem long, there continue to be remarkable advances in clinical practice as a consequence of basic scientific research that makes current practice obsolete. Institutes like SVIMR play a key role in this process and have an exciting future.



ARCHITECT'S IMPRESSION OF THE NEW INSTITUTE,  
DUE FOR COMPLETION IN SEPTEMBER 2003

(photo courtesy of SVIMR)

# GRADUATES, PRIZES AND AWARDS

## School of Medicine and School of Population Health Graduates 2002

### **Bachelor of Medicine (1862) and Bachelor of Surgery (1879)**

Aylin Aslan, Jodie Rachelle Auster, Daniel Banyasz, Timothy Geoffrey Bennett, Kelly Lucinda Bertram, Tamara Rachel Bonney, Tatiana Catanchin, Richard John Cavell, Paul Cheng Loon Chan, Shaun Xavier Ju Min Chan, Charles Yuah-Ning Chao, Sarah Lissa Charlton, Tom Yun-Cheng Chen, Yan Chen, Yi Chen, York Keat Cheung, Chew Man Fong, Sue Cheng Chew, Sue-Ling Ching, Elaine Wei-Tinn Chong, Chong Fei Yoong, Sing-Jill Chow, Amy Siobhan Clerehan, David Clive Andrew Crosbie, Matthew John Damasiewicz, Amaranthi Yasaangi De Silva, Alex Hung Duong, John Alexander Emmanuel, Shiv Kumar Erigadoo, Adam Feldman, Jun Feng, Kum Chung Fok, Ilan Seth Freedman, John Giannakakis, E Shaun Goh, Melvin Beng Kiat Goh, Jerome Michael Goldstein, Peter John Gowdie, Alison May Graham, Andrew Adel Guirguis, Ding Yu Guo, Gaurav Gupta, David Emeric Gyorki, Jessica Ruth Hamer, Guy Hampson Harper, Nur-Shirin Harun, Ian Haywood, Davorka Anna Hemetek, Ahmad Almahdi Hilli, Christine Pin Pin Ho, Man Yuk Ho, Russell Hodgson, Amanda Louise Hyams, Mukesh Jain, Savio Cuong Jnguyenphamhh, Kerry Michelle Jones, Kenneth Kui Kam, Damien Kee, Atlas Ching-Hong Ko, James Michael Koziol, Annie Vihreva Kroushev, Annabel Kuek, Jiun Miin Lai, Liza Mei Yee Lau, John Lik Muk Law, William Le, Kim Francis Le Marshall, Fay Deanie Leaper, Stephen Lee, Lee Wei Hsin, Christopher Chak-Ming Leung, Teresa Sing-Yan Leung, Vicky Wai Ki Leung, Chung Hung Li, Qiang Li, Virginia Mei Chi Li, Wai Leong Liew, Andrew Boon Ming Lim, Jesselyn Sher Yee Lim, Win Nie Lim, Cheng Hean Lo, Damien Chee Kuen Loh, Kenny Wei-Tsen Loh, Talia Maayan, James Fraser Macpherson, Andrew Alexander Mahony, Chi-Yang Mak, Elizabeth Kiely McGregor, David Kieran Metz, Nicholas Edward Murphy, Krishant Sarat Naidu, Michael Kok-Luen Ng, Paul Pui Yan Ng, Yok Leng Michelle Ng, Christine Ng Tang Fui, Binh Nguyen, Louise Mary O'Donnell, Anderson Teck Shern Ong, Ooi Hui Bing, Jason Ka-Wing Pak, Adam Nehemiah Plotnik, Kheman Rajkomar, Sharmila Ramessur, Cameron James

Roberts, Varuna Ruggoo, Janaka David Samaratunge, Shimon Scharf, Kelly Ann Seach, Ray-Mund Siau, Anthony Singh, Carol Elizabeth Stacey, Andrew James Stewardson, Yang Sun, Ket Sang Tai, Chin Guan Tan, Huang Min Tan, Kian Jin Tan, Tan Kwei Lin, Li Szu Tan, Tze Woei Tan, Poh-Kim Tang, Kim Siong Tew, Caroline Chun Mei Thng, Ken Yan Thong, Persis Hern-Yew Tiang, Ru Dee Ting, Robert Toma, Ben Tran, Hong Anh Tran, Ka Chun Tse, David Noel Vaughan, Ishwari Vidyasagar, David Francis Wardill, Kate Shannon Wick, Emilia Widjaja, Ruwan Wijemunige, Gidon Nathan Winter, Alex Wong Choon Hin, Gin Leong Wong, Olivia Win-En Wong, Si Mun Wong, Siew Fei Yap, Paul Andrew Yates, Joanne Yeo, Louisa Noh Yee Yim, Shi-Jynn Yong, Rebecca Young, Vivian Wai-Ling Yu, Hong Zhou

### **Bachelor of Medicine and Bachelor of Surgery with Honours (1997)**

Fiona Jane Bainbridge, Patrishia Bordbar, Kenny Wai-Chung Chan, Arun Chandu, Katherine Ya-Hui Chen, Zenia Yin Chow, Amy Ashton Crosthwaite, Eli Joseph Dabscheck, Mervyn Douglas Ferdinands, Melissa Rae Garbutt, Jonathan Rael Golshevsky, Victoria Jane Greenwood, Johnny Stuart Halliday, Saliya Sanjeeva Hewagama, Ingrid Ruth Horner, Jessica Anne Howell, Peter Shang-Yu Hsu, Raymond Tiong Chin Hu, Chatura Sanjith Jayasekera, Cameron Ian Knott, Remi Roch Kowalski, Sarah Chau-Nga Leung, Eu Jin Lim, Daniel William McKay, Genevieve Louise McKew, Fiona Louise Nelson, Gene-Siew Ngian, Trisha Nicole Peel, Yuliya Perchyonok, Ilana Prideaux, Cilla Jean Raby, Suchitra Rao, Yee Jen Tai, Wai Yin Tam, Andrew James Weickhardt, Fiona Kim Wilde, Beverley Huey Wern Woon, Christopher James Yates, Jaclyn Su-Lin Yoong

### **Bachelor of Medical Science (1967)**

Sarah Elizabeth Bowen, Martin Richard Elmes, Raviraj Aron Joshi, Sidney Matthew Levy

### COMBINED COURSES

### **Bachelor of Arts and Bachelor of Medicine and Bachelor of Surgery**

Joseph Samuel Doyle, Katharine Anne Gordon Squires, Evan James Symons, James McCracken Trauer, Benjamin Pak Kwong Wong

### **Bachelor of Arts and Bachelor of Medicine and Bachelor of Surgery with Honours**

Susan Emily Fox, Sameer Suhas Jatkar, Anna Lee-Yen Pang

### **Bachelor of Arts (Degree with Honours) and Bachelor of Medicine and Bachelor of Surgery**

Marcel David Zimmet (History)

### **Bachelor of Medicine and Bachelor of Surgery and Bachelor of Medical Science**

Peter Sebastian Azzopardi, Siddhartha Deb, Henoh Henrich Dolezal, David Andrew Kipp, Eugene Yu-Ping Lim, Ruth Margaret Little, Drew Slimmon, Darren Wai Pang So

### **Bachelor of Medicine and Bachelor of Surgery with Honours and Bachelor of Medical Science**

Bruce Charles Vivian Campbell, Elizabeth Frances Dapiran, George Kalogerakis, Jonathan Chun Hong Ng, Lloyd Antony Roberts

### **Bachelor of Medicine and Bachelor of Surgery and Bachelor of Science**

Carminia Uy Lapuz

### **Bachelor of Medicine and Bachelor of Surgery with Honours and Bachelor of Science**

Thomas William Barber

### **Bachelor of Medicine and Bachelor of Surgery and Bachelor of Medical Science and Bachelor of Science**

John Vincent Fitzgerald

### MASTERS DEGREES

### **Master of Surgery (1885)**

Oliver Cassell, Caroline Rainsford Dowling, Dragos George Iorgulescu

### **Master of Medicine (1983)**

Catherine Elizabeth Scarff, Joseph San Laureano

### *Clinical Neurosciences*

Shan Weng

### *Internal Medicine*

Vu The Hong, Bao Lin Kang, Arun Prakash Kumar

### *Paediatrics*

Phuong Thao Bui, Shinta Rama Tjandra

*Psychiatry*

Spiri Katsenos, Ian Henry Katz, Ajit Jeya Indrajit Selvendra

*Women's Health*

Chitrangani Sunethra Perera

**Master of Public Health (1999)**

Priya Sarah Cheeran Joseph

*Health Program Evaluation and Health Economics*

Elizabeth Birbilis, Melinda Anne Brown, Mark Edward Hennessy, Margaret Rumpf, Glenys Joy Sleeman, Gail Younie

*Epidemiology and Biostatistics*

Amanda Jean Handley, Michael Richard Le Grande, Meera Momtaz Sabeka, Jason Andrew Wasiaak

*Epidemiology*

Elizabeth Ellen Cooper, Adrian John Lowe, Leonard Sunil Piers, Alexandra Raulli

*Women's Health*

Mona Ismail

**Master of Clinical Audiology (2000)**

Felicity Delores Ash, Adrienne Louise Blechman, Benjamin Leigh Featherston, Hayley Jane Fiket, Bridget Clare Gale, Rafal Gawlowski, Rodney Maxwell Glance, Lois Margaret Grant, Dino Hodge, Jane Marie Kidman, Kamila Alexandra Krauze, Mansze Lai, Jaime Roanne Leigh, Pei-Chen Liu, Fred Victor Matta, Sarah Louise McCullough, Michelle Pasinati, Tania Elizabeth Sketcher, Campbell Dominic Stevens, Jessica Jane Vitkovic, Heidi Wai Chuen Wai, Erin Siobhan Winfield, Katie Dorothy Webby

**Master of Health Ethics (2001)**

Andrea Lynette McNally, Tara Alexandra Nipe, Jacqueline Bernadette Smith, Jeannie Sun-Young Yoo

**Master of Medical Anthropology (2002)**

Amos Jerome Hee

**Master of Women's Health (1996)**

Hiromi Ashikawa, Fiona Jane Colquhoun Sayers

**Master of Health Sciences (2000)***Child Health*

Allvena Noreen Khan

*Infant and Parent Mental Health*

Diana Russo, Robin Jean Wilson

## DOCTORATES

**Doctor of Medicine (1862)**

Mark Winter Ashton, Robert Yung Ming Chen, Damon Peter Eisen, Paul Richard Alan Froomes, Nicholas David Houseman, Madalena Ian-Pim Liu, Peter Scott Mackie, Elizabeth Clare Penington, Stuart Keith Roberts, Jennifer Ann Royle, Andrew Colin Francis Taylor, Susan Joan Weigall

*Paediatrics*

Gillian Michelle Nixon

**Doctor of Philosophy (1948)***Anatomy and Cell Biology*

George Alex, Anthony Argentaro, Lance Boyd-Clark, Sandra Dieni, Jhodie Rubina Duncan, Leanne Nicola Maria Godinho, Elisa Llewellyn Hill, Jensen Thomas Hjorth, Alan Lomax, Stephanie Joy Royal, Katarina Terezia Tisay

*Biochemistry and Molecular Biology*

Justin Leonard Cameron Bilszta, Mathew Paul Dixon, Nada Dobric, Gerard Mark Gibbs, Danny Martin Hatters, Chitladda Mahanivong, Claire Louise Mitchell, Kylie Anne Mullin, Matthew Anthony Perugini, Nicholas Andrew Williamson

*Medical Biology*

Deborah Lee Baldi, Jason Ross Coonan, David Anthony Elliott, Benjamin Thomas Kile, Nathan Ronald Martinez, Rodney Lee Rietze, Robert Charles Andrew Symons, Anthony Gerald Uren, Mark Edward Wickham

*Medicine*

Megan Elizabeth Baldwin, Maryam Bassirat, Lindus Anne Conlan, Hayat Dagher, Sandra Joy Feeney, Christine Teraze Filippis, Susan Leeanne Grant, Andrew Bruce Hammet, Michael Henry Jefford, Ian George Jennings, Mark Adrian King, Suwattanee Kooptiwut, Sweet Lin Leng, Kerrie-Ann McMahon, Labrini Nassis, Alvin Kee Jin Quah, John Risvanis, Aaron David Tabensky, Rachel Jean Thomas, The Maria Meiwati Widagdo, Amanda Kharmia Wiggins

*Microbiology and Immunology*

Brett David Aplin, Julianne Louise Cameron, Nenad Firez, Bradley Paul Gilbertson, Tracey Michelle Hinton, Fan Li, Sarah Louise Londrigan, Sen-Lin Tang, Simone Warner-Haddad, Jie Zhong

*Obstetrics and Gynaecology*

Martha Lappas, Mirjana Martic

*Ophthalmology*

Gabriella Tikellis

*Otolaryngology*

Joanna Ruth Parker

*Paediatrics*

Tom Van Agtmael, Katrina Jane Allen, Yvonne Ann Bonomo, Dianne Elizabeth Campbell, Heather Ruth Gilbertson, Maria Kamarinos, Kirsty Jane Reed, Kenneth John Millar

*Pathology*

Christopher James Bradley, Joanne Elizabeth Davis, Tom Karagiannis, Suzanne Jeanine Micallef, Simon Guy Royce, Amanda Hildegard Tammer, Katrina Vanin

*Pharmacology*

Elsa Ching Han Chan, Tamara Elianne Konopka, David Mcnaughton Smallwood

*Physiology*

Shannon Eleanor Campbell, Tanyth Emily De Gooyer, Christina Julia Moravski, Joseph Alexander Rathner, Pei Rong, Megan Louise Smart, Rebecca Lee Starkie, Evan Alexander Thomas

*Population Health*

Jane Elizabeth Pirkis

*Public Health*

Susan Rosemary Hemer

*Surgery*

Shiva Akbarzadeh, Melissa Julie Knight, Permyos Ruengsakulrach

## PRESENTATION OF THE SIR WILLIAM UPJOHN MEDAL

Richard Graeme Larkins AO

## DIPLOMAS GRANTED

**Graduate Diploma in Adolescent Health and Welfare**

Julie Craig Adamson, Margaret Brown Ash, Diane Helen Bradford, Karen Louise Brunskill, Mary Gerardine Clapham, Richard Douglas de Paiva, Stuart John Edwards, Danielle Louise Forer, Lesley Foster, Lorraine Mary Therese Fullinfaw, Nicholas Charles Garofalo, Catherine Ann Gatt, Kathryn Lucy Gibbs, Jennifer Godden, Marion Lorna Hadingham, Susan Jayne Harrap, Yolanda Hoo, Anna Maria Horgan, Allison Gai Hurley, Lesley Hyde, Kim Patricia Kavanagh, Mark Keen, Elspeth Mary Lamb, Janie Lee Lambert, Annetta Latham, Emily Danielle Lenton, Marlene McLoughlan,

Terri Aston McNeil, Belinda Kim Morton, Mariel Muyco, Anna Eileen Nikolaou, Anna Mary Sloane, Damian Peter Stone, Cathryn Marie Williams

### **Graduate Diploma in Audiological Science**

Allison Baker, Loretta Lee Brown, Warren Andrew D'Costa, Irene Douras, Julia Margaret Durham, Marie-Anne Fam, Lori Friedman, Miranda Hadjiconstanti, Amani Mounir Hanna, Judith Christine Harper, Jutta Alice Hau, Olivia Jane Hillenaar, Robyn Eliane Horner, Luke Andrejs Klunder, Gloria Siew Lin Lee, Hanny Listyowati, Jasmine Siu Chun Mar, David Andrew McAdam, Justine Suzanne Nedinis, Irma Saldic, Andrea Elizabeth Thomas, Elizabeth Jane Webster, Philip Martin Anthony Winfield

### **Graduate Diploma in Biotechnology**

Adrian Peter Wiegmans

### **Graduate Diploma in Drug Evaluation and Pharmaceutical Sciences**

Carleen Margaret Cullinane, Jingjing Liu, Cheng Ma, Tania Francesca Nardo, Lena White, Zhongyu Yuan, Cammy Yuen

### **Graduate Diploma in Epidemiology**

Peter Angus Macisaac

### **Graduate Diploma in Epidemiology and Biostatistics**

Narin Bak, Pamela Gai Deacon, Angela Margaret Hawkins, James Crowther

Hurley, Roman Kluger, Jonathan Charles Knott, Christopher Roderick Lawson, Anhchuong Le, Carolyn Anne Nelson, Barbara Jean Newell, Jennifer Lee Newstead, Thang Chien Nguyen, Gregory Mark Saville, Andrew Benjamin Stewart, Margarite Julia Vale, Nyima Yoezer, Helen Zogos

### **Graduate Diploma in Genetic Counselling**

Nikki Berlin, Matthew James Chapman, Rebecca Jessica D'Souza, Ella Louise Edwards, Janine Phyllis Furmedge, Rachel Anne Meadows, Michelle Seipolt, Belinda Ann Todd, Jane Wallace, Jonathan Scott Whitty

### **Graduate Diploma in Health Ethics**

Madonna May Grehan

### **Graduate Diploma in Mental Health Sciences**

Patricia Caroline O'Leary

*Child, Adolescent and Family Mental Health*  
Heather Moyle, Vicki Sarikoudis, Denise Elizabeth Stranger, Shannon Lee Thompson, Jemma Elizabeth Van Loenen

*Clinical Hypnosis*

Aliye Akarsu-Atakan, Petrina Louise Barson, Manuel Boultradakis, Vanessa Amelia Bulic, Coral Dawn DeBoo, Angeline Maree Landry, Susan Lyn Miller, Roslyn Joyce West

*Cognitive Behavioural Therapy*

Susan Anne Hayden, Barbara Anne

Hindson, Roslyn Joy Rogers, Poppy Sarantakos

*Community Mental Health*

Raymond Edward Meyers

*Infant and Parent Mental Health*

Kerry Joan Connolly, Mary Therese Fontana, Lindy Henry, Leah Therese Jenkinson, Elizabeth Anne Mann, Kay Joan McWilliam, Michael Menton, Jeanette Faye Webb, Susan Ann Williams

*Young People's Mental Health*

Kathryn Louise Allen, Kelly Anne Johnstone, Lara Jorgacevic, Melanie Jayne Mossman, Sarah Kirsten Povey, Gary Arthur Sawle, Bobbi-Jo Sawyer, Justin Newton Scanlan, Mark Andrew Smith, Janet Louisa Mary Theobald, Denise Lea Warmington, Caroline Yeaman

### **Postgraduate Diploma in Palliative Medicine**

Annabel Jane Dunn, Evelyn Amy Harding, Simon Toby Horne, Jenny Louise Hynson, Megan Bernice Sands, Lorraine Scragg, Peter Michael Sherwen

### **Graduate Diploma in Psycho-Oncology**

Michael Frederick Back

### **Graduate Diploma in Women's Health**

Alison Jeanette Lloyd, Kerrith Michelle Peake

## School of Medicine Undergraduate Prizes and Awards 2002

### **FINAL YEAR**

*The Alfred Edward Rowden White Prize in Clinical Obstetrics*

Sameer Jatkar

*AOA (Vic) Orthopaedic Prize*

Genevieve McKew

*Australian Medical Association Prize*

Andrew Weickhardt

*Beaney Scholarship in Surgery*

Andrew Weickhardt

*Clara Myers Prize in Surgical Paediatrics*

Bruce Campbell

*Edgar and Mabel Coles Prize in Obstetrics*

Wai Yin Tam

*EH Embley Prize in Anaesthetics*

Jonathan Rael Golshevsky

*Howard E Williams Prize in Paediatrics*

Amy Crosthwaite

*Jamieson Prize in Clinical Medicine*

Jessica Howell

*John Cade Memorial Medal in Clinical Psychiatry*

Patrischia Bordbar

*Keith Levi Memorial Scholarship in Medicine*

Fiona Nelson

Yee Jen Tai

*The Pharmacia Award in Clinical Pharmacology and Therapeutics*

Fiona Nelson

Yee Jen Tai

*Prize in Clinical Gynaecology*

Jonathan Golshevsky

*Proxime Accessit Prize in Surgery*

Johnny Halliday

Bruce Campbell

*RACGP Prize in Community Medicine*

Patrischia Bordbar

*Robert Gartly Healy Prize in Medicine*

Andrew Weickhardt

*Robert Gartly Healy Prize in Surgery*

Andrew Weickhardt

*Robert Gartly Healy Prize in Obstetrics*

Amy Crosthwaite

*Rowden-White Prize*

Andrew Weickhardt

*Sir Albert Coates Prize in Infectious Diseases*  
Fiona Bainbridge

**FIFTH YEAR**

*Child Growth & Development Study Prize in Paediatrics*

Paul Paddle

*Crawford Mollison Prize in Forensic Medicine*

Gaurie Palnitkar

*Fulton Scholarship in Obstetrics & Gynaecology*

Shalini Amukotuwa

*General Practice & Community Medicine Prize*

Arthur Nasir

*Ian Johnston Prize in Reproductive Medicine/Biology*

Alexander Incani

*John Adey Prize in Psychiatry*

Shalini Amukotuwa

*Kate Campbell Prize in Neonatal Paediatrics*

Danielle Freeman

*Max Kohane Prize*

Ada Sau-Zhuen Cheung

*Vernon Collins Prize in Paediatrics*

Laurel Bennett

Danielle Freeman

*RCH Paediatrics Handbook Award*

Danielle Freeman

Karen Robins-Browne

**PRIZES FOR YEARS 1—4**

The conditions under which prizes were originally awarded have changed under the new curriculum. The School of Medicine and University of Melbourne solicitors are still working on legislative changes to ensure that the original intentions underlying the prizes are maintained. Announcements of prizes awarded under the new curriculum will be made as soon as possible.

**Dean's Honours List 2002****SEMESTERS ONE AND TWO**

Christopher George Briggs

Britt Christensen

Jonathan Epstein

Jonathan Gardner Evans

Mervyn Kyi

Matthew James Lin

David Liu

Elissa Claire McNamara

Allison Gwun-Yee Mo

Katherine Moors

Luke Royden Robinson

Hao-Wen Sim

Christine Anne Wools

Siew Swan Yeong

**SEMESTERS THREE AND FOUR**

Marian Abouzeid

Katherine Anne Buzzard

Shimin Jasmine Chung

Robert James Commons

Marissa Grace Daniels

Eric Soon Yi Ee

Nina Jane Fisher

Rominder Singh Grover

Matthew Kok-Hao Hong

Michael Kok-Yee Hong

Li-Sen Sandra Neoh

Anne Trinh

Rory Charles Walsh

Harrison Scott Weisinger

Bernadette Jane White

**SEMESTER FIVE**

Victoria Anne Alguera-Lara

Caroline Czarnecki

Andrew Ginn Ming Hardley

Andrew James Harrison

Prahlad Wei Soon Ho

Joseph Isac

Christabel Kelly

Katherine Anne Lowe

Nathan Wayne Manning

Om Narayan

Ching Hui Ng

Anita Lee Pogorzelski

Sally Michelle Riches

Anna Gabriella Takacs

Stephanie Pooi Yiin Tang

Katherine Janette Wilson

**SEMESTERS SIX AND SEVEN**

In the new medical curriculum these semesters make up the July—June year during which students undertake their Advanced Medical Science research year. A system for awarding Dean's Honours for this year is being finalised.

**SEMESTERS EIGHT AND NINE**

For the first cohort of students in the new medical curriculum, semesters eight and nine will end at the end of June 2003. Dean's Honours for those students will be awarded after that date.

**FIFTH YEAR**

Shalini Amukotuwa

Laurel Bennett

Andris Ellims

Danielle Freeman

Michael Gilbertson

Madeleine Healy

Alexander Incani

Kathleen McCloskey

Naseem Mirbagheri

Meena Mittal

Arthur Nasir

Paul Paddle

Tomas Walters

**FINAL YEAR**

Bruce Campbell

Victoria Greenwood

Johathan Golshevsky

Johnny Halliday

Jessica Howell

Fiona Nelson

Anna Pang

Lloyd Roberts

Yee Jen Tai

Andrew Weickhardt

## Final Year Top Student 2002



ANDREW WEICKHARDT

AT THE BEGINNING of 2003 Dr Andrew Weickhardt began his postgraduate medical career as an intern at the Royal Melbourne Hospital (RMH) with the world at his feet. In 2002 Andrew achieved the rare feat of being the top student in both surgery and medicine. If this was not enough, his equally stellar undergraduate record prior to final year resulted in him achieving the highest aggregate for the MB BS course overall. For his efforts he was awarded the

Australian Medical Association Prize, the Rowden-White Prize, the Robert Gartly Healy Prize in Medicine and Surgery, and the Beany Scholarship in Surgery.

Andrew is described by his friends as 'focused' but also well able to 'let his hair down'. During the early years of his course Andrew was a resident of Queen's College and its student president during his third year of medicine. Despite his significant college-based extra-curricular activities he remained on the Dean's Honours List during these years.

Andrew took the year off prior to his final year of medicine, starting with an elective medical placement in Kenya and then moving to the United Kingdom for several months. He worked, among other places, in a bolt factory and then travelled in Europe with his girlfriend, who is a speech pathologist.

Andrew particularly enjoyed his clinical years at the Royal Melbourne Hospital/Western Hospital Clinical School and this is why he has chosen to remain at the RMH for his internship. He enjoys golf and tennis, but says he struggles to maintain aerobic fitness. He has had a long-term interest in travel, which he intends to continue, fuelled by an intern's wage. At this early stage Andrew is unsure where his medical career will take him, with an equal interest in surgery and medicine. I have no doubt that whatever he chooses he will continue his record of high achievement. Well done, Andrew.

*Geoff McColl, Clinical Dean, RMH/WH Clinical School*

## UMMS ADVANCED MEDICAL SCIENCE PRIZE 2002

*The UMMS Advanced Medical Science Prize, formerly the BMedSc Prize, was renamed in 2002 to reflect changes in the medical curriculum. Two prizes of \$500 each are awarded to the winning students. The prize is supported by donations made by UMMS members.*

THE STANDARD OF the better AMS reports bears witness to the outstanding efforts, intellectual integrity and quality of students in the University of Melbourne medical course. Supervisors, markers and faculty staff have been deeply heartened to see the extraordinary quality of research work undertaken by our AMS students. Many of these reports deserve publication and would easily stand amongst the best of published manuscripts in reputable journals.

In determining the prizes, the overall AMS mark and the actual mark for the report was considered. These scores differed by fractions of a mark for the top candidates, however, fewer candidates scored in the top band in both categories. Those who did were further examined for the overall quality of their report. The clear winner was Katie Hogg, with a superlative report in every respect. Although not a factor in determining this prize, her project was also of global significance. Determining second place was more difficult, however, Eunice Chan's report had the highest quality throughout. Well done to both students. To those who were close behind, I wish we had several prizes to award.

The first group is the start of what we hope will be a long tradition of quality. I often receive emails attesting to the quality of our students, such as a recent one from a Harvard paediatrician, stating that his AMS student had independently solved a problem in the data analysis that no-one else had been able to. My congratulations to all who have put in a great year's effort and who have seen their work be of value to others.

*Associate Professor Stephen Farish, AMS Co-ordinator*

## Acute Flaccid Paralysis (AFP) Surveillance in Hunan Province, The People's Republic of China, 1996—2001

*Vaccine Derived Poliovirus: Was it circulating and how certain can we be? Including an assessment of: The AFP Surveillance System, Characteristics and Rate of Vaccine Associated Paralytic Poliomyelitis (VAPP), and Molecular Biology of Polioviruses Isolated from AFP and VAPP cases.*

BY KATHARINE HOGG

DATA FROM THE Hunan Province AFP surveillance database was reviewed to assess surveillance sensitivity and completeness, characterise AFP and the subgroup of possible VAPP cases, and seek epidemiological evidence consistent with circulating vaccine derived poliovirus (cVDPV). Seroprevalence data from three studies was analysed to quantitate population immunity and thus susceptibility to cVDPV. Poliovirus isolates from AFP cases were tested with up to three intratypic differentiation techniques to identify divergent strains which may be cVDPV. Sequencing data from selected cases was used to assess the prevalence of mutations and recombination which may contribute the neurovirulence of isolates and which may play a role in the establishment of cVDPV. The duration of virus replication between vaccine feeding and virus isolation was also estimated from sequencing data.

The surveillance system met all WHO's criteria for effective surveillance. A negative or incomplete polio vaccination history, first dose of OPV within thirty-five days, isolation of type 1, 2, or 3 poliovirus or monotypic type 1, 2, or 3 only, age less than four years, and hospitalisation all differed significantly between possible VAPP and non-VAPP AFP cases. A higher rate of virus isolation was observed in a number of provinces. Type 2 viruses were isolated significantly more often than either type 1 or 3, these more likely to be monotypic and more likely to come from zero dose children. Seroprevalence studies showed a high level of immunity to poliovirus at a titre of 1:8. Intratypic differentiation showed all but one isolate to be Sabin-like. Sixty-seven per cent

of type 2 isolates were recombinant. No recombination was observed in type 1 or 3 isolates. No differences were observed in recombination rate in isolates from possible VAPP or non-VAPP cases. A known type 2 neurovirulence determinant was observed in eighty-eight per cent of isolates sequenced, however, this was found equally in possible VAPP and non-VAPP isolates. A known type 1 neurovirulence was observed in one isolate from a possible VAPP case with a history of recent vaccination. No other known neurovirulence determinants were observed. Sequenced isolates showed little evidence of replication and were thus estimated to be under two months in all cases.

Vaccine derived poliovirus was not circulating in Hunan Province and therefore did not cause disease. This can be asserted with a high degree of certainty due to the breadth of data assessed, the quality of this data and the surveillance systems that produced it. A high isolation rate of non-identical monotypic type 2 polioviruses from children with a history of no or partial immunisation, possibly causative of disease, requires further investigation.

### What is the Treatment Integrity of Family Focused Grief Therapy? A randomised-controlled trial with families in palliative care

(Family Focused Grief Therapy—an intervention used in 'Preventative Psychosocial Treatment of At-Risk Families in Palliative Care and Bereavement')

BY EUNICE CHAN

**A**SSessment of Treatment integrity is a formal process that studies the compliance and delivery of a defined and manualised intervention. It has an important role in giving validity to psychotherapy outcome research, especially those aiming to evaluate the efficacy of new psychotherapy protocols.

The aim was to evaluate the treatment integrity of Family Focused Grief Therapy (FFGT) in the study, a randomised-controlled trial (RCT) where FFGT was used as an intervention (treatment) and compared against routine care only (control).

A FFGT-specific treatment integrity coding manual and three accompanying coding sheets, all based on the FFGT manual, were developed and used to assess the psychotherapy implemented in 109 therapy sessions from twenty-eight randomly selected families who were treated in the RCT. Thirty per cent of this sample was assessed by a second rater to review the reliability of coding.

The model of FFGT was well applied in the wider RCT. More than adequate interrater reliability was established and high treatment integrity was demonstrated across phases of therapy, families and therapists. In addition, suggestions for future refinement and implementation of FFGT were provided.

#### UMMS Office

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## 2003 REUNIONS

### 63rd year of 1940

17 November  
The Melbourne Club  
John Bignell  
(+61 3) 9817 2268 (ah)

### 61st year of 1942

1 June  
John Tucker  
(+61 3) 5254 1490 (ah)

### 60th year of 1943

12 March  
William Swaney  
(+61 3) 9822 7039 (ah)

### 55th year of 1948

mid October (tbc)  
Graham Cooper  
(+61 3) 9822 5206 (ah)

### 50th year of 1953

14 November  
John Webb  
(+61 3) 9419 6911 (bh)

### 42nd year of 1961

14 March  
Jim Stockigt  
(+61 3) 9592 4568 (bh)

### 35th year of 1968

25 October  
Sally Norton  
0419 001 970 (mobile)

### 30th year of 1973

22 November  
Queens Hall, Parliament  
House (pm)  
Sunderland Lecture  
Theatre (am)  
Hamish Ewing  
(+61 3) 8405 8723 (bh)

### 20th year of 1983

22 March  
Annette Steel  
(+61 3) 5250 1208 (bh)

### 13th year of 1990

late 2003 (tbc)  
Mandy Favilla  
(+61 3) 9836 0027 (ah)

### 10th year of 1993

date tbc  
Kathy Yu  
0417 381 144 (mobile)

#### Medical Graduate Reunion Assistance

The University of Melbourne Medical Society office can assist with reunions. We can: list reunion details in *Chiron* and in *The Melbourne PostCard*; obtain on your behalf a list of graduates from your year group plus mailing labels; advise on possible university venues for your reunion. Contact the UMMS office for details.

#### UNIVERSITY OF MELBOURNE MEDICAL SOCIETY (UMMS) MEMBERSHIP

The University of Melbourne Medical Society was founded in 1982 to promote communication between graduates and the School of Medicine. UMMS also promotes excellence in medical education and research, and raises funds to support initiatives within the school. It provides a means for medical graduates to stay in touch with former classmates and opportunities for active links with the School of Medicine and the university. Members are kept informed about the medical school and fellow graduates through *Chiron* and *The Melbourne PostCard*, and receive advance invitations to: the Dean's Lecture Series; the ethics seminar; the society's annual lecture and function; and reunions of their graduate year.

The School of Medicine has developed important teaching and learning initiatives to maintain the high quality and value of its medical degrees. UMMS members have opportunities to support such initiatives in medical education and research, medical student financial aid and student prizes. Membership is free and renewable annually.

Contact the UMMS office for details.

## MB BS 1933

### Sixty-Nine Years Reunion

*From Spot Turnbull*—The sixty-ninth anniversary of the 1933 medical graduates was celebrated by Dorothy Sinclair (Gepp) and myself at Dorothy's apartment on 18 September 2002. As Lorna Lloyd-Green had died in June we were the only graduates residing in Melbourne.

Of the 119 students who commenced the medical course in 1928, only fifty-eight graduated in 1933. At the time of our reunion there were six alive: Frank Ebell and Ken Starke in Perth, Bill Holdsworth in England, Cam Duncan in Horsham, and Dorothy and myself in Melbourne.

We toasted our colleagues and hoped we would be present for our seventieth anniversary in 2003.

## MB BS 1937

### Sixty-Five Years Reunion

*From Jim Peters*—The reunion to mark the sixty-fifth year since our graduation was held at the Naval and Military Club on 31 May 2002. Six graduates attended: Clarinda Abrahams (Jelbart), Victor Brand, Cyrus Jones, Mark O'Brien, Lena Thomas (Drake) and Jim Peters were joined by family members to enjoy a very pleasant luncheon in the John Collins Room. Of the sixty-eight names on the list of graduates provided by the university, fourteen are still living and all but one were able to be contacted. Apologies and good wishes were received from Kiernan Dorney and David Jackson (Qld), Donald Oldmeadow (Perth) and Maurice Morris (Melbourne). We were delighted to receive a letter from Professor Richard Larkins (dean of the faculty) in which he sent warmest congratulations and best wishes for this milestone reunion.

## MB BS 1947

### Fifty-Five Years Reunion

*From Ross Webster*—Twenty-three graduates attended this lunchtime reunion at the Melbourne Club on 12 October 2002. Some travelled from as far as Queensland, New South Wales and Western Australia to be with us. We received nineteen apologies.

It was a pleasant spring day and the reunion began with pre-lunch drinks in the idyllic setting of the famous garden. We all contributed to the reminiscences after lunch.

Partners were invited to join the reunion for the first time, despite resistance from some graduates. Happily, their presence was a highlight of the occasion.

## MB BS 1952

### Fifty Years Reunion



MB BS 1952 GRADUATES AT THEIR FIFTY YEARS REUNION

*From Hugh Hadley*—On Saturday 9 November 2002, medical graduates of 1952 celebrated their golden jubilee with a dinner at the Australian Club. This was followed the next day by a barbecue for graduates, their partners and friends.

Of the 184 who graduated in 1952 about fifty-eight have died and we have lost contact with some others. There were eighty-five graduates at the dinner, Fred Hocking and Lorna Murfitt not being well enough to attend.

The reunion was attended by: John Aberdeen, John Anchen, Jack Armour, Dot Bailhache, Neil Barter, George Bearham, Ron Benson, John Booth, Clive Bowman, Ken Brearley, Neil Buckmaster, Len Champness, Dick Chenoweth, Dick Colahan, Alastair Cole, Kayo Coltman, Shirley Coombes, Graham Corbett, Alex Davis, John Dodgshun, Brendan Dooley, Abe Dorevitch, Barry Drake, Nan Ferguson, Ernie Finkelstein, David Fone, Peter Forsell, Maurice Gilfedder, John Gorman, Keith Grabau, Peter Graham, David Grounds, Hugh Hadley, Bill Hardy, Ross Jagger, Max Kent, Lindsey Knight, Serge Kunstler, Neville Lamb, Margaret Lawrence, John Learmonth, John Leeton, Alf Liebhold, Oscar Lipson, Scotty Macleish, Alan Marshall, Ken McColl, Laurie McInnes, David McIntosh, Jim McKay, John McKenna, June McKeogh, Alan McPhate, Geoff Miles, John Morris, John North, Denis O'Brien, Colin Officer, Bill Orchard, Kevin Owen, Ted Palmer, Harry Pannifex, Peter Pearce, Bill Prott, Graham Raad, John Riddell, Ian Robertson, Patti Rogers, Clyde Scaife, Max Shavitsky, Leg Sloan, Rod Sutherland, Ian Swain, Bill Taylor, Kath Taylor, Ian Thomas, Morrie Thwaites, Raoul Tunbridge, Ken Twiddy, Peter Tynan, Vern Vivian, Ben Wadham, Bob Weate, John Wiseman, Neville York.

## MB BS 1962

### Forty Years Reunion



MB BS 1962 GRADUATES AT THEIR FORTY YEARS REUNION.  
STANDING L-R: ANDY BURGESS, GEORGE SANTORO, SAM SLUTSKI, ALLAN EBRINGER  
AND IAN RECHTMAN. SEATED L-R: MARY SCHRAMM, ELIZABETH SHAW  
AND SYLVIA TOPOR

*From George Santoro*—On Friday 22 March 2002, the forty years reunion of the 1962 graduates was held at the Atheneum Club. Some eighty people attended, including overseas members: Elizabeth Shaw, Brian Roet and Allan Ebringer from the UK, Andy Burgess and Peter Pletka from the USA, Sam Slutski from Israel, Mary Schramm from Fiji and Sylvia Topor from Hawaii. It

was a most enjoyable evening with excellent food and wines, both enjoyed in moderation due to this crowd's increasing age! There was no guest speaker and the night was informal. A montage of photos from past reunions showed us all looking much younger. The evening started at 6.30pm and it was difficult to move everyone on by 11pm.

The organising committee was Ian Rechtmann, Jack Leder, Bob Dickens, Mary Dwyer and George Santoro, but without Ian's enthusiasm the reunion would not have been so successful.

On Sunday 24 March the reunion continued, this time with partners, at the ANZ College of Anaesthetists, a beautiful Victorian building with very impressive extensions. We were pleased to see Gwynne Duigan attend on Sunday and all wish her well in her retirement—a lifestyle change many of us are contemplating.

Sadly, Jenny Paton (Mills) died in 2001. We missed her infectious happiness and laughter (see *Chiron* Vol 4, No 5, 2002).

If anyone reads this *Chiron* article would they be kind enough to pass it on to a 1962 graduate who did not attend so they can see what they missed and swell our ranks for 2007. I look forward to assisting with that meeting.

## MB BS 1967

### Thirty-five Years Reunion

*From Trevor Jones*—The thirty-fifth anniversary of the 1967 medical school graduation was celebrated with a dinner at University House on 18 October 2002.

The dinner was very well attended and a number of international and interstate attendees were present.

In attendance were: Kathy Anderson, Gordon Arthur, Ian Barker, David Barraclough, John Bartlett, John Brennan, Robert Burton, Don Campbell, Anton Cavka, Kevin Collins, Ed Darby, Barry Dawson, Peter Dobson, John Duggan, Robin Dunne, Keith Elsner, Dick Fletcher, Patsie Fox, Pam Fradkin, Kingsley Gee, Dawn Giltinan, Miron Goldwasser, Phil Harris, John Higginbotham,

David Jenner, Trevor Jones, Victor Kelman, Barbara Knothe, Ray Lanteri, Mark Lazarus, Steve Leittl, Kin Liu, Katie Lubbe, Margaret Lush, Rosemary McConchy, Andrew McLeish, Jack McLeish, Jack Mackey, Philip Mein, Mary Meldrum, Jenny Mills, Wayne Morrison, Heather Munro, Elizabeth Nash (Almond), Elizabeth Nash, John Nettleton, Richard Ng, David Ogilvy, Brian Pyman, Gail Pyman, Sandra Ray, Maya Rinks, Jim Rowe, Les Sedal, Elizabeth Smibert, Margaret Smithers, Peter Stanley, John Sullivan, Victor Syrmis, Andrew Tonkin, Brian Tress, John Vance, Dominic Vella, Robert Webb, Simon Williams, Diane Wilson.

## MB BS 1972

### Thirty Years Reunion

*From Doris Young and James Best*—'Back to the Medical School' was the theme that attracted graduates of 1972 to attend the celebration of the thirtieth anniversary of our graduation. We gathered over coffee in the foyer of the tripartite building we had first entered as second years in 1968, the year of its completion. The trees outside had grown 'from acorns to oaks' and we had changed too! We were now old enough to have children who had completed their own MB BS and some of us were now grandparents.

The organising committee—Jim Butler, Geoff Donnan, Chris Buckley, Lachie DeCrespigny—and their generous spouses, thought graduates would be interested to hear how the curriculum, the teachers and the students have changed over the past thirty years. So we reminisced about that famous lecture by Keith ('Red') Russell on the humerus and were treated to a display of an@tomedia by our own Norm Eizenberg (reclaimed



LES RETI, CARL BLECHER, LEON MASSAGE AT THE  
1972 GRADUATES REUNION

happily from the class of 1973). In a series of less spectacular powerpoint presentations Doris Young, Wilma Beswick, Eleanor Flynn, Jim Best and Peter Deutschmann told us about the new MB BS curriculum with its problem-based, self-directed learning approach and gave us an international viewpoint that is essential now that overseas students make up twenty-five per cent of each class. Many commented how much our year has contributed to development of the new course.

For those who wanted to re-live more fully our past experiences, there was a tour of the medical school building, including the dissection room with its unmistakable formalin scent. The tour was conducted by students in the new MB BS course, some of whom had a parent amongst the class of 1972. Then a stroll down Professors' Walk to the great environment of University House for a drink and lunch, accompanied by a very topical presentation on stem cell

research by Alan Trounson. Many of us had not seen each other since our twenty-year reunion so there was a lot to catch up on, with careers now peaked and many nests empty.

The evening program was also a highlight, held at Wharf 8, the new function area at the Docklands. On a warm evening the Yarra River and the city lights made a very romantic scene (partners had now joined us) for us to enjoy a truly superb meal. There was no live band, only pleasant background music for those with twinkle toes and scanned photos of our past were flashed up on a big screen making us laugh at our hairdos and 1960s fashions. The now politically incorrect 'Miss Med' competition lineup was featured, as were the all-white outfits we had worn on our

rotation to the Royal Women's Hospital.

Over the course of the day and night, there was still not enough time to catch up with everyone. While there was a very good attendance from our graduating class of over 200, many were unable to or chose not to attend. On the other hand some of us, such as Julian Pribaz, had come from as far as Boston to celebrate this significant milestone in our professional lives. Our next reunion is likely to be on the fortieth anniversary of graduation—many of us will be retired or winding down significantly. Our thanks and congratulations go to the organising committee for a wonderful day and good health and happiness to the class of 1972 until next we meet.

## THE UNIVERSITY OF MELBOURNE MEDICAL SOCIETY CONGRATULATES...

*Dr James Beeson* who was awarded the University of Melbourne Chancellor's Prize for excellence for his 2001 PhD thesis researching malaria infection in pregnancy.

*Professor Sam Berkovic (MB BS 1977, BMedSc 1977, MD 1985), Director, Epilepsy Research Institute and Deputy Head, Department of Medicine, ARMC* who has won, with his team, the 2002 GlaxoSmithKline Australia Award for Research Excellence.

*Professor Suzanne Cory (Director of the Walter and Eliza Hall Institute of Medical Research)* who was awarded the prestigious Royal Medal of the Royal Society in recognition of her distinguished work on the molecular basis of cancer. Professor Cory is the first Australian woman to be awarded the Royal Medal and the sixth Australian in the history of the medal.

*Professor Lorraine Dennerstein (MB BS 1970, GDip 1981, Director of the University of Melbourne's Office for Gender and Health)* who was awarded the 2002 North American Menopause Society's Pfizer Perimenopause Research Award for her contribution to understanding the effects of the natural menopause transition through her leadership of the Melbourne Women's Midlife Health Project.

*Dr Robyn Guymer (MB BS 1984, PhD 1991, Royal Victorian Eye and Ear Hospital)* who won the AMGEN Medical Researcher Award for 2002.

*Associate Professor Ego Seeman* who was awarded The Frederick C Bartter Award by the American Society for Mineral Research in recognition of his outstanding clinical investigations into disorders of bone and mineral metabolism and lifelong research into osteoporosis.

*Professor Colin Masters (Head, Department of Pathology and the Mental Health Research Institute of Victoria)* who was awarded the 2002 Mayne Florey Medal by the Australian Institute of Political Science in recognition of his research into the cause of Alzheimer's disease and other brain diseases of the elderly.

### Officers of the Order of Australia (AO)

*Professor Richard Larkins (MB BS 1966, MD 1975, Dean of the Faculty of Medicine, Dentistry and Health Sciences)*—for service to medicine and health as an advocate for increased investment in research, as a contributor to health policy reform, and as an initiator of innovative medical programs and the provision of training opportunities for medical officers in the Oceania region.

*Dr Margaret Redpath (MB BS 1964)*—for service to the community in the initiation and establishment of palliative care services in Australia, as an educator in the field of professional practice, and as an advocate for improved services.

### Members of the Order of Australia (AM)

*Professor Alan Coates (MB BS 1966, MD 1973)*—for service to medicine in the field of oncology, particularly through breast cancer research.

*Emeritus Professor John McLeod Hunn (MB BS 1951)*—for service to medicine, particularly in developing the burns treatment unit at the Royal Hobart Hospital, to medical education and to the community.

*Emeritus Professor James (Jim) Sutherland Lawson (MB BS 1958, MD 1968)*—for service to medical administration and to the community, particularly through programs aimed at health improvement.

*Dr John Leeton (MB BS 1952, MGO 1971)*—for service to medicine, to the development of women's health, family planning and IVF services, and through ethical and regulatory debate in relation to assisted reproductive technology.

*Dr Merrilyn Leila Murnane (MB BS 1960)*—for service to paediatrics, particularly in the areas of care and protection of abused children and youth.

*Dr Paul Nisselle (MB BS 1968)*—for service to medicine and the medical profession through contributions to a range of government and professional organisations, and to the community through youth welfare and cultural groups.

*Dr Maxwell James Robinson (MB BS 1949, MD 1954)*—for service to medicine through the practice and teaching of paediatrics.

### Medals of the Order of Australia (OAM)

*Dr Trevor Albert Banks (MB BS 1957)*—for service to medicine and to the community, particularly in the field of palliative care.

*Dr William Elliott Gillies (GDip Ophthal 1954)*—for service to ophthalmology, particularly through the study of glaucoma and strabismus.

*Mr Justin Henry Kelly (MB BS 1959)*—for service to medicine as a paediatric surgeon.

*Dr Ian Robinson (MB BS 1955)*—for service to the community of Beenleigh as a general practitioner.

*Dr John William Upjohn (MB BS 1953)*—for services as brigade medical officer for the Metropolitan Fire and Emergency Services Board.

### Ambulance Service Medal (ASM)

*Dr Mark Christopher Fitzgerald (MB BS 1981)*—Mark Fitzgerald is the Director of the Emergency and Trauma Centre at the Alfred Hospital.

## Frank Rex Betheras ED

MB BS 1957 (ADEL), DDU 1990, FRCOG (ENG),  
FRANZCOG

1933–2002

**R**EX BETHERAS ACHIEVED a distinguished career as a specialist in the care of the newborn, and in neonatal ultrasound.

When Rex was deciding the direction of his life's work, he was torn between medicine, the army and the land. He chose medicine and, with his interest in neonatal paediatrics, sought appointment as a resident at the Royal Women's Hospital, Melbourne.

The Women's always remained central to Rex's professional life, and he was greatly honoured to have been awarded the Woodward Family Medal by the hospital in 2002.

After completing training in Melbourne and overseas, Rex was appointed honorary paediatrician at the Women's in 1966, and served on the paediatric staff for thirty-six years. He set the highest standards in the clinical care of his patients and their families, but was also outstanding in several innovative ways.

First, with his combination of obstetric and paediatric skills, Rex pioneered the technique of foetoscopy, which allows antenatal diagnosis of thalassaemia. This contributed to the setting up of the Thalassaemia Clinic which has served thousands of families, particularly immigrant families who carry this genetic disorder.

Secondly, from 1984 to 1995, Rex was director of the division of paediatrics. With experience as a clinician, and military administrative training, he ran a disciplined and forward-thinking department. During this time, the unit at the Royal Women's Hospital became one of the leaders in Australia. One of the most significant initiatives was the proposal for the creation of a professor/director of neonatal medicine, the details of which Rex drafted.

This position came to fruition shortly after he handed over as director, and the unit at the RWH has become the leading neonatal research department in the country—indeed, in the southern hemisphere.

Another initiative was the development of a plan for a modernised neonatal unit—again, finally drafted by Rex with every detail and every square metre carefully calculated.

The Victorian Government has promised to rebuild the Royal Women's Hospital, so planning for the new facility is in progress. Despite it being ten years since he made his designs, the fundamentals are all there, and Rex's work provides the blueprint for the future of neonatal care for babies in Victoria.

Relatively late in his career, Rex had the vision and application to develop ultrasonology in the neonatal unit. He had a unique and comprehensive experience in neonatal ultrasound, and his published papers on this subject are quoted internationally.

He trained many young neonatologists in neonatal ultrasound techniques, and these specialists are practising nationwide as well as in New Zealand and Britain.

In addition to his work at the Women's, Rex had a very busy private practice, visiting maternity hospitals all over Melbourne.

He was the first paediatrician at Essendon and District Memorial Hospital, serving on its medical advisory committee and helping to develop the neonatal service. He likewise served on the medical advisory committee of St Andrew's Hospital, and was consultant paediatrician at St Vincent's Hospital for many years. Rex served on the consultative council on maternal and perinatal mortality, and was a member of the group that planned and lobbied for the establishment of a statewide, neonatal transport service. The Newborn Emergency Transport Service was established in 1976, and has become one of the largest and most respected of such organisations in the world.

Rex Betheras was born in Melbourne, where he completed his secondary education at Wesley College.

He studied medicine at Adelaide University. His service in the Adelaide University Regiment enabled him to begin a parallel,



REX BETHERAS

part-time career in the army. He thoroughly enjoyed both.

While a resident at the Women's, Rex met and married a colleague, Gytha Wade. They had very different career paths, but shared a great love of and commitment to family. They valued the time spent with their children, Ian and Trish.

There were greater opportunities for enjoying a variety of activities together when Rex bought a farm—which completed the trio of choices that he had considered as a young man.

Rex took great pleasure in sharing his many interests,

including modern technology, conservation and the environment, books, music and ballet, with family and friends. A man of many qualities, Rex Betheras was a very worthy leader, an enthusiastic teacher, a wise counsellor and a skilled and compassionate doctor to thousands of babies and their families.

*Neil Roy, Director (Medical), Neonatal Services, Royal Women's Hospital, friend and colleague, and Gytha Betheras*

*Based on an obituary published in The Age, 4 March 2002*

*Reproduced with permission*

## David Crosby Cowling ED

MB BS 1943, MD 1950, FRACP,  
FRCPA, FRCPATH (ENG), MASM

1920—2002

**D**AVID COWLING WAS born in Leeds on 5 November 1920 and arrived with his family in Melbourne in 1927, when his father was appointed to the chair of English language and literature in this university. He entered the medical school in 1938 while still a resident of 'Professors' Row'.

David joined the ranks of the Melbourne University Rifles and had achieved the rank of corporal by the onset of the Second World War. After graduating from the shortened medical course he was appointed junior RMO at Royal Melbourne Hospital (RMH). A couple of country locums followed at the behest of the medical manpower directorate prior to the start of his war service, first with the 1 Armoured Brigade and then with the 14th Field Regiment. Volunteering for service with the British Borneo Civilian Affairs Unit, he took part in the Labuan landings where he established a beach-head hospital. Posted to Heidelberg Military Hospital in December 1945 and demobilised a year later, David undertook a refresher course at RMH prior to his appointment as RMO at the old Children's Hospital, where he met Dr Nancy McNeil, whom he married in September 1948.

David's entrée into clinical pathology was in July 1949 as Dr Hilda Gardner's assistant at RMH. The following year he acted as relieving clinical supervisor in the RMH clinical school as an additional task. He also completed the examination for admission as MRACP and finished his MD in that year. In 1953, on Dr Gardner's death, David succeeded her as clinical pathologist with responsibility for microbiology as well as haematology. Following the (amicable) splitting of the department in 1971, David became director of haematology and secretary of the division of investigative medicine until the retirement of JD Hicks in 1978, when he took on the role of division chairman.

David contributed to pathology literature despite the lack of encouragement for 'service' departments to engage in 'research'



DAVID COWLING

at the hospital. He expanded and improved his laboratory's activities after sabbatical visits abroad—especially to London and Cambridge.

During the Vietnam conflict David spent a period as DDMS and took a three-month tour of duty at the field hospital at Vuang Tau. He took a keen interest in the training of army laboratory technicians (he was a foundation member of the Defence Pathology Advisory Committee for twenty years) and gave long-running support to the raising of academic standards and training of laboratory scientists. He served

on the Royal Melbourne Institute of Technology Advisory Council for the medical laboratory degree course and was a member of the Australian Institute of Medical Laboratory Scientists Federal Examining Council for many years. David served his salaried colleagues as a state councillor of the AMA at a time when negotiations with hospitals and government led to the establishment of state wages boards for medicos. From 1954 David was a member of the Red Cross Blood Transfusion Committee, his term included the teasing period of the emergence of HIV infection and AIDS.

All these activities took their toll on his health and David took early retirement from RMH in 1983, after suffering a myocardial infarct. He continued a quieter mode of practice at a private laboratory in Frankston and as a sessional visiting specialist at Heidelberg Repatriation Hospital, until his seventieth year.

David died on 15 April 2002 after a long, at times heroic, battle with malignant lymphoma. He is survived by his widow, Nancy, their four children and several grandchildren.

*Ben Wadham*

## Colin Noel De Garis

MB BS 1940, DGO 1950, MGP 1976,  
FRACS, FRCOG, FRACOG

1916—2002

**N**OEL DE GARIS was educated at Geelong High School where he was head prefect. He won a resident scholarship to Queens College and graduated in medicine from Melbourne University in 1940. During his undergraduate years, Noel played first grade district cricket for the university. A short term in the Royal Australian Army Corps followed. Noel served in the Sixth Division Casualty Commandos in Darwin and was there during the first waves of Japanese bombing. He later saw front line action on the northern beaches of Papua New Guinea.

After the war and his residency years in Melbourne, Noel travelled to England to further his experience. On his return he shared rooms with Professor (later Sir) Lance Townsend, where he met Joan Middleton, then secretary to the practice. They married in 1955.

In 1951 Noel joined the medical staff of the then Women's Hospital (later Royal Women's Hospital), Melbourne, where he was to spend his professional life. He rose through the ranks at the hospital to become an outpatient obstetrician in 1954 and an inpatient obstetrician in 1964. His logical and measured approach to obstetrics was reflected in his teaching and a generation of specialists, including myself, owe him much. From 1971 to 1973 he was also chairman of staff. In June 1976, the year he turned sixty, existing hospital by-laws forced his retirement

as head of unit. Except for the last six months, all Noel's twenty-five years of dedicated service to the hospital were honorary, and he was very proud of this.

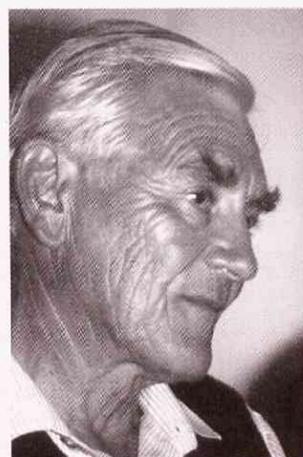
In an era before litigation-driven caesarean sections, with his obstetric manipulative skills, Noel rapidly built up one of the largest private practices in Australia. He was a kind and compassionate man and many of his patients were either doctors themselves or from medical families, the ultimate mark of respect for any specialist.

Despite his extremely busy working life, Noel always managed to find precious time for his family, to whom he was completely devoted. His other main passions included his beautifully manicured garden and, whenever possible, attendance at any Australian Football League match involving Geelong, especially when they played his sons' teams, Richmond and Melbourne.

I was privileged to share rooms with Noel towards the end of his long and distinguished career. After his retirement from the Royal Women's Hospital he continued to work part-time for some years on maternal and perinatal statistics with the Victorian Department of Health.

Noel died in his eighty-sixth year, in May 2002, after a protracted illness punctuated by a series of strokes. He is survived by his wife Jo, by his three sons, Andrew and twins Ric and John, his daughter Marzi, and his six grandchildren.

*Neil Johnstone*



NOEL DE GARIS

## John Boswell Hewitt

MB BS 1948

1925—2002

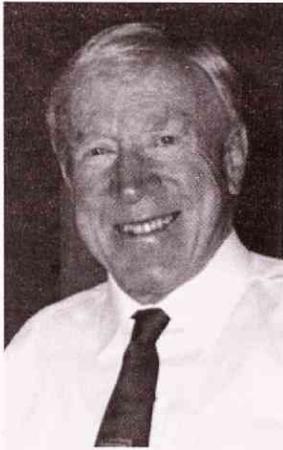
**J**OHNSON WAS THE eldest child of Vera and Alan Boswell Hewitt (MB BS 1924). His grandfather, Reverend Joseph H Hewitt, was an Ormond College resident in the 1890s and later lectured in logic and theology.

John attended Koo-wee-rup state school then stayed with his grandparents in Melbourne while he attended Scotch College. He entered Melbourne University medical school in 1943 and graduated MB BS in 1948. Throughout his life John valued his friends from his time in college and medical school very highly.

He spent two years as an RMO at Prince Henry's Hospital where he met and married Margaret Day, a hospital physiotherapist. In 1951 he joined his father in a rural medical practice at Koo-wee-rup and Lang Lang. To further his training he returned to Melbourne in 1955 for a year as RMO at the Royal Women's Hospital. His brother Ian (MB BS 1951) carried on the practice.

John joined the Box Hill Medical Centre in 1956 and practised there until ill health forced his retirement in 2001. The epitome of the traditional family doctor, John was always available whether or not he was rostered on duty at the practice. If they thought it necessary, his grateful patients would be visited at any time of night or weekend. He also derived great pleasure interviewing for the selection of first year medical students at Monash University.

A devoted family man, John and Margaret had four children—Robyn, Peter, Michael and Dougall—and nine grandchildren. Besides being an excellent general practitioner, his highest



JOHN HEWITT

priority was to be a good husband, father and grandfather. He had a great interest in all sports, particularly if his talented children or grandchildren were involved. Respite from a busy family practice came with golf on 'sacred' Thursdays at the Metropolitan, and weekends at his Main Ridge property.

A capable obstetrician, a careful surgeon and anaesthetist, and an excellent diagnostician aware of his limitations, John Hewitt will be greatly missed by his patients and colleagues.

Noel Ramsey

### Nancy Lewis

MB BS 1935, DOPHTH 1945, MD 1948, FRACS, FRACO, FRCO

1913—2002

**N**ANCY LEWIS LED a life characterised by compassion, loving and forgiving. Daughter of Mabel Fincham and Reginald Lewis, Nancy started school at Lowther Hall at the age of four and moved to Toorak College when she was five. She worked hard and was often top of her year. She excelled at Latin, her favourite subject, and participated in many school sporting teams, in particular tennis, winning the Schoolgirls' Singles Championship in 1929.

Although there was no science teacher at all and no good mathematics teacher in her final year, Nancy succeeded, at the age of sixteen, in entering the University of Melbourne medical course at a time when very few women were accepted. During her course she obtained honours in her studies and was anatomy prosector. She also continued to play tennis, winning numerous championships in her first three years at university.

After graduating, Nancy did residencies at the Royal Melbourne Hospital (RMH), the Royal Children's Hospital (RCH), the Royal Victorian Eye and Ear Hospital (RVEEH) and the Royal Women's Hospital (RWH).

During her time as medical superintendent of the RVEEH (1940 to 1941) Nancy decided to pursue a career in ophthalmology. During the Second World War she worked at the RWH and RMH, where she was clinical assistant in ophthalmology from 1941 to 1946, then assistant ophthalmologist from 1946 to 1962.

Appointed to the RCH in 1942, Nancy founded and headed the eye clinic from 1949 to 1963 and was honorary consultant ophthalmologist from 1964 to 1986.

In 1951, aged thirty-eight, Nancy married John Vickery Brooks at the Methodist Church in Malvern. They had many very happy years together and Nancy juggled a professional career with family duties at a time when very few women did.

Nancy Lewis was loved and respected by all her patients. She was very determined and ethical in her practise of medicine and had great concern for her patients' welfare. She would spend considerable time talking to her patients, not only about their condition but about their families and other important aspects of their lives.

Nancy was extremely fond of her granddaughters, Elita and Georgina: they were the joy of her life and her *raison d'être*. She showed extreme determination and bravery over her last four-and-a-half years, firstly to conceal her condition until Georgina had been born, then to proceed at great length to lead as full and busy a life as possible. We are very fortunate to have

experienced Nancy's rich and full life and to have benefited so much from her work. The only words she wished in her eulogy were: 'I had a wonderful life and enjoyed every minute of it'.

Anne Brooks

### Lorna Lloyd-Green CBE, OBE

MB BS 1933, DGO 1945, FRACOG, FRCOG, RMT

1910—2002



LORNA LLOYD-GREEN

**L**ORNA LLOYD-GREEN was a pioneering woman in Australian medicine whose life spanned ninety-two years and bridged two centuries.

She was born in 1910, the eldest child of a veterinary surgeon father and an artistic, musician, schoolteacher mother. Her first surgical experience was at the age of fourteen, when her father was ill and a dog was brought into the surgery requiring eye surgery. Lorna performed the procedure, the dog was saved and her career was planned.

Dux and captain of Lowther Hall in 1929, she vacillated between being a musician and a medical practitioner, but studied medicine at the University of Melbourne and became one of the first female obstetrician/gynaecologists in the first half of last century. She was appointed medical superintendent at the Queen Victoria Memorial Hospital in 1939. During the Second World War she was on-call twenty-four hours a day for two years and spent every night at the hospital.

Lorna founded and was head of the Queen Victoria Hospital sterility clinic for twenty-five years, her interest in infertility fuelled by her perception of a lack of concern for those unable to have children. This eventually became the IVF clinic at Monash Medical Centre.

Lorna was an ardent advocate of breastfeeding and was the first medical adviser to the Nursing Mothers Association (now the Australian Breastfeeding Association). She was the first woman fellow of the AMA and a foundation fellow of the Australian College of Obstetricians and Gynaecologists. Her work with the AMA achieved equal pay for equal work for female medical practitioners. An active member of the Australian Federation of Medical Women throughout her professional life, Lorna was also president of the Medical Women's International Association, hosting a world conference in 1970, when she was named Woman of the Year.

In 1982 she decided it was no longer appropriate for her to practise obstetrics and gynaecology and for the next ten years she worked with dying patients at Lovell House and Bethlehem.

Lorna Lloyd-Green was awarded an OBE in 1968 and a CBE in 1979. She also received a Commonwealth Recognition Award for senior Australians and on the centenary of federation was included in the Victorian Honour Roll of Women Shaping the Nation. Her Christian faith was one of her most important driving forces. Lorna planned her own funeral at St John's, Toorak, where she had served on the vestry and as a churchwarden.

Janet Duke

Based on an obituary published in the RANZOG Journal Vol 4, No 3, September 2002. Reproduced with permission

## Allan Malcolm MacLeod

MB BS 1960, FRACS

1936—2002

ALLAN MALCOLM MACLEOD died on 29 November 2002 after a short illness. Immortality seemed one of Allan's hallmarks. At sixty-six he had retired from St Vincent's Hospital as head of the Plastic Surgery Department, but immediately upgraded his workload to revamp plastic surgery services at Peter MacCallum. His private workload was never busier.

Born on 15 November 1936 at Williamstown, he was the last of three boys. His father, a naval engineer, spent much of his time at sea so his mother took on the task of educating her boys. The three went on to achieve high distinction in science, law and medicine respectively. They were initially boarded at Assumption College, Kilmore, which was for Catholic boys a breeding into the perennial values of ethical principles, hard work and determination. He was sent to Xavier College, Kew, then went on to medical school at Melbourne University.

He completed his intern year at St Vincent's then fulfilled his RAF scholarship commitments to the airforce, which took him to Malaya, Penang and Thailand for four years. Allan had by now married his childhood sweetheart, Shirley. He returned to St Vincent's where he embarked on a surgical career, and was greatly influenced during his rotation through the Plastic Surgery Unit by Richard Newing, whose practice included major head and neck cancer removal and reconstruction. It was here, as an intern, that I first encountered my big brother figure. He had the greatest influence on my career path.

After further training at the Victorian Plastic Surgery Unit at Preston, under Sir Benjamin Rank, Allan went to London as a Commonwealth Fellow in 1969, to work at St George's Hospital and the Royal Marsden in the newly formed Head and Neck Cancer Reconstruction Unit. Here he consolidated his interest in this challenging field, where newer techniques were being developed to make reconstruction more feasible. In 1970 Allan gained a scholarship to Harvard to work at the Shriners Burns Institute with Jack Burke, who was pioneering artificial skin. He returned to Melbourne in 1971 as consultant plastic surgeon to St Vincent's Hospital, with Richard Newing and Bernard O'Brien, and also to Repatriation Hospital, Heidelberg.

Bernard O'Brien had established a research centre in microsurgery at St Vincent's Hospital, with the support of Professor Richard Bennett, where he was pioneering new techniques of small blood vessel repair. This enabled amputated parts to be replanted and tissues to be transferred from one part of the body to another. Allan applied the new techniques to head and neck reconstruction on his patients at St Vincent's and especially the Repat. Hospital, where he developed a major head and neck service. It permitted immediate restoration of oral function and appearance after cancer resection. He pioneered original operations, including jaw reconstruction using the metatarsal bone from the foot, and correction of dry eyes by transferring the submandibular gland as a substitute for damaged lacrimal glands. Countless patients and plastic surgery trainees benefited from his ingenuity and dedication.

Allan and Shirley divorced after many years. Their four daughters were becoming independent. He had a keen interest in Interplast, a voluntary organisation providing plastic surgery services to third world countries in the Pacific region. He treated victims of the Iran Iraq war in Tehran, where he met and married Zohreh, a maxillo facial surgeon working in the Hospital of the Martyrs. Their wedding in Tehran and the intrigues of their escape back to Australia are the stuff of romantic novels. They had two children, Sarah and Alex.

Allan MacLeod became one of the world's leading plastic surgeons and a professor of the University of Melbourne. He published almost one hundred articles and chapters and gained regular NHMRC grants and Anti Cancer and National Heart Foundation funding. He rose to group captain in the Royal Australian Airforce Reserve and held many executive roles.

Short in stature but tall in every other department, Allan was a human dynamo with extraordinary determination. He was funny and an exceptional sportsman, especially in the water sports of swimming, diving, water polo and life saving. His very Australian bravado camouflaged an incisive intelligence that was easily underestimated. He could capture the essence of a situation instantly and was a master of the off-the-cuff witticism. Sprog (Scottish for wee one) was his life long prefix, but 'Snow' and 'the under fourteen champion' were others that captured the youthful enthusiasm he exuded throughout his life.

The sudden extinguishing of this 'eternal flame' caused an extraordinary outpouring of emotion. At his funeral at St Patrick's Cathedral, numbed mourners from all walks of life overflowed into the streets. Allan was a team man, the coach, the inspiration, loved by many, admired by all. In life the diminutive Sprog sowed a rich harvest, which others now must reap.

*Wayne A Morrison, Professor of Surgery, Head of Plastic Surgery, St Vincent's Hospital, Director, Bernard O'Brien Institute of Microsurgery, colleague and friend*

## Thomas E Mandel

MB BS 1961

1938—2002

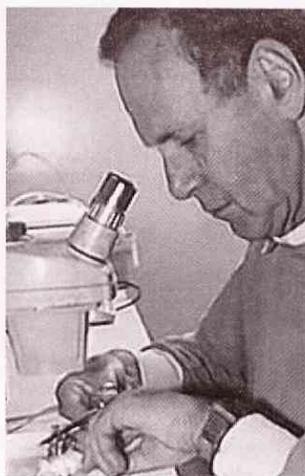
TOM MANDEL WAS a medical doctor and renowned transplant researcher, but above all the loving husband of Lorrie and doting father of Cath and Liz. Family, friends and scientific colleagues farewelled Tom on 31 May 2002, in a warm celebration of his life and achievements.

Tom was born in Vienna and, after his mother died when he was a year old, raised by an aunt in Czechoslovakia during the Second World War. The Red Cross united him with his father and they emigrated to Australia in 1947 to 'get as far away as possible from the atrocities that had beset Europe'. He had a happy childhood in Melbourne, and developed a very Australian outlook and personality, not to mention sense of humour.

He did well at school and entered medicine at the University of Melbourne, graduating in 1961. After residencies at the Royal Melbourne and Royal Children's hospitals, being a very practical kind of character, Tom set out for a career in surgery. He became an expert anatomist and passed the postgraduate exams for the Royal Australasian College of Surgeons in 1964.

While a senior lecturer at Monash University, Tom became interested in the microscopic aspects of anatomy, in particular the application of the electron microscope. In 1968 he was appointed to the Walter & Eliza Hall Institute of Medical Research as a research fellow, to work on problems relating to the thymus, leukaemia and cellular immunity, and to run the new electron microscopy laboratory—where he worked until his retirement as head of the Transplantation Unit in 1997.

Tom's sharp intellect and superb technical skills enabled him to develop and perfect techniques for growing the thymus in the laboratory and for transplanting it. This led to his pioneering work on the foetal pancreas and the isolation and transplantation of the cells in the pancreas that produce the hormone, insulin. Tom had a dream: to cure insulin-dependent diabetes by transplanting these cells. He succeeded in showing this was possible in mice and his work is a basis for current efforts to bring his dream to reality. His 250-odd research papers



TOM MANDEL

testify to Tom's contribution to transplant science. He supervised and trained an academic family: basic scientists and clinicians in specialties ranging from dermatology to nephrology to ophthalmology.

If you travelled to North America, Europe or Japan and mentioned pancreas transplantation, you would be asked, 'Do you know Tom Mandel?'. Tom was president of the Transplantation Society of Australia and New Zealand, whose members enjoyed his leadership and legendary after dinner speeches. The tributes

paid Tom attest to his persona as a 'most unforgettable character'. His happy-go-lucky attitude, his self-deprecating and vile sense of humour, and his humility and lack of pomposity set him apart. He could always be relied upon never to take himself seriously and saw something funny or absurd in the most serious situation, even until the end.

Despite his career achievements, Tom never let his work dominate or control his life, particularly his family life. The love and respect between Tom and Lorrie, their two daughters, Cath and Liz, and between Tom and Liz's husband Trevor, was evident to all who knew him. Numerous friends from all walks of life enjoyed the frequent hospitality of the Mandels at their Glen Waverley home over thirty-nine years of their marriage. Tom and Lorrie spent the last few years on their newly acquired property just this side of the Otways. When Tom was diagnosed with cancer only weeks before he died, his consolation, expressed to his friends, was that he had made the decision to retire early and had 'experienced the happiest five years of my life with Lorrie on the farm'.

It seems incomprehensible that Tom Mandel, always larger than life, is no longer with us. Mercifully, the effects he suffered from his terminal illness were short-lived. He was a unique individual who left his mark on the world. In addition to his immediate family, Tom is survived by his Auntie Puci in Slovakia, by whom he was raised for the first seven years of his life. He always regarded her as his mother. From her he gained his love of family, an appreciation of the value of friends and his zest for life.

*Len Harrison*

*Based on an obituary published in The Age, 17 June 2002*

*Reproduced with permission*

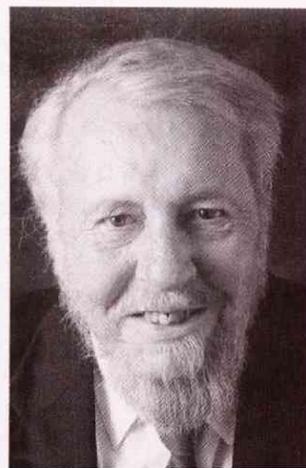
## Michael John Rand

BSc 1952, MSc 1955, PhD 1957 (SYD)

1927—2002

**M**ICHAEL RAND DIED at his home in Heathcote on 9 May 2002, after a long illness. With his passing Australia lost one of its most outstanding medical research scientists and academics, and the world one of the most influential pharmacologists of recent times. Michael Rand was professor of pharmacology at the University of Melbourne from December 1965 until his retirement from the university in December 1992.

Born in Suffolk, England, in August 1927, Mike migrated to Australia with his mother and brother in 1941. After qualifying Bachelor of Science at the University of Melbourne he was accepted into a Master of Science (research) program in the university's Department of Physiology, under the supervision of George Reid. His project was the investigation of the then unknown vasoconstrictor principle released from platelets during blood clotting, now known as serotonin. In 1952 Reid and Rand published the first comprehensive account of its pharmacology.



MICHAEL RAND

Mike completed a PhD at the University of Sydney in 1957 then accepted an invitation to work with one of the most eminent pharmacologists of the time, Professor JH Burn, in the University of Oxford Department of Pharmacology. Mike considered the two-and-a-half years in Burn's laboratory as one of the most formative and productive periods of his career. The collaboration resulted in major advances in the understanding of autonomic neurotransmitter mechanisms. Burn was to describe Rand as one of the best experimentalists with whom he had ever been associated.

After Oxford Mike returned briefly to the Department of Pharmacology at the University of Sydney, then won a research fellowship to the University of London's School of Pharmacy, where a year later he was appointed lecturer. Through his prolific research activity he continued to make major contributions, many of which provided the conceptual framework for the development of important new therapeutic drugs.

Mike's collaboration with WC Bowman and GB West at the School of Pharmacy led to the publication in 1968 of *The Textbook of Pharmacology*, a second edition of which was published in 1980 under the authorship of Bowman and Rand. The work was considered around the world as one of the best and most informative pharmacology texts. Unfortunately, a long planned third edition never eventuated, the whole of Mike's contribution being lost in a fire that destroyed his house in the early 1990s. Sadly, his efforts to complete his part of the revision in the two years before his death were prevented by his illness and, ultimately, by his death.

In late 1965 Mike was appointed to the chair of pharmacology at the University of Melbourne, a position he occupied for twenty-seven years. From the outset he worked tirelessly to transform his new department to one of great strength and influence in pharmacology, nationally and internationally. His dedication to scholarship, his seemingly tireless efforts and his intellectual brilliance provided inspiration to undergraduate and graduate students, postdoctoral fellows and his academic colleagues. Many of those fortunate enough to have the benefit of Mike's mentorship and guidance went on to establish prestigious careers in academia, industry and public service.

In 1992 Mike retired from the university, which conferred upon him the title of professor emeritus. After retirement Mike joined some of his colleagues who had relocated to Royal Melbourne Institute of Technology University, which provided an opportunity to continue his research and to continue mentoring graduate students. He was appointed as an adjunct professor in what was to become the Faculty of Life Sciences at RMIT.

In 1967 Mike was instrumental in the establishment of what is now the Australasian Society of Clinical and Experimental

Pharmacologists and Toxicologists. He served on the council of the society for many years and was its president for two terms. During the 1970s Mike worked with others to bring together pharmacologists throughout Asia for the first Southeast Asian/Western Pacific Regional Meeting of Pharmacologists. Mike also led the successful Australian bid to host the Tenth International Congress in Sydney in 1987, which, under his leadership, is still regarded as one of the most successful ever.

Mike served on several national expert committees dealing with drug and poisons regulation and was a commissioner on the Australian National Food Authority. At an international level he was for many years a member of the World Health Organisation Expert Advisory Panel on Food Additives and Contaminants. He also served on several joint FAO/WHO expert committees on food additives. In 1984 he was vice-chairman of the joint FAO/WHO Expert Consultation on Residues of Veterinary Drugs in Foods.

Mike served as a member of the editorial board of numerous international journals of pharmacology and was the founding editor-in-chief of *Clinical & Experimental Pharmacology & Physiology*. His endeavours and those of the late Professor Austin Doyle ensured its recognition as a major international journal for the disciplines of pharmacology and physiology.

The diversity of Mike Rand's skills and the breadth of his accomplishments are truly amazing. As an academic he embraced an integrated model of scholarship in which generation of new knowledge through research and the integration, dissemination and application of knowledge were each essential components. Next to his passion for discovery ranked his enthusiasm for encouraging others, particularly his students, to achieve their maximum potential.

Those of us who have had an association with Michael Rand as friend, colleague, mentor or teacher have been privileged indeed. His intellectual stimulation, academic insightfulness, encouragement and camaraderie will be sorely missed.

David Story  
Innovation Professor, RMIT University

## Peter John Ryan OAM

MB BS 1948, MS 1953, FRCS FRACS

1925—2002

PETER RYAN ENTERED the University of Melbourne on scholarship in 1942, at the age of sixteen, after completing his leaving certificate at Assumption College, Kilmore. The eldest of a farming family from Dookie, in Victoria's north-east, he always remembered that his first weeks at university were spent digging air-raid shelters for the expected Japanese attacks. He graduated MB BS in 1948, having taken a year out from the wartime-truncated course to recover from suspected pulmonary tuberculosis, and proceeded to residency at St Vincent's Hospital in Melbourne. He pursued surgical training through the university anatomy school and married Margery Manly (BA 1946), herself part of a rich Melbourne University medical school tradition—sister of Gerald Manly (MB BS 1947), daughter of Richard Manly (MB BS 1915), and grand-daughter of Richard Manly (MB BS 1889) [see *Chiron* 1988; 2 (1): 49-50].

His further surgical training led to a stint with the RAAMC in Korea and Japan, and three years in Leicester, England, training in general, mainly gastrointestinal, surgery. He returned to Melbourne in 1957 and was soon appointed to the staff at St Vincent's Hospital, where his service as a surgeon and associate professor in the university department of surgery continued

until 1990. During these years his enthusiasm and prowess at teaching were legendary. He could claim to have founded the specialty of colorectal surgery in Melbourne, becoming inaugural head of the first such unit in the city. He researched and published extensively and was active in local and international societies, becoming international president of the Society of University Colorectal Surgeons in 1987. In 1986 he was awarded the prestigious Hunterian professorship of the Royal College of Surgeons of London, primarily for his work on diverticular disease.

His concern for the less fortunate was exemplified by his leading of the first civilian surgical team to Long-Xuyen, in Vietnam, in 1965, and by his long-standing appointment and commitment to the Victorian Aboriginal Health Service in Fitzroy. Many generations of medical students, nurses, surgical trainees and junior staff benefited from his knowledge and devotion to his work. A dedicated internationalist, he also helped train surgeons from Indonesia and Japan in Melbourne.

Somehow, he also found time to be a devoted father to ten children, three of whom followed him in graduating MB BS Melbourne—Rowena in 1981, Jeremy in 1982 (married to Arlene Murkies, MB BS 1982) and Roderick in 1987 (married to Mary McCormack, MB BS 1985).

He suffered a debilitating stroke in 1995 and his last ten years were characterised by cruel illness stoically borne. He was awarded the medal in the General Division of the Order of Australia in 2002, which he received at Government House in Melbourne a month before his death. His contribution to surgery in Melbourne and Australia was significant and will not readily be forgotten. Importantly, he managed to achieve all he did with grace and with charm, and all who fell under his spell will remember him fondly. He is survived by Margery, his wife of fifty-one years, and his ten children. He is missed by all who knew him.

Jeremy Ryan



PETER RYAN

## Margaret Julia Tobin

MB BS 1978, MBA 1990 (MON), FRANZCP, FRACMA, FACHSE

1952—2002

MARGARET TOBIN STUDIED medicine at the University of Melbourne, graduating from St Vincent's Clinical School in 1978. She completed her training in psychiatry and became a fellow of the Royal Australian and New Zealand College of Psychiatrists in 1986. Her medical and psychiatric expertise was supplemented by a Masters of Business Administration, a fellowship of the Royal Australian College of Medical Administrators, and a fellowship of the Australian College of Health Service Executives.

Margaret began her career in psychiatry in Victoria, working in clinical roles in various settings, including St Vincent's and



MARGARET TOBIN

Willsmere hospitals. In 1988 she accepted a position in the Victorian Health Department Office of Psychiatric Services, where our paths first crossed when I was on secondment to that unit as chief policy advisor. From there, she went on to specialise in the management of mental health services, commencing with the role of clinical director overseeing the closure and mainstreaming of Lakeside Hospital to Ballarat Base Hospital.

Moving to New South Wales in the early 1990s, Margaret worked as the area mental health director for Southern Sydney Area Health Service,

incorporating St George's Hospital, from 1993 to 1995, then for South Eastern Sydney Area Health Service from 1995 to 2000. Margaret's final professional role was as director of mental health in South Australia from 31 July 2000.

All who worked with Margaret understood her passion for the development of the highest standards of mental health care. Margaret was personally and professionally committed to changing the face of mental health services. She strove to improve them by making them more responsive to the experiences of sufferers and their families. She was dedicated to the implementation of national standards and took on many of the hardest issues, particularly with regard to the improvement of acute mental health services.

Margaret's final role was the end result of a consultancy review of mental health services in South Australia, which recommended that a director be appointed to better coordinate the system. This review highlighted the problems in mental health in very open and frank terms, and recommended how they could be overcome. Once appointed, she wasted no time in implementing the key priorities. Of these there were many, among them: enhanced mental health services for adolescents; stable supported accommodation initiatives for people with complex needs; access to twenty-four-hour emergency services in rural and remote regions; greater integration of mental health services within a regional network; and provision of training and

education support to attract and maintain an effective mental health workforce.

With great energy and enthusiasm, Margaret brought her particular set of clinical and management skills to her involvement in a wide range of national and international issues—as a psychiatric administrator, manager, public servant and citizen. She was widely published in national and international journals on the subjects of quality improvement, organisational restructuring and change management in mental health services. Over the years, she had obtained several independent funding grants to develop new models of service in mental health and had a special interest in the application of academic and research method to practical service delivery.

One of her strong interests was the development of leadership in the field of mental health. She was a great role model and example of a modern mental health leader. She always had time for teaching and mentoring others.

Margaret was one of few in mental health who wrote explicitly about leadership for psychiatrists, interpersonally, intellectually and within human service systems. She was always striving to achieve best practice. She was sometimes contentious, and often outspoken on any issue involving the public mental health system.

In speaking publicly, only a few short days before her death, to mark World Mental Health Day (10 October), Margaret referred to mental health as 'everybody's business' and looked forward to a time when mental illness could be discussed with the same openness and understanding as we currently discuss many other forms of illness, such as diabetes. Only by eliminating the stigma associated with mental illness, Margaret argued, will people stop 'seeing it as something to be worried, frightened or ashamed about'.

Margaret Tobin was shot by an unknown gunman as she exited a lift to enter her office on the eighth floor of the Department of Human Services building in Adelaide, on 14 October, 2002. A deregistered psychiatrist from Sydney has since been charged with her murder and is awaiting trial at the time of writing. Her tragic death had a profound effect on all her colleagues who knew her and admired her dedication and commitment to mental health reform, to which she made significant contributions in three states during a decade and a half of immense change.

Margaret is survived by her husband, Don.

*Bruce Singh*

*Cato Professor and Head, Department of Psychiatry  
The University of Melbourne*

UMMS RECORDS WITH REGRET THE PASSING OF...

Fred Bainbridge, MB BS 1951	Lachlan Hardy-Wilson AM, MB BS 1941	Ralph R Ragazzon, MB BS 1971
Charles G Batten, MB BS 1946	John G Howard, MB BS 1956	Anthony G Read, MB BS 1967
John H W Birrell OAM, ISO, MB BS 1950	Cliff Judge, MB BS 1955	Willoughby S Sewell, MB BS 1951
Lois A Bishop, MB BS 1951	William M Keane AM, MB BS 1943	Michael Shaw, MB BS 1943
Henry M Bray, MB BS 1948	John F Macdonald, MB BS 1954	Lionel E Sloan, MB BS 1952
Peter Cosgriff, MB BS 1952	Lloyd Morgan, MB BS 1940	Mervyn H Smith, MB BS 1941
Gregory W Dynon, MB BS 1973	John C Mullany, MB BS 1938	Howard Toyne CBE, MB BS 1944
Harry Eizenberg, MB BS 1947	Andrew G Ostor, MB BS 1967	Ivy J White, MB BS 1941
Shirley E Francis, MB BS 1945	John Perry, MB BS 1943	John E Whitehead, MB BS 1950
Christopher C Funder, MB BS 1964		

# BEQUESTS AND MEMORIAL GIFTS

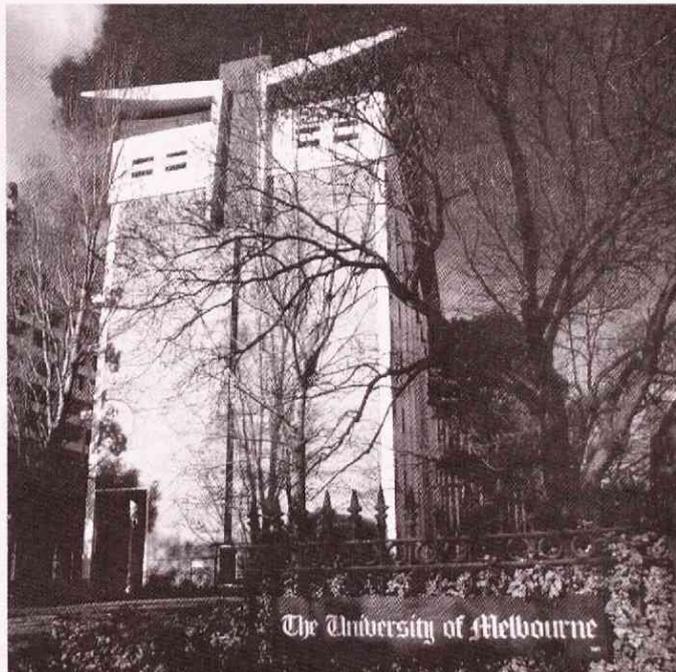
## THE IMPORTANCE OF BEQUESTS

**T**HE INTERNATIONAL STANDING of the School of Medicine today bears testimony to the determination of its founders, the quality of its staff and students, and the foresight and generosity of its many supporters and benefactors. The early years, however, were far from easy. It was extraordinarily difficult to gain government funding to establish and maintain a medical school, even though there was a strong case for Victoria to produce locally trained doctors to service its rapidly expanding population. Much ingenuity, hard work and generosity was needed to overcome this. The first professor appointed to the medical school, George Britton Halford, commenced work in temporary buildings, teaching three subjects—anatomy, physiology and pathology—and at the same time planning the new school. Research took second place to teaching for some decades owing to an almost total lack of funds to support it.

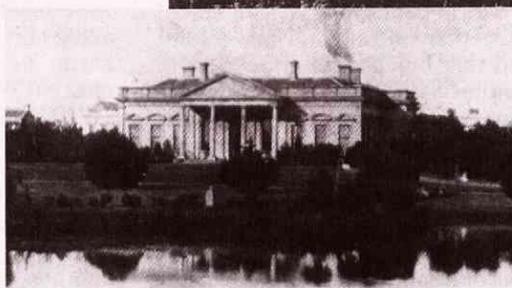
There has been much progress since those early years. New buildings, better equipment and innovative teaching courses have been established. The school has developed an outstanding research record in Australia and internationally. What has not changed, however, is that a high-quality medical course and medical research still require substantially more resources than the government provides. In fact, over the last decade government funding of universities has decreased greatly. Private sources of income are essential for the school to maintain the quality of its teaching and research, and to ensure the continuing prestige of its degrees.

Private benefactors have helped extend and develop the quality of education and the facilities available to medical students, and they have supported vital research projects leading to advances in health care. Benefactors have helped fund a number of important chairs, for example, the Stevenson Chair in Paediatrics and the Cato Chair of Psychiatry. The Helen Mackie Endowment Fund helps the university to secure or retain professors of outstanding eminence in the pre-clinical medical chairs.

Many scholarships and fellowships awarded today are the legacy of benefactors, and much of the research currently being undertaken is fully or partly funded by income from bequests. Research fellowships provide funds to assist our most outstanding young researchers. For example, the Annie Glover Fellowship supports research into cancer in either clinical or non-clinical areas, and the RJ Gleghorn Fellowship supports research in arthritis, inflammation and vascular disease. Research into poliomyelitis, motor neuron disease and



The University of Melbourne



TODAY'S MEDICAL SCHOOL (ABOVE) HAS SEEN MANY CHANGES SINCE ITS EARLY DAYS, PICTURED LEFT c.1875, WITH THE HELP OF BENEFACTORS AND SUPPORTERS  
(photo, above, by Michael Silver)

spastic conditions including multiple sclerosis is supported by the William Collie Postdoctoral Research Fellowship, and the Ronald Philip Griffiths Bequest supports schizophrenia research.

Medical graduates and the community have benefited in many ways from the foresight and generosity of their predecessors. A bequest or memorial gift to the School of Medicine is a tangible way in which you, in turn, can help to ensure that our medical school continues to be one of the best in the world.

## BEQUEST AND MEMORIAL GIFT INFORMATION

For information about establishing a memorial gift or making a bequest to the university, please contact the Manager, Fundraising Coordination, Development Office, the University of Melbourne, Victoria 3010, Australia. Telephone (+61 3) 8344 0896, email [bequests-development@unimelb.edu.au](mailto:bequests-development@unimelb.edu.au). All enquiries are treated in strictest confidence.

### Alumni in the USA, Mexico and the UK

If you are a resident of or have assets and tax obligations in the USA or Mexico, and are considering a gift or bequest to benefit the university, the University of Melbourne USA Foundation can assist with making such a gift tax effective.

The foundation is an incorporated not-for-profit body in the USA.

**Contact:** The Administrator, Mr John Semmler, The University of Melbourne USA Foundation, 630 Mt Pleasant Road, Freeville, New York 13068 USA. Telephone (+607) 277 8860.

In the United Kingdom, the Friends of the University of Melbourne Charitable Trust is a registered charity and offers similar benefits for prospective supporters in that country.

**Contact:** The Trustee, Friends of the University of Melbourne Charitable Trust, Britain-Australia Society, Swire House, 59 Buckingham Gate, London SW1E 6AJ United Kingdom. Telephone (+20) 7630 1075.

14 November 2002

## THE HUMAN GENOME PROJECT

Medical Miracles, Ethical Dilemmas

BY PROFESSOR BOB WILLIAMSON FRS FAA

*Director, Murdoch Childrens Research Institute*

*David Danks Professor of Medical Genetics, University of Melbourne*

### Before cloning—BC

THERE WAS A time when the community thought doctors and scientists were good people. Polls taken to identify the most respected professions often put us on top. A number of things have changed that: Hiroshima and Nagasaki; Auschwitz and eugenics; deliberate attempts on the part of governments (aided and abetted by some scientists and doctors) to mislead the public around issues like Bovine Spongiform Encephalopathy and its transmission to humans; and controversies about cloning.

To give an idea of the pace of change, in 1974 my group in Glasgow, Scotland, proved that alpha-thalassaemia is due to a gene deletion. Then we heard on the grapevine that YW Kan and Harold Varmus had similar data in California. We contacted them and said, 'Why not get together on this and make sure we submit at the same time so that our papers appear back to back?'. They agreed with enthusiasm. None of us thought of patenting anything we did, and it was a more pleasant way to conduct scientific research, even if it didn't move quite as quickly. Now, competition is the rule and results are seldom mentioned until the patents are written and papers accepted.

The human genome project has given us the complete DNA sequence of one man. It is worth emphasising, though, that we only know the function of about twenty-five per cent of those genes. Of the genes we don't understand, about half are expressed in the brain and the other half during early embryonic development. We have to work out what these genes do if we are to understand normal and abnormal human development and behaviour.

All of this is happening against a backdrop of a changing concept of disease. Most significant diseases today are neither genetic nor infectious, but multi-factorial; the result of interactions between each person's genome and their environment.

Our genes are personal property and each of us has a unique genome. There are about five million differences in the DNA sequence between any two people. The differences in DNA sequence that cause single gene mendelian diseases like cystic fibrosis and thalassaemia are known, but do DNA differences also control personality, behaviour and complex diseases?

Before cloning we had to deduce genetics from phenotypes. It was often impossible to judge which genes were involved, how many or how they acted, because phenotypes are not only the result of the genome but also the environment. For instance, coronary heart disease is determined primarily by genes, but if you have the best genes in the world and you smoke forty cigarettes a day, drink a lot of whisky and eat a lot of butter you can overcome those genes quite easily. Conversely, if you have genes that predispose you to coronary artery disease and you are very rigorous with diet and take statins, you can lower the risk substantially.

A single cell or a mouthwash is sufficient to give us a DNA fingerprint that we can examine for cystic fibrosis, for a breast cancer gene, or even the red hair gene. But what about genes for things like criminality?

In the south of Holland about ten years ago, the police approached the professor of genetics at the local university. They reported that they had three pairs of brothers in jail, each of whom were cousins. They didn't know they were cousins until they were in prison because the families didn't know one another. All were inside for rape and arson and grievous bodily harm. In itself this is not unusual, as (whether for social or genetic reasons) criminality does cluster in families and in neighbourhoods. What was unusual was that these six cousins had another seven or eight brothers who were completely straight.

When a gene test was performed, it was found that the brothers in prison had a mutation in the gene coding for the enzyme monoamine oxidase A (MAOA). This enzyme is part of the dopamine control and reward pathway in the brain. These six people did not have the ability to receive neuronal rewards, as they had no normal control mechanisms and consequently a very short fuse.

*Most significant diseases today are neither genetic nor infectious, but multi-factorial; the result of interactions between each person's genome and their environment.*

Now, this is not a common cause of criminality. There are only about eight or ten families in the world with a mutation in the MAOA gene. But an interesting study about this gene from New Zealand was recently published in *Science*. A group in Dunedin followed a cohort of children through to adulthood and showed that twenty-five per cent of abused children grew into adults who in turn abuse children. This twenty-five per cent had a very high number of mutations in the same gene as the criminal family in Holland, but in these cases it was a minor mutation that only attenuates gene activity so it doesn't function as well as it should. Lots of people in the group who were not abused as children also had the attenuating mutation but didn't grow up to be child abusers: it is the combination of genetic predisposition and early experience that leads to child abuse.



BOB WILLIAMSON

Molecular genetics plays at being reductionist because reductionism allows you to do experiments. We know that there is not actually a gene for criminality, or for being gay, or for intelligence, but we require the assumption of predictive information that reductionism gives us. If we have a phenotype (a conviction for violent offences, for instance) and a gene variant, we can do a laboratory test to see if they are associated.

We need to be careful, though, that this device that allows us to carry science forward is not mistaken for the same thing as the truth. Reductionism is great for the laboratory but may not contribute much to medicine. For example, the breast cancer genes BRCA1 and BRCA2, isolated some years ago now, turn out to be of virtually no value in understanding the causes of common sporadic cases of breast cancer. The gene for a rare form of colon cancer, familial polyposis coli, however, turns out to be related to mutations found in sixty per cent of the cases of sporadic colorectal cancer. For breast cancer a stunning failure to illuminate the wider situation, for colon cancer a stunning success.

My colleagues Professor George Patton (of the MCRI Centre for Adolescent Health) and Craig Olson studied a cohort of 4000 people, first interviewed when they were about thirteen years old. Twelve years later, approximately 3500 are still in touch, and we know about their alcohol, heroin, and marijuana habits. Only one in five experimenting with nicotine become addicts (and only one in four of those experimenting with heroin). From comparing identical and non-identical twins, addiction appears to have a major genetic component. My colleague Ric Anney has looked at the gene variants associated with addiction in this cohort. At least one of the genes involved is in that same dopamine pathway that controls reward in the brain.

What can we use that information for? Let us suppose we can show that a variant in one of those genes predisposes you to become an addict. That propensity to addiction could make you a workaholic—it is not necessarily a bad thing. In the context of a drug like heroin, however, it becomes incredibly destructive.

Genome data can be used in a number of ways. It can be used for diagnosis, for predicting risk and for prenatal testing and intervention. We offer a gene test for haemochromatosis to people between eighteen and thirty-five in Victoria. This is worth doing because we can offer an intervention, blood donation, which protects the person at risk from developing the disease. But only ten or fifteen per cent of the people offered the test have taken it. Part of the reason is that, in spite of non-discrimination agreements with insurance companies and employers, people are not convinced it is possible to keep the information confidential.

Predictive testing doesn't raise any ethical issues when offered for a severe condition for which help is available. However, we can also offer a predictive test as to whether you're at high or low risk of developing Alzheimer's disease in your seventies. Unlike haemochromatosis, there is nothing you can do to prevent it; the information is just knowledge. However, I think it is sometimes wrong to offer nothing but a medical model for diagnostic tests, and to assume that the only thing people want is medical treatment. People might want the information so they can take a trip round the world and see places they haven't seen before, or put their affairs in order and write a living will.

There are no real ethical issues in diagnostic testing; it comes down to choice. If you live in a country like Australia, prenatal testing raises no issues either. Our society generally accepts that a couple has a right to make decisions (including reproductive decisions) for themselves. Many clinicians, however, begin to have difficulties when the reason for terminating a pregnancy becomes what they think of as trivial. However, perception of severity varies from family to family. Personally, I would not be very worried if someone told me that a gene I was passing on to a child of mine would result in an increased risk of Alzheimer's disease when they are seventy.

But one family, which had lost six brothers and sisters due to Alzheimer's disease that began in their fifties, wanted prenatal diagnosis because their experience had been catastrophic. We have to allow for such individual perceptions.

These days you can carry out prenatal diagnosis pre-fertilisation by analysing the genes in the (surplus) first polar body and deducing the genotype of what is left as the active genome. Prenatal diagnosis can also be carried out very late in pregnancy. A recent study showed that most women would rather have prenatal diagnosis for an eight-cell embryo than an abortion at ten weeks of pregnancy. We suspect this is because in the case of an eight-cell embryo you are analysing ten or more eight-cell embryos simultaneously, and putting two into the womb that could provide an unaffected foetus. The choice of the embryo leads to what the couple wants—an unaffected child. In prenatal diagnosis at ten weeks, the termination of pregnancy is carried out with the same intention—an unaffected pregnancy—but the two events occur at different times and are seen as ethically distinct.

### A word about eugenics

Eugenics is the decision by a government to impose genetic principles against certain people in favour of others. It has nothing to do with the way in which the human genome project is being used at this time in Australia. I believe the way we offer genetic data to people empowers them to make decisions they would not otherwise be able to make. Last year about a dozen women in Victoria who found out they were carrying a Down syndrome foetus decided to continue the pregnancy. That might not be my own choice, but I find it very encouraging. It shows that our prenatal diagnosis system in Victoria is not forcing people down a one-way track, but giving them information that empowers them to make choices.

*I believe the way we offer genetic data to people empowers them to make decisions they would not otherwise be able to make.*

Discussion around embryo research has tended to revolve around the ethics of doing something: is it ethical to obtain embryonic stem cells from the inner cell mass of a hundred-cell embryo? But the ethics of not doing something can be just as catastrophic. If you fail to treat when you have the ability to treat successfully, and you do not give people the option of treatment when you have the ability to make a difference, that is every bit as unethical as treating people badly.

### Stem cell research—hopes and fears

If I went out in front of the Royal Children's Hospital and said, 'In these labs we are using the newest techniques with stem cells to try to treat children with muscular dystrophy, deafness and cystic fibrosis', and held out a tin, everyone would put in a dollar coin. But if I said, 'We are taking cells from dismembered human embryos and using them in experiments on children', they would string me up. When it comes to medical research the hopes and the fears of the community are unrealistic. The community believes in what I call the 'laboratory of molecular mythology'. We have to answer this with education, and the truth is we are answering it badly.

Senior doctors and scientists should be trained to talk to journalists and on television in language people can understand. When we talk about getting genetic and medical education into schools we often think of the four per cent of kids doing VCE with marks in the top range in the science subjects, and not the ninety per cent of kids who will either leave school without going on to higher education or who will read law or arts or hospitality. They deserve to know what we're doing every bit as much as the doctors and scientists of the future.

**AD—after Dolly**

The one-cell embryo formed when a sperm hits an egg is the ultimate human stem cell. It gives every tissue in the body. The one-cell embryo is totipotent. If implanted in the womb it gives a person. If it stays in the Petri dish it gives many millions of cells, each of which will just sit there quite happily and grow. If any of these cells is treated in a particular and very complex way, and then implanted in a womb, it can become an embryo itself. It is possible to grow these cells from the inner cell mass of any embryo, and even in culture these embryonic stem cells have the ability to give rise to any type of cell: neurons, blood cells, liver cells, skin cells. The cells are still totipotent. This is now clear, but it is important to note that these understandings have come only during the past five years.

Adult tissues also have stem cells. Stem cells have long been known to exist in bone marrow and cord blood. Recently they have been described in brain and spinal cord and liver, although they are normally handcuffed and can't operate. Adult stem cells don't divide easily, they are hard to work with and, unfortunately, as one ages they work less and less well. Embryonic stem cells, on the other hand, grow like weeds, doubling every seven or eight hours in culture. It is hard to grow adult stem cells, they don't like forming tissues other than the one each came from, and they don't grow easily in suspension.

*There are several thousand 'spare embryos' in Victoria today and sixty per cent of couples want to see them used for medical research.*

It is possible to attempt to use viruses (tumour viruses, or HIV, or adenovirus) to deliver genes to a sick tissue. A few children with immunodeficiency have been treated by this method but at a very great cost. Gene therapy is expensive because our bodies are constructed to reject foreign DNA. I eat pig and chicken and wheat DNA (bacon and eggs on toast) every day for breakfast, yet I remain untransformed by it. In my view the only plausible way in which we will be able to deliver gene correction other than pharmacological methods, will be by delivering the genes via stem cells.

**The embryo research argument**

The embryo research argument revolves around where we get these stem cells and what we use them for. There are a few people who still object to *in vitro* fertilisation (IVF) on principle, but most of us accept IVF in the context of a couple in a stable relationship who can't have children by other means. When IVF is carried out, there are very good medical reasons why fifteen to twenty embryos are formed at once, and why only one or two are put back in a single cycle. If a couple has fifteen embryos formed, and two are put back and they have twins, many couples think, 'That's it. We don't need the rest of those embryos.' The law in Victoria says that those leftover embryos must be destroyed, so they are poured down the sink. There are several thousand 'spare embryos' in Victoria today and sixty per cent of couples want to see them used for medical research.

**Another bit of new science**

Since Dolly, we know that a fertilised egg is not the only way to get a person. You can form a mammalian embryo that develops into a foetus and then an animal by starting with the diploid nucleus from any cell. This is placed into an enucleated egg, which is shocked and implanted to generate a 'clone'. This means that every cell in each of our bodies has the potential to become a human embryo if treated in this particular way.

This raises sharply the issue of the nature of humankind and of individuality. Clearly we do not accord the respect given to a person, to each of our own cells. If we did so, we would be committing genocide every time we killed a few million cells

when washing our hands. We do, however, accord respect and legal status to a foetus once it is viable. If a human were to be cloned, that person (and a person she would be) would deserve the same respect due to any other individual.

**The ethical issues**

Based on what we know from the human genome project and reproductive biology, let's begin to explore the question: is cloning people ethically wrong, and if so, why? Most people believe that cloning people is ethically wrong, but few can give strong arguments against it.

Let us briefly review the ethical principles put forward by two American bioethicists in the middle of the last century. They constructed an ethical framework based on four principles which most philosophers agree is cross-cultural and does not depend on any specific religion or belief system. The four principles are, roughly: attempt to do good, attempt not to do harm, show respect for autonomy, and give due attention to justice and equality in the context of the situation. It is important to analyse human cloning using a set of ethical principles.

It is important to recognise that in Australia, and most first world countries, we operate our societies according to the political principles (which also have ethical dimensions) of liberal democracy. This includes the concept that it is only possible to restrict the rights of people to do things if this is based on the concept that, for some reason, doing this thing causes a serious harm to others. In general, people here are free to do as they wish, provided they do so in private and pay for it from their own resources.

There are two ways of cloning: within the same generation or between generations. Same generation cloning might involve taking a two-cell embryo and splitting it in half, separating the cells and growing each as an individual. This parallels closely what happens naturally for identical twins.

*Same generation cloning*

Does cloning identical twins create an ethical dilemma? It is not 'natural', but it is many years since humankind has lived in a natural society. Most of us would not be here if it were not for 'unnatural' medical intervention. It would cost lots of money that might well be better spent elsewhere, say by improving third world health through better sanitation. I dare say this is true, but alas, we find that banning an expensive procedure in a first world country does not usually lead to the transfer of the funds that would have been spent somewhere more deserving.

*Most people believe that cloning people is ethically wrong, but few can give strong arguments against it.*

Then there's the argument about slippery slopes. Would allowing identical twin cloning make us more receptive to things we really don't want, like intergenerational cloning? We are used to slippery slopes. In many extreme situations, things that are not normally allowed become allowable and yet do not destroy the social fabric. Murder in self-defence is the most obvious example.

A final argument is that moving in this direction means we allow citizens to use scientific and medical techniques to choose embryos on a trivial rather than a medically important basis. I think we have to take this argument seriously. It speaks to the issue of the kind of society in which we want to live. However, it is not a very strong argument, because there are many examples (ranging from attempts to choose sex by using one time or position rather than another, to sophisticated DNA tests) where choice is permitted and even encouraged. It is a form of 'slippery slope' argument, asking whether we want to move this way for

fear of future elaborations of what is done, rather than what is being proposed here and now.

On balance, it is hard to find strong ethical arguments against same generation splitting of a two-cell embryo to give two single cells in order to create identical twins. Each twin is different from either parent, they will be different from each other (as are identical twins today), and this is analogous to something that happens naturally.

#### *Intergenerational cloning*

What of 'Dolly cloning', intergenerational cloning, using a cell from an adult to make a new infant with the same genome as the adult? Dolly the sheep has a problem. The process of cloning is very inefficient; it took over 250 attempts to get one Dolly, and poor Dolly is not very well. She has arthritis although she is only five years old. We can predict that Dolly cloning would have similar problems if it were applied to humans.

### *Knee-jerk, non-analytical ethics that is not based on scientific and clinical practice, is bad ethics.*

The first argument given against cloning is what I call 'the ethics of unsafety'. Reproductive intergenerational cloning is, indeed, not a safe procedure. Dolly is sick and so are most clones. Beware, however, of using the ethics of unsafety as your primary ethical argument against reproductive cloning. If unsafety is the main argument, does it become ethical if scientists work out a way to make it safe? There is a great deal of research to make reproductive cloning safe for farm and laboratory animals, for obvious reasons, and this research will probably apply to human cloning as well.

The issue of genetic determinism is more interesting. Will the cloned person be identical to the donor? Will we see a *Boys from Brazil* scenario, with lots of little Hitlers cloned from cells? Of course not! Identical twins are not really identical, as everyone knows, although they are more identical than siblings. It is perhaps ironic that, if you are a true environmentalist, and believe that genetics is not important and that environment is all, you can have no arguments against cloning as the DNA won't matter. But, of course, no one with any life experience would seriously argue that genetics (or environment) are irrelevant to the things that matter about us: our behaviour, our intelligence, our personality.

Then people say, 'the real problem with cloning is that the motives are wrong'. However, we don't normally ask people what their motives are for having children. They are many and varied, and not all are nice. We do not yet demand licenses before allowing reproduction, and I don't think we want to move in that direction.

There is one serious issue that I identify in reproductive cloning, relating to the issues of autonomy and diversity. I think that respect for autonomy, diversity and individuality is a central tenant of humankind. I don't believe we value people unless we value the autonomy of people. I believe that genetics is important in shaping our autonomy, since the interaction of genetics and environment determines 'what we are that matters'. I believe that intergenerational cloning reduces the autonomy of an individual, and reduces the uniqueness and diversity of our society. Therefore I believe that reproductive cloning is fundamentally unethical.

#### **Stem cell research does matter**

A law has just been passed in Australia which, in order to protect us against the possibility of human cloning, will make it extraordinarily difficult to carry out stem cell research. Part of that law attempts to define an embryo as any cell that could ever

become an embryo. But, as I've said, Dolly teaches us that any cell can become an embryo. This leads to a major problem, since it is clear that every human cell cannot be treated as a potential embryo.

My personal view is that reproductive cloning is unethical. However, working with human cells in culture is not, even if those cells were originally from an embryo. We should redefine the key event as the implantation of an embryo into the womb of a woman. I would have no difficulty with that redefinition, and making it illegal to clone a human by implantation in the womb.

However, it is also important that we look at these issues from the point of view of ethics as seen in a multi-dimensional, multi-ethnic liberal democracy in the twenty-first century. Knee-jerk, non-analytical ethics that is not based on scientific and clinical practice, is bad ethics. What I have presented to you is not the last word in any debate about the ethics of experimentation and cloning. Apart from other issues, the field is moving too fast to be conclusive. However, I am reasonably sure that this is the sort of analytical process that we have to undertake if we are to carry our community with us. This is important, for it represents the underpinning of acceptable criteria for clinical practice in the future, and for the implementation of scientific advances which could make a great difference to many young people with inherited and acquired diseases.

*Acknowledgments:* I would like to thank Professor Julian Savulescu, now at Oxford University, for helping me to understand ethics, and my many colleagues at the MCRI for working with me on genetics.

However, the ideas expressed above are my own. References for many of the statements are available from the author.

#### UNIVERSITY OF MELBOURNE MEDICAL SOCIETY

The 2003 UMMS lecture will be held in late October/early November. This year's AGM will also be held at this time, to coincide with the society's annual function for members. Full details of the date and speaker will be included in our October issue of *The Melbourne PostCard*. Details will also be posted on our website as soon as they are available.

UMMS helps School of Medicine graduates stay in touch with their former classmates and provides them with opportunities for active links with the school and the university. Members receive our journal *Chiron* and newsletter *The Melbourne Postcard*, plus advance notice of the Dean's Lecture Series, the faculty's annual ethics seminar, the UMMS function and lecture, and reunions of their graduate year.

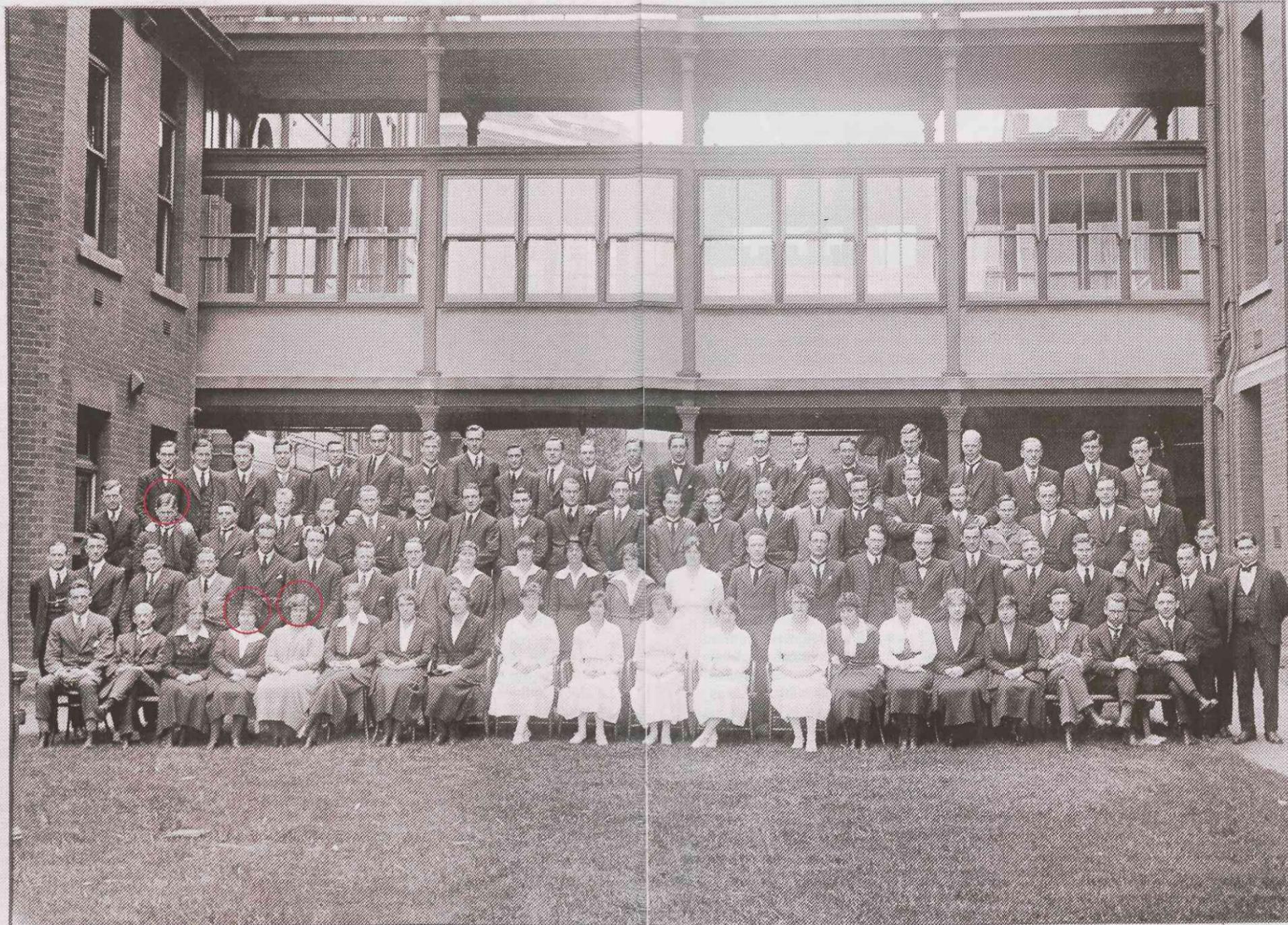
The School of Medicine has developed a range of important teaching and learning initiatives to maintain the high quality and value of its medical degrees. UMMS members can support these initiatives in medical education and research, student financial aid and student prizes. **Membership is free and renewable annually.** To join please contact:

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# M A G A Z I N E

## FIFTH YEAR MEDICAL STUDENTS 1921



*Griffiths, W.S.D. - Williams - McKenzie, S.B. - Cook, M.S. - Cannon, D.G. - Benson, F.B.T. - Walker, M.C. - Andrew, J.M. - Anonby, C. - Spence, H.G. - Kerlan, D.G. - Fuchs, C.R. - Dunlop, B.E.G. - Clark, E.J. - McCowan, R.D. - Hall, R.D. - Backwell, C.E. - Sutherland, J.R. - Gibson, J.J. - Redmond, R. - Williams, C.E. - Clark, F.  
 Group: R. - Burnett, F.M. - Gilbert, D.T. - Cook, C.E. - Harris, J.A.B. - Hawkins, H.P. - Beattie, J.P. - Wark, M.C. - Forbes, T.A.R. - Fraser, S. - Morgan, F.D. - Summers, H.F. - Mattheias, C.S. - Johnson, M.D. - Simpson, G. - Le Foe, L.E. - Rawson, P.W. - Montrose, G.G.H. - Small, R.H. - Harris, A.R. - Guthrie, G.H. - Cameron, G.R.  
 Alexander, J.B. - Wright, S.L.G. - Fagan, W.D. - Stevens, R.A. - Peck, W. - Stetson, J.E. - Pennington, G.A. - Lawson, W.M. - Campbell, H.K.J. - Mackay, M.S. - Wood, M.S. - Bryce, M.S. - McFarlane, M.S. - Kippen, W.C. - Edmunds, F. - Quinlan, J.G. - McLeod, N. - Rice, M.A. - White, E.J. - Drake, E.J.S. - Spence, R.D. - Mayhew, L.S.J. - Reinberg, M.  
 R.T. Brown - Peters, H.L. - All, Miss L.P. - Macnamara, Mrs. J.J. - Littlejohn, Mrs. J. - Fralton, Miss J. - Brown, Miss J. - Kelly, Miss M.B. - Hughes, Miss F.H. - Higgins, Miss E.M. - Mills, Miss L.R.H. - Clark, Miss R.M.A. - Humphrey, Miss M.J. - Brown, Miss J. - Hamilton, Mrs. H. - Boyd, Mrs. J. - Wright, Mrs. - Norris, J.B. - Spence, J. - Stewart, D.G.*

THE CLASS OF 1922, PICTURED HERE IN 1921, IN THE FIFTH YEAR OF THEIR MEDICAL COURSE, INCLUDED SOME OF AUSTRALIA'S MOST FAMOUS MEDICAL RESEARCHERS AND PRACTITIONERS. THESE INCLUDED: JEAN MACNAMARA AND JEAN LITTLEJOHN (FRONT ROW, CIRCLED), AND MACFARLANE BURNET (THIRD ROW, CIRCLED). SEE PAGE 50

## THE CLASS OF 1922

BY ASSOCIATE PROFESSOR JANET MCCALMAN

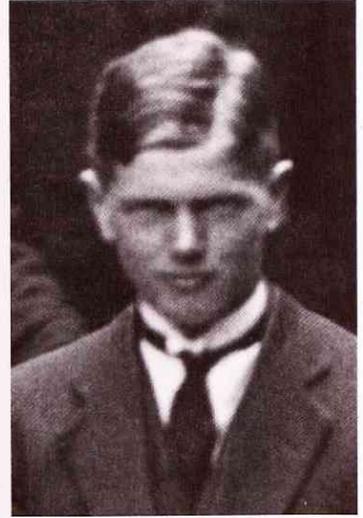
**E**VEN WITHOUT THEIR Nobel laureate, the class of 1922 was a bumper crop. Seventy-five men and seventeen women graduated in medicine that year, and sixteen of them were to earn a place in *Who's Who*. Three were knighted and two were made dames of the British Empire, and that quintet all made medical history in research. Many more were to be leaders in the profession and in the armed forces medical services. Macfarlane Burnet did not even top the class.



JEAN LITTLEJOHN



JEAN MACNAMARA



MACFARLANE BURNET

Kate Campbell, always a prodigious 'noticer' of significant detail and underlying patterns, later commented that the final honours graduates had been harvested across Victoria by the new government scholarship system: junior government scholarships to pay for private or government schooling past year eight; and senior government scholarships for university. Of the boys, Sir Macfarlane Burnet (Geelong College), Sir Rupert Willis (Melbourne High School), and Sir Roy Cameron (Kyneton High School) were all dependent on scholarships to attend university. And among the women so were Dame Kate Campbell (MLC), Dame Jean Macnamara, Kate Mackay and Jean Littlejohn (all PLC), and Lucy Bryce (MCEGGS).

At university, the attrition rate was high: 160 had begun in 1917; just over half finished. They had enrolled during the bleakest year of the war, and male students were expected to enlist. Burnet, like many, feared that a failure to enlist would ruin his future career and he was very relieved when the master of Ormond College and his father agreed that he should wait until his twentieth birthday.

With so many men away at the war, and spurred by the sight of women doing men's work, twenty-six women began medicine in 1917. The sexes lived in separate worlds, however, both as students and as residents. Discrimination against women ranged from inappropriate jokes to real difficulties in obtaining access to good cases and the best honoraries. The Alfred Hospital said it lacked suitable toilet arrangements for women residents, so took none at all; the Melbourne Hospital took women, but would not allow them to work in Casualty. (Even so, Burnet's maleness failed to inure him against Casualty's procession of drunks, syphilitics and consumptives.)

This post-First World War generation of outstanding women doctors were to be the pioneers in opening the highest echelons of medicine to women. Sir William Upjohn would later boast that when he finally got to heaven and St Peter asked him what he had done on earth to deserve entry, he need only say, 'I got Jean Macnamara and Kate Campbell on at the Children's'.

But this was only the half of it. In the United Kingdom, Sir Rupert Willis became known as the father of tumour pathology; Sir Roy Cameron was professor of morbid anatomy at University College London, after postgraduate study in Germany in the

1930s; and TAB Harris was director of anaesthesia at Guy's Hospital, London. Sir Macfarlane Burnet was director of the Walter and Eliza Hall Institute, and Arthur Corkill of the Baker Institute. Three became senior consultants in Western Australia: Gilbert Troup, Reginald Hall, Leslie De Souef; in Melbourne Geoffrey Penington, Hedley Summons, Jean Littlejohn and Kate Mackay were all distinguished consultants. Lucy Bryce was a leading pathologist and director of the Red Cross Blood Bank. Jean Macnamara was honoured for her work on poliomyelitis and Kate Campbell for her contribution to paediatrics. And among those who distinguished themselves in obstetrics and gynaecology were William Morton Lemmon, Irving Buzzard, and the saintly George Simpson, medical officer to the District Nursing Society and co-founder with the Reverend John Flynn of the Flying Doctor Service.

While a couple of men had served in the First World War, most had been saved from enlisting by the Armistice. When the Second World War began, they were still young enough (now in their forties) to be senior officers in the medical services. Three quarters were called up, two died as a consequence of war service, and six were captured by the Japanese as prisoners of war. Maggie Hewitson, as Dr Smallwood, was a civilian prisoner in Singapore. Professor Richard Smallwood, the Commonwealth Chief Medical Officer, is her son.

They were a hard working generation whose formative years of clinical training and private practice were during the Depression of the 1930s. Of the forty-one civilians traced to have died in Victoria by 1985, three men died very young so that seventeen died before retiring age at sixty-five; and just eleven after the age of seventy-five. But one of the sturdiest was Ethel Pitt, who had matriculated after years of night study at the Working Men's College. Inspired by Mary Glowery, she joined the Sisters of Jesus, Mary and Joseph in 1931 and the following year went to India, where she served as a medical missionary for the rest of her life.

*Anyone with further information on the class of 1922 is welcome to pass it on to Associate Professor Janet McCalman, Department of History and Philosophy of Science: [janetsm@unimelb.edu.au](mailto:janetsm@unimelb.edu.au).*

## THE UNIVERSITY OF MELBOURNE 150TH ANNIVERSARY

The university is this year hosting a broad range of events as part of its 150th anniversary celebrations. Based on the themes 'A Sense of History' and 'Giving to Students and the Community', events include art exhibitions, public lectures, concerts and a major international conference, 'International Perspectives on Peace and Reconciliation', to be held from 14–17 July. See <http://www.conferences.unimelb.edu.au/>

Melbourne University Publishing (MUP) is also celebrating with a suite of four publications profiling the artistic, architectural and educational history of the university:

*Architecture on Campus: A Guide to the Buildings of the University of Melbourne*, by Philip Goad and George Tibbits;

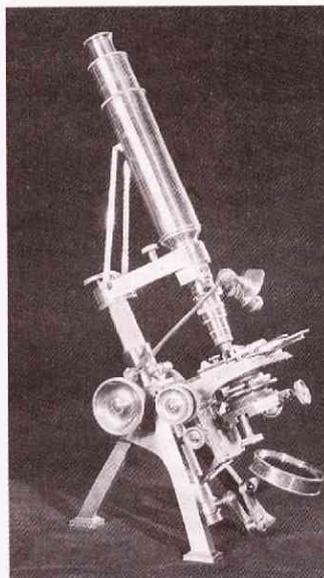
*A Short History of the University of Melbourne*, by Stuart Macintyre and Richard Selleck;

*The Shop: The University of Melbourne 1850-1939*, by RJW Selleck;

*Treasures: Highlights of the Cultural Collections of the University of Melbourne*, edited by Chris McAuliffe and Peter Yule. See: <http://www.mup.com.au>

Selected items, such as those shown on the right, from the university's collections are also on display at the Ian Potter Museum of Art until 27 July in the exhibition 'Curiosity: 150 years of collecting at the University of Melbourne'. See <http://www.art-museum.unimelb.edu.au/>

For details of the university's 150th programs see <http://www.unimelb.edu.au/150/>



POWELL AND LEALAND (LONDON).  
COMPOUND MONOCULAR AND  
BINOCULAR MICROSCOPE (C.1860).  
BRASS, SILVER, GILT, GLASS  
Medical History Museum, the University  
of Melbourne. Purchased in 1864 by the  
University of Melbourne for Professor GB  
Halford (1824-1910)



UNKNOWN MEMBER(S) OF THE UNITED  
TINSMITHS, IRONWORKERS AND  
JAPANNERS' SOCIETY OF VICTORIA.  
TINSMITH'S ARMOUR (C.1880S)  
METAL, FEATHERS  
The University of Melbourne Archives.  
Transferred to the archives in 1978 by the  
Victorian Trades Hall Council

## Fortieth Anniversary of the Department of Ophthalmology

**T**HE RINGLAND ANDERSON Chair of Ophthalmology was gazetted in March 1963, being the twelfth chair of the medical faculty. Gerard Crock started as foundation professor on 1 May 1963.

The department never would have prospered without the foresight of the ophthalmologists sponsoring the academic concept—notably Joseph Ringland Anderson, Archie Anderson, Kevin O'Day, Hugh Ryan, Sir Thomas a'Beckett Travers, D'Arcy Williams—nor without the driving force of the dean of medicine, Sir Sydney Sunderland, who secured Commonwealth funding through the Australian Universities Commission for the accommodation of both departments of Ophthalmology and Otolaryngology.

Ophthalmology was the first specialty chair in an Australian medical school, established under a tripartite agreement between Melbourne University, the Royal Victorian Eye and Ear Hospital (RVEEH), and the Ophthalmic Research Institute of Australia. Starting from humble beginnings, such a small department had difficulty securing university funding under the weighted student unit formula of the period. For the first nine years it was housed, along with an outpatient clinic, in Victorian terraces in Morrison Place, East Melbourne. In 1972 the then chancellor, Sir Robert Menzies, opened the present facilities. Teaching and patient care came easily, with eager residents in training, and a wealth of clinical material from local, interstate and overseas referrals.

The build up of research and development capabilities owed much to a young technician scientist, Jean Marie Parel, who, with the generous support of numerous benefactors, established a biomedical engineering facility. He and Lbjumir Pericic, together with Professor Crock, pioneered revolutionary changes in binocular ophthalmoscopy, retinal angiography, microscope automation, microsurgery and corneal grafting. Most notably they designed and manufactured the first

vitrectomy instrument—in a joint venture with Robert Machmer of the University of Miami—and thus established modern vitreo-retinal surgery that transformed the management of ocular trauma and diabetic eye disease.

The department has always valued its close links with RVEEH. Together they developed a series of subspecialty clinics at the hospital, starting with the Vitreo-Retinal Unit. Collaboration with the Department of Optometry led to the formation of the Low Vision Clinic at the Association of the Blind (now Vision Australia Foundation), a world leader in the provision of services to the partially sighted.

In 1990 Gerard Crock retired and Hugh Taylor took up the Ringland Anderson Chair, named in honour of his grandfather. In the past thirteen years the department has continued to grow, establishing a number of new units: the Eye Bank (now known as the Lions Corneal Donation Service); the Ocular Genetics Unit, which explores the genetic bases of myopia, glaucoma, and macular degeneration—the latter in conjunction with the Macular Research Unit; and the Epidemiological Research Unit, whose nine-year study showed that eye disease is a largely unrecognised problem, especially among the elderly. Many of these research findings have been translated into practical public health initiatives that are being implemented by the Eye Health Promotion Unit. This unit also conducts interactive programs to reduce the impact of vision loss in indigenous communities and in developing countries.

In 1992 the department was designated a WHO Collaborating Centre for the Prevention of Blindness, the only such centre in Australia. Its research staff continue to receive national and international awards in recognition of their work, and it is a core partner in the recently formed Vision Co-operative Research Centre, that aims to eliminate refractive error as a cause of vision loss.

## A TRIBUTE TO AC BROWNLESS

BY ANN BROTHERS

**T**HIS YEAR MARKS the 150th anniversary of the establishment of the University of Melbourne. While the founding of the medical school does not reach back the full 150 years, it is evident from the *Act of Incorporation* that there was provision for conferring the degrees of MB and MD from 1853, and plans for a medical school were underway shortly thereafter. This was largely due to the vision and sustained efforts of Anthony Colling Brownless. Having arrived in the colony in 1852, we find Brownless already gazetted a member of the university council in 1855, and devoting his energies to this cause.

Brownless had been a distinguished student of St Bartholomew's Hospital and in 1841 obtained the diploma of the Royal College of Surgeons and was admitted a licentiate of the Society of Apothecaries. After work in the wards of St Bartholomew's, Brownless furthered his study of anatomy at the University of Liege, returning in 1846 to graduate MD from the University of St Andrews. It was at this time that Ellen, his wife of four years, died, leaving behind their two sons. Brownless now practiced as a physician in London, while lecturing and preparing medical students for their examinations. During this time he gained repute for his series of articles *Diseases of the Joints*.

He was soon elected physician to the Metropolitan Dispensary and the Royal General Dispensary, two of the largest charity institutions assisting London's poor. Accounts in 1852 commented upon: 'his rapid rise in the estimation of the profession and of the public; his kindness of manner and great attention [which] won the hearts of his patients; and his diagnosis and successful treatment of their diseases [which] secured their confidence'.<sup>1</sup> He was also known to be devoted to his students, offering them every opportunity for clinical instruction, for which they too held him in high esteem. Then in 1848, upon the retirement of obstetrician Dr Protheroe Smith, Brownless was unanimously elected teacher of practical midwifery at St Bartholomew's.

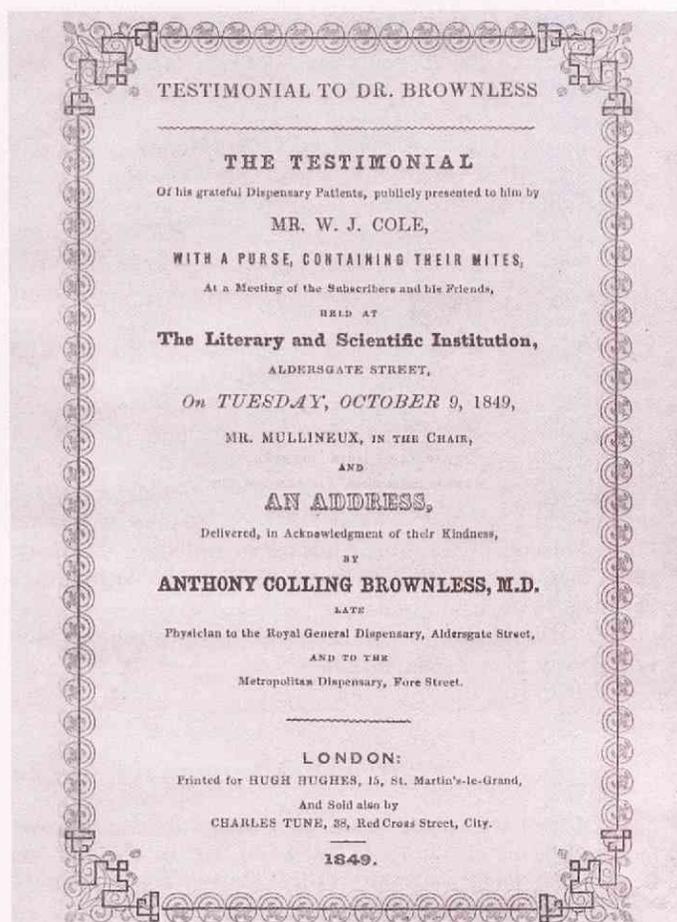
It reportedly came as a great surprise, therefore, when friends learned shortly after of his intention to leave for Australia. This was in consequence of ill health, probably the recurrence of tuberculosis which followed a knee joint injury sustained in his youth. This caused him to resign his positions at the London dispensaries, about two years before leaving England in 1852.<sup>2</sup>

Upon his resignation from the charity hospitals, the patients, at a great gathering, presented him with 'a beautiful testimonial raised with their mites, accompanied by an address full of genuine feeling and homely eloquence'.<sup>3</sup>

The Medical History Museum is fortunate to possess a bound copy of these addresses, dated 1849, inscribed in Brownless's hand to a favourite aunt. It also includes his response to his dispensary patients, which included the following words: 'your Demonstration of esteem, grateful as it would have been to me at all times, brings to my heart redoubled pleasure, *now* that I am assailed by some of the rich and powerful; (mark you, I say some, for *many* are most kind and generously supporting me) *now* that an attempt is being made to crush me for my support for the Poor, and devotion to the cause of Truth and Justice'.<sup>4</sup>

While the meaning behind these words remains unclear, what does become evident is that Brownless's strong sense of public service was the driving force behind his determination to see the young colony he had adopted provided with the highest possible standard of medical training and service.

Within weeks of arriving in Melbourne in December 1852, Brownless was elected physician to the Benevolent Asylum, where again his patients would have been the incurable and destitute ill. In 1854 he was elected physician to the Melbourne Hospital, where he continued in active service for twelve years.



TESTIMONIAL TO DR BROWNLESS, PRESENTED BY HIS GRATEFUL PATIENTS WHEN HE RESIGNED FROM LONDON'S CHARITY HOSPITALS

Already a member of the council of the university, Brownless saw the foundation stone for the main university building laid on 13 May 1855, and the university formally opened in a ceremony in the Old Exhibition building, then on the site of the Old Mint, where teaching of arts subjects started right away.<sup>5</sup>

In December 1856 the university council decided that preparations for the teaching of law and medicine should commence, and Redmond Barry and Anthony Brownless were requested to draft details. Within a month Brownless had submitted a 'Scheme for the Institution of a Faculty of Medicine', to be established before April 1857, so that all could be in place for the opening of a school of medicine on 1 May 1858. Professors and lecturers were to be appointed and salaries found for nine subjects within the university, and for clinical medicine and surgery outside the university. The sanction for the legislature was to be sought for an anatomy act to provide for the supply of bodies for dissection, and in London the advice of professors Paget and Owen was to be sought in the appointment of a threefold professor of anatomy, physiology and pathology.

It was soon realised that the fledgling university did not have funds for this comprehensive scheme, but Brownless, not to be daunted, approached the honorable chief secretary of government himself, requesting on behalf of the university council the estimated \$21 000 necessary for the building and equipping of a medical school. This request met with a response from the government which was to have a familiar ring for the next seven years, before the building finally arose, 'that the time



SIR ANTHONY COLLING BROWNLESS IN HIS ROBES AS CHANCELLOR OF MELBOURNE UNIVERSITY C.1890

was not yet arrived for initiating the medical school project'. The response by 1861 was even more firmly expressed, that: 'on account of the falling off in the revenue the Government cannot provide funds for establishing a Medical School, or even sustain the question of making further grants of money to the University'<sup>6</sup>—all of which has a familiar resonance to this day.

Despite these rebuffs (and a suspected distaste within the university council 'to allow a dissecting room to come betwixt the wind and their corporate nobility'),<sup>7</sup> Brownless continued to move ahead with plans. In 1860 Dr Shearman Ralph of the Microscopical Society was appointed to collect pathology specimens for the museum, and lengthy correspondence was entered into with Sir James Paget concerning the structure of the proposed course. Interestingly (as it turned out not to be adopted), Paget recommended a four-year course, reduced to three years if candidates had sufficient training in science. The course actually adopted was of five years, with five examinations, longer and more gruelling than that offered in the motherland.

In 1861 the Medical Society of Victoria, who had decided to start a school of their own, met with the university council and the decision was made to work with the newly formed Medical School Committee.

Advised again by the chief secretary's office in 1862 that further urgings might result in the matter being altogether rejected, Brownless redirected his pleas to the treasurer himself, for the much smaller vote of £2000, so that the portion of the building most urgently needed for anatomical purposes could at least go ahead.

With the rejection of even this modest request, a lesser man might have abandoned the cause. Brownless, undaunted, came up with a totally new suggestion for a general scheme of retrenchment of university expenditure, whereby the lecturers in law and civil engineering would give up part of their salaries to fund the maintenance of a medical school. This extraordinarily

selfless request seems to have been accepted. The professorial board could now frame regulations for the five-year MB course, and the university council announced that lectures would soon begin.

Without building or professor, the course commenced in 1862 on a more modest scale. Dr John Macadam, public analyst and health officer for the City of Melbourne, was appointed lecturer in chemistry and began his classes on 3 March, in his own laboratory behind the public library, with his own apparatus and materials. It was here, after such a protracted but determined struggle spearheaded by Brownless, that the first enrolled medical students—Patrick Maloney, William Rees and Alexander Mackie—commenced the first year of the MB.

Steps then had to be taken to choose the professor of anatomy, pathology and physiology, which on the advice of professors Paget and Owen resulted in the appointment of George Britton Halford. Yet in October 1862, with Halford on his way to take up his position, there was still no building in which the professor could conduct his classes. The council, determined that classes be held as promised, made arrangements for the erection of a shed (or possibly the clearing out of an existing loft)<sup>8</sup> at the back of Halford's rented premises. It was here in 1863 that the first dissecting class took place, and the three students could proceed with the second year of their course, supplemented with lectures in materia medica, therapeutics and medical botany, provided by Dr Richard Eades.

This pattern of pushing the project forward without waiting for 'due process' or infrastructure to be in place seems to have been the strategy adopted by Brownless in the face of setback and opposition. Eventually, in August 1863, the chancellor was instructed that the expenditure of £6000 for the additions to Melbourne University had been approved. The building was completed in May 1864 and celebrated as a significant milestone for the medical school.

While much more could be told of the school's early years, in closing this tribute to Brownless we acknowledge his great service in the realisation of the Melbourne medical school. Following his death, in December 1897, the by then chancellor, Sir Anthony Colling Brownless, was accorded a university funeral. Amongst his many tributes was a special medical supplement to *Alma Mater* in September 1989, acknowledging his life in which so much energy was directed towards the establishment of the school. His long years in this cause enabled him to see the fruit of his labours: a medical school, fully equipped and recognised, with 250 students and graduates scattered in honourable positions throughout Australia, and shortly throughout the world.

Ann Brothers  
Curator, University of Melbourne Medical History Museum

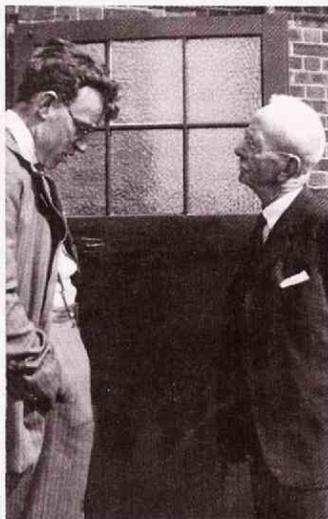
1. 'Memoir on the Life of Dr AC Brownless', *Medical Circular*, 17 Nov 1852, London, cited in 'The Contributor—Our Illustration' (anon), *The Melbourne University Review*, Vol. 2, No. 3, 1885, p.131.
2. Russell, KF. Entry for Brownless, Sir Anthony Colling, *ADB* Vol. 5, 1851-1890, MUP 1974.
3. (op. cit.) *The Melbourne University Review*, p.132.
4. *Testimonial to Dr Brownless by his grateful Patients and His Address in Acknowledgment of their Kindness*, London, 1849, p.15.
5. Allen, Harry. 'A History of the Medical School', *University of Melbourne Medical School Jubilee 1914*, Melbourne, 1914, pp.3-4.
6. Chief secretary's office to the registrar, Registrar's Correspondences—Medical School, Sept 1861, UM 419, No. 299, MUA.
7. Neild, JE. 'The Medical School of the Melbourne University, an Address delivered on the 25th Anniversary of the Opening of the Medical School, in the Wilson Hall, March 23 1887', in *Pamphlets—Neild*, (collected addresses 1867-1887).
8. AC Brownless to the registrar (concerning the landlord Smithers, and the removal of plants from loft), 17 Nov 1862, Registrar's Correspondence Medical School, UM 419, No. 380, MUA.

## SIR JOHN ECCLES

1903–1997

BY DAVID CURTIS

**T**HE TWENTY-SEVENTH of January 2003, marked the centenary of the birth in Melbourne of John Carew Eccles, a distinguished graduate of Melbourne University's Medical School and undoubtedly Australia's most outstanding neuroscientist. Eccles began his medical course early in 1920, achieved numerous academic successes and graduated at the top of his year in 1925. During his course he became enthralled by the interaction between the mind and the brain and resolved to pursue a career in brain research. Having been awarded the Rhodes Scholarship for Victoria late in 1924, he arrived in Oxford in 1927 to study and carry out research under the supervision of Sir Charles Sherrington, his chosen



JOHN ECCLES AND SIR CHARLES SHERRINGTON, c.1937  
(photo courtesy Information Technology & Communications Unit, John Curtin School of Medical Research, ANU)

mentor. Sherrington's department was then pre-eminent in the field of mammalian central nervous system physiology.

In Oxford Eccles was required to spend two years studying for the final honours school in physiology and biochemistry. He then joined Sherrington in a study of spinal reflexes in order to elucidate the mechanisms of excitatory and inhibitory synaptic transmission. These processes were then widely regarded to be electrical in nature, although there was strong evidence for chemical transmission in the peripheral nervous system. The available techniques and equipment, however, were quite inadequate for analysing in detail synaptic transmission in the central nervous system. Nevertheless, Eccles became convinced, from the rapidity of transmission at synapses in the spinal cord and autonomic ganglia, that an electrical component was essential.

Following Sherrington's retirement in 1935, and a change of research directions in Oxford, Eccles moved to Sydney as director of the Kanematsu Institute of Pathology at Sydney Hospital. Here, in addition to general supervision of the routine work of the institute, he established research laboratories. His observations, with SW Kuffler and B Katz, strongly suggested that acetylcholine was the chemical transmitter at neuromuscular junctions. Eccles, however, was not convinced and considered that both a fast electrical and a slower chemical process were involved. From 1941 his research was curtailed by the institute's participation in activities related to the war in the Pacific.

In 1943, when Eccles became aware that he would be unable to expand his research in Sydney after the war, he accepted the chair of physiology in the medical school of the University of Otago. In Dunedin from 1944 he made major changes to the pre-clinical teaching of physiology and set up research laboratories to pursue his interest in central synapses. Based on new experimental evidence, and influenced by KR Popper, then in Christchurch, he elaborated electrical hypotheses for central excitation and inhibition. A major breakthrough, however, which revolutionised the course of brain research, occurred in mid-1951 when he and his colleagues pioneered the use of electrolyte-filled glass micropipettes to record intracellularly from single nerve cells in the spinal cord of anaesthetised animals. The



SIR JOHN ECCLES IN HIS LABORATORY AT THE JOHN CURTIN SCHOOL OF MEDICAL RESEARCH, ANU  
(photo courtesy Information Technology & Communications Unit, John Curtin School of Medical Research, ANU)

findings were contrary to those predicted by Eccles's electrical hypotheses, and he was immediately converted to being a strong believer in chemical central transmission.

In 1951 he accepted the foundation chair of physiology in the new John Curtin School of Medical Research at the Australian National University in Canberra, and from 1953 created an outstanding 'school' of neurophysiology. Research facilities unmatched elsewhere were rapidly developed, and both established scientists and research students were attracted from twenty different countries. Initially he and his colleagues studied the properties of spinal neurones, the organisation

of spinal excitatory and inhibitory pathways and the ionic mechanism of excitation and inhibition. For this latter study Eccles shared the 1963 Nobel Prize in Physiology or Medicine. From 1961 he turned his attention to higher brain centres, including the thalamus, hippocampus and particularly the cerebellum.

The use of the intracellular recording technique for studying central neurones *in-vivo* spread to other centres abroad, and Eccles's discoveries related to synaptic processes and the organisation of neurones in the mammalian central nervous system are recognised internationally as having a major and continuing impact on brain research.

Eccles's concern about the limited facilities which would be available in Canberra on his retirement in 1968, led him to resign from his chair in 1966 and move to the United States. After a short period in Chicago he was appointed a distinguished professor in the State University of New York at Buffalo, and continued with a number of colleagues to investigate the cerebellum until he retired in 1975. He then moved to Contra in the Swiss canton Ticino, and concentrated on his continuing interest, since 1920, in the mind-brain problem. With his wide knowledge of the brain, and as a declared dualist, he published numerous papers and books on this subject. His final publications concerned his hypothesis as to how the mind could modify transmitter release at central synapses and so regulate brain function.

John Eccles received numerous honorary degrees, awards and honours, and delivered many named lectures. He was elected to fellowship of the Royal Society of London in 1941, and in Canberra was one of the fourteen fellows responsible in 1954 for the foundation of the Australian Academy of Science. He was second president of the academy (1957-1961) and was awarded a knighthood in 1958. In 1990 he was appointed a Companion in the Order of Australia.

Eccles never returned to Australia after his departure in 1966. From 1994 his activities were curtailed by ill health. He died on 2 May 1997, in Locarno, and was buried in Contra.

*Emeritus Professor David Curtis AC (MB BS 1950) was a PhD Research Scholar with John Eccles, 1954-1956*

## HISTORY OF THE ROYAL MELBOURNE HOSPITAL & WESTERN HOSPITAL CLINICAL SCHOOL

BY ASSOCIATE PROFESSOR GEOFF MCCOLL

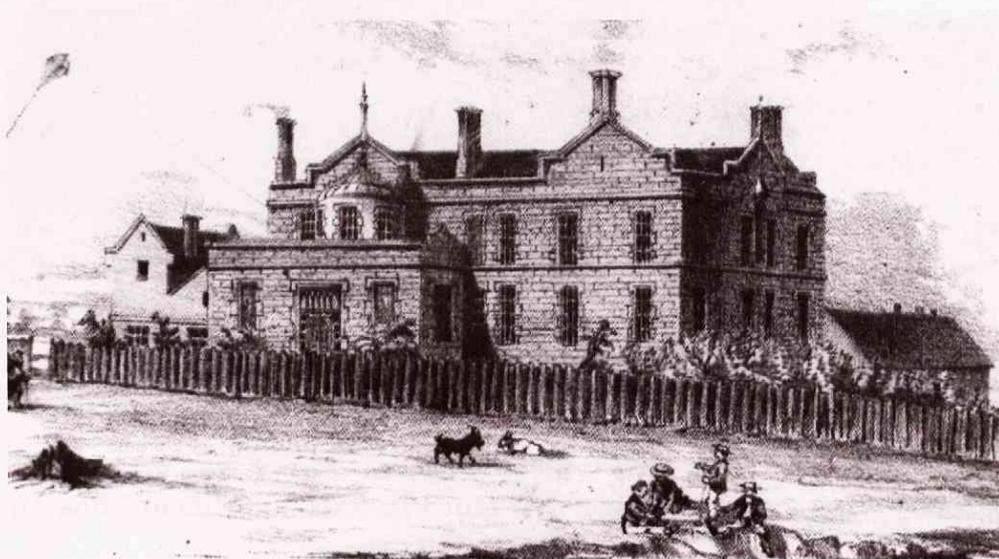
CLINICAL DEAN, ROYAL MELBOURNE HOSPITAL/WESTERN HOSPITAL CLINICAL SCHOOL

**I**N 1855, NOT long after the University of Melbourne was founded, the university council found itself considering a proposal for the first school of medicine in Australia. Prior to this, aspiring Australian doctors were forced to travel to the United Kingdom, often Edinburgh, for their medical education. With Melbourne growing rapidly, this seemed inappropriate and thus Dr AC Brownless, a member of the university council and an honorary physician to the Melbourne Hospital, proposed the formation of a faculty of medicine. With considerable financial pressures on the university at the time, it was not until 1862 that three students were admitted to the newly established medical school at the University of Melbourne.

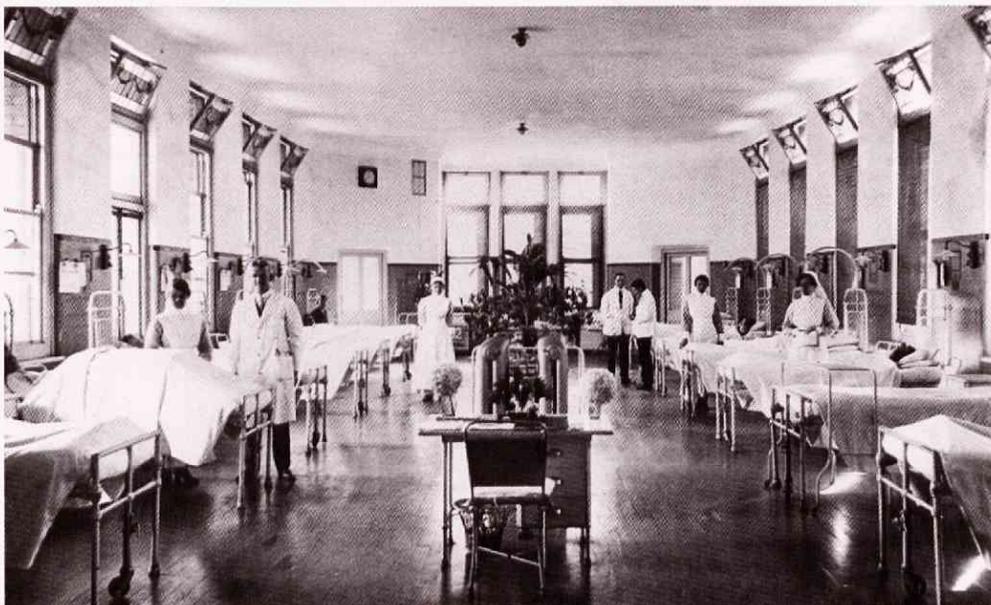
The Melbourne Hospital had opened its doors in Lonsdale Street on 15 March 1848, with Superintendent Charles La Trobe as its first president. The hospital was established 'for the benefit of the sick poor' and initially did not see its role as a teaching hospital. With the formation of a school of medicine at the University of Melbourne, however, it was clear that medical students would need clinical instruction and this was planned for the third year of the course.

The first University of Melbourne medical students were clinically attached to the Melbourne Hospital in 1864. The Melbourne Hospital and the University of Melbourne, however, were not directly associated and, as a result, early attempts to deliver clinical education were poor—it was widely reported that honorary staff ignored students attached to the hospital. Clinical medical education at the Melbourne Hospital was problematic for the remainder of the nineteenth century. At the time the subscribers to the hospital elected honorary physicians and surgeons, and the committee of management therefore had little opportunity to select medical staff who would be diligent teachers. As a result of the ongoing problems with medical education, the university council appointed four honorary medical officers as lecturers in clinical surgery and medicine: TN Fitzgerald, TM Girdlestone, P Moloney and John Williams. These men raised the profile and quality of medical education in the Melbourne Hospital, but on their own were unable to address all of the ongoing problems.

With the dawn of the twentieth century, despite the ongoing electoral system, medical education at the Melbourne Hospital improved significantly with the appointment of surgeons such as GA Syme and RA Stirling, and the physician RR Stawell.



THE MELBOURNE HOSPITAL IN LONSDALE STREET, C.1848, WAS ESTABLISHED 'FOR THE BENEFIT OF THE SICK POOR' AND DID NOT INITIALLY SEE ITS ROLE AS A TEACHING HOSPITAL  
(photo courtesy the Royal Melbourne Hospital Archives Department)



WARD SCENE AT THE MELBOURNE HOSPITAL C.1917  
(photo courtesy the Royal Melbourne Hospital Archives Department)

A new curriculum was implemented in 1906 and in 1910 the 'scandalous' electoral system was abolished and an advisory board, which allowed the university greater input, appointed honorary medical officers.

At this point the decrepit state of the original Melbourne Hospital began to impact both on teaching and the delivery of clinical services. Despite many having a strong view that the hospital should be relocated to a site in Parkville, to improve its relationship with the university, the hospital was rebuilt on Lonsdale Street.

In 1909, using an endowment from Dr James Stewart, two lectureships were set up—one in surgery and one in medicine. The occupants of these posts also played important roles in undergraduate medical education and were described as 'professors in all but name'.



THE MELBOURNE HOSPITAL, PICTURED HERE IN 1913, WAS REBUILT IN LONSDALE STREET TO HELP IMPROVE TEACHING AND THE DELIVERY OF CLINICAL SERVICES  
(photo courtesy the Royal Melbourne Hospital Archives Department)



THE ROYAL MELBOURNE HOSPITAL IN 1960 ON THE CURRENT PARKVILLE SITE  
(photo courtesy the Royal Melbourne Hospital Archives Department)

Female students were first admitted to the University of Melbourne in 1880, but it was a further seven years before they were enrolled in the medical school. It was initially proposed that these female medical students would perform separate dissections and clinical placements, but this lasted only a few years. The Alfred Hospital Clinical School had recently opened and the first cohort of female students was allocated to this clinical school. As a result of poor teaching, the majority of them transferred to the Melbourne Hospital the following year. Many female medical students performed very well in final examinations, and the dilemma of whether they could be employed at the Melbourne Hospital was faced in 1892. It was not until 1896 that two female students were finally elected as resident medical officers.

In 1914 a system of deans and sub-deans, appointed by the honorary medical staff, was initiated in the Melbourne Hospital Clinical School. The first dean was Henry Carr Maudsley, an English born and trained physician with an interest in neurological

and psychiatric illnesses. Seventeen clinical deans were to follow Dr Maudsley, many of whom, through their varied roles, had a significant impact on the Melbourne Hospital in general, and medical education in particular. Notable deans in the early years included George Syme, Bernard Zwar and Victor Hurley. George Syme, whose uncles David and Ebenezer were involved with *The Age* newspaper, graduated top of the class in 1881 from the University of Melbourne medical school. A general surgeon with wide interests, and a natural leader, Syme was dean of the clinical school from 1916 to 1919. Mr Zwar, a general surgeon associated with the hospital from 1911, was dean from 1922 to 1929. In his later years he was the driving force behind the development of the new Royal Melbourne Hospital on the Parkville site. Victor Hurley was certainly one of the great names of the Royal Melbourne Hospital and he served as dean of the clinical school from 1929 to 1936. Hurley, a general surgeon, was influential in every aspect of the hospital's life, completing a fifty-year association as president of the board of management from 1947-1956.

In 1935, by royal charter, the Melbourne Hospital became the Royal Melbourne Hospital. At about the same time, planning began for the hospital to move to its current site in Parkville, at that time a pig market. Led by Bernard Zwar, among others, the many hurdles in the relocation were overcome and the 'New Royal Melbourne Hospital' foundation stone was laid on 13 November 1941. The US Army 4th General Hospital occupied the new hospital until 10 December 1944, when the Royal Melbourne Hospital finally moved to the Parkville site.

Medical education remained an integral part of life at the Royal Melbourne Hospital after the Second World War, but was given a significant

boost with the appointments of the Stewart professors in medicine and surgery—Richard Lovell in 1956 and Maurice Ewing in 1958. This focus on academic departments assisted the clinical school in its delivery of lectures and tutorials, and also resulted in the construction of the clinical sciences building, in which the clinical school office was housed until the 1990s.

The longest serving clinical dean was Ken Grice, who served in this position for nearly twenty years until his retirement in 1969. Dr Grice, a general physician and cardiologist, was a respected teacher who significantly improved the clinical curriculum during his tenure as dean.

In recent years the challenges of delivering high quality clinical education were made more difficult by changing medical practices, such as shorter hospital stays for patients and shrinking bed numbers in the large teaching hospitals. To address these issues the clinical school negotiated placements for its students at the Western General Hospital, a link that remains very strong to this day, and resulted in 1988 in the formation of the combined

Royal Melbourne Hospital/Western Hospital Clinical School. Rotations of medical students to regional sites such as Ballarat (from 1980), Horsham (from 1991) and Wangaratta (from 1989), have also improved the breadth of experience available to students attached to the Royal Melbourne Hospital.

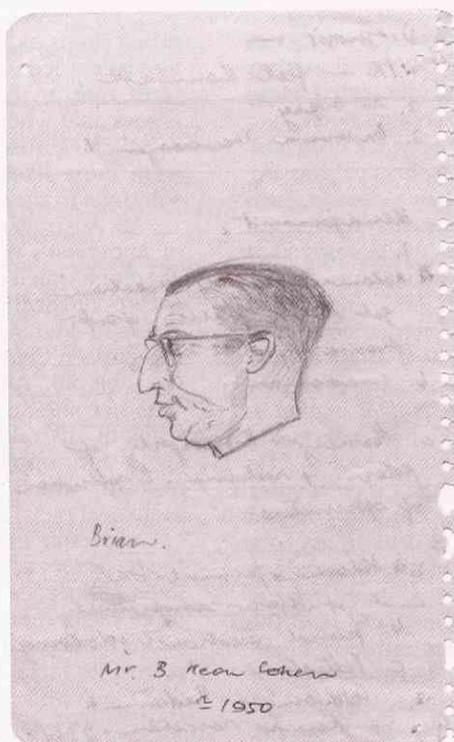
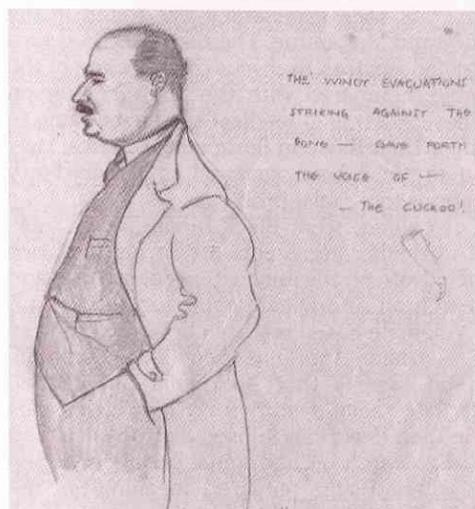
The RMH/WH Clinical School remains the largest clinical school attached to the University of Melbourne Faculty of Medicine, Dentistry and Health Sciences, with approximately ninety to 100 students per year level. In 1999 the faculty implemented a new curriculum in the School of Medicine that embodied principles of adult learning in the form of problem-based learning. Students in the vanguard of this new curriculum reached the clinical schools in July 2002. It is a great credit to the flexibility of the teachers at the RMH/WH Clinical School that this significant change in the curriculum was embraced by all.

There has been considerable change over the 139 years of clinical teaching at the Royal Melbourne Hospital, but it is worth reflecting that during this time there has been one constant: that the ideal teaching environment comprises a good teacher, a willing patient and an enthusiastic student—which continues to epitomise the approach of the Royal Melbourne Hospital.

#### Deans of the clinical school

1914 – 1915	Dr HC Maudsley
1915 – 1916	Dr GT Howard
1916 – 1919	Dr GA Syme
1919 – 1922	Mr W Kent-Hughes
1922 – 1929	Mr BT Zwar
1929 – 1936	Mr TEV Hurley
1936 – 1946	Mr WA Hailes
1941 – 1946	Dr FB Lawton (Acting)
1946 – 1949	Dr HH Turnbull
1949 – 1950	Mr WEA Hughes
1950 – 1956	Mr JO Smith
1956 – 1959	Dr GA Pennington
1959 – 1965	Dr KJ Grice
1965 – 1966	Mr HH Eddey
1966 – 1979	Dr KJ Grice
1979 – 1986	Dr RA Melick
1986 – 1990	Mr AM Cuthbertson
1991 – 2001	Associate Professor RFW Moulds
2001 –	Associate Professor GJ McColl

### Through Lens and Speculum—views of medical student life



A SELECTION OF CARICATURES BY JAMES MILNE (MB BS 1951) FROM AN ALBUM 'SOME CHARACTERS SEEN IN THE COURSE OF A MEDICAL EDUCATION' IS ON DISPLAY IN THE MEDICAL HISTORY MUSEUM, WITH OTHER ARTIFACTS RELATING TO MEDICAL STUDENT LIFE, UNTIL AUGUST.

L-R: DR RUSSELL 1950, MR B KEON COHEN 1950, HUGH TRUMBLE 1947, JW JOHNSTONE 1949-50.

Readers with anecdotes about the people depicted can contact the editor at: [umms-medicine@unimelb.edu.au](mailto:umms-medicine@unimelb.edu.au).

#### BOOKS RECEIVED

##### Hospital in the Home

PRINCIPLES AND PRACTICE  
BY DR MICHAEL MONTALTO

ArtWords Pty Ltd Publishing, 2002, Sbk, pp 172, rrp \$66 plus postage & handling. Available from ArtWords Pty Ltd Publishing, Rear 144 Upper Heidelberg Road, Ivanhoe, Victoria, Australia 3079. Ph: +61 3 9497 4871.

#### Preventive Medicine / Medicina Preventiva

REDUCING THE BURDEN OF DISEASE / COME RIDDURRE L'ONERE DELLA MALATTIA  
EDITED BY DR ANTHONY F MARIANI

Dr Anthony F Mariani and the Italian Medical Society of Victoria, November 2002, Sbk, pp 302, glossary, subject index, websites and resources, rrp \$45. From Co. As. It. Italian Assistance Assoc, 189 Faraday St, Carlton, Victoria, Australia 3053. Ph: +61 3 9349 9000.

The Cultivation of Whiteness

SCIENCE, HEALTH AND RACIAL DESTINY IN AUSTRALIA

BY WARWICK ANDERSON

Melbourne University Press, 2002  
Sbk, pp 364, illustrated, notes,  
bibliography, index, rrp \$34.95

IN FUTURE, THE pioneer should not be 'the settler', Anton Breinl told the 1911 Australasian Medical Congress, 'but the scientifically-trained man, who studies local conditions in a new territory, and investigates the existing diseases'.<sup>1</sup> Breinl was the first director of the then newly established Australian Institute of Tropical Medicine in Townsville: the first medical research institute in Australia. The institute did not just research tropical diseases but embarked on 'a thorough and impartial inquiry into the physiology of the white race living and working under different conditions in tropical Australia'.<sup>2</sup> This research was entangled with the national identity of a White Australia, and the now notorious White Australia policy.

Warwick Anderson's *The Cultivation of Whiteness* investigates this entanglement of medicine, science, race and nation. Australian medical scientists' changing and contested ideas about race are the thread that binds this fascinating book.

This tropical physiological research now seems a little odd: I am writing this review under a ceiling fan in tropical Darwin, where I have lived in good health for more than a decade, even though I am classified as White. However, in the early nineteenth century, the first four attempts at permanent White settlement in the tropical Top End were inevitably unhealthy—fevers, dysentery and malnutrition were common and often fatal. All sites were quickly abandoned. Many doctors continued to believe until the early twentieth century that tropical heat and humidity were unhealthy for the White race. A professor of physiology in London wrote in the *British Medical Journal* in 1914 that: 'Evolution has settled the dark-skinned man in the tropics, and the white in the temperate zones of the earth'.<sup>3</sup> He asserted that White settlement of north Australia was 'counter to the laws of Nature'. Each race had evolved in and adapted to its own climate but could not easily move and adjust to a markedly different climate. Doctors' fears of the degeneracy of the White race in the tropics led to concerns about tropical White women's bodies and their procreative capacity, and the progressively weakened bodies of their children and subsequent generations. But most medical and political debate was about the White man in the tropics—in particular the *working* White man, with its explicit economic concerns, which became more urgent following the deportation of Pacific Islander labourers after the new federal parliament passed the *Pacific Islanders Labourers Act* in 1901. The inability of White men to adapt to and work in the tropical climate had been used to justify the exploitation by the Queensland sugar industry of these cheap indentured labourers in the nineteenth century. The new institute's physiological research was required to solve these potential problems caused by the politics of a White Australia.

When the special session to discuss this research was convened at the 1920 congress, 'the supreme national importance of this matter' was emphasised.<sup>4</sup> The research acquitted the tropical climate and so medical attention shifted and turned to the social environment and matters of hygiene. Race remained important. Aboriginal people were described as reservoirs of infection (with hookworm) and given mass treatment (to protect nearby White health), rather than the

individual treatments offered to infected Whites. Earlier research had emphasised the relative absence, compared with other tropical countries, of such native reservoirs in making Australia an ideal place to investigate whether the White race could live in the tropics.

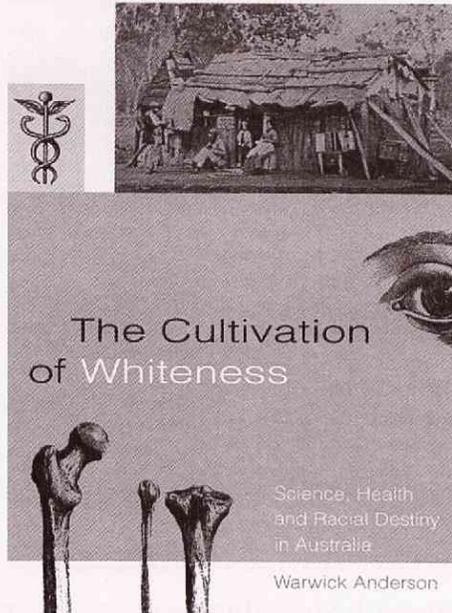
The exploration of the meaning of these stories from medical science in tropical Australia forms the core of Anderson's book, but he begins with the earlier doctors' fears that even the climate in south-east Australia was unhealthy for new British migrants. These earlier concerns with acclimatisation and the unhealthy effects of the sun and wind, soon diminished as the climate became more ordinary to settlers in southern Australia, and as contagionism and the germ theory increased their influence over medicine in the late nineteenth century. When both the southern and tropical Australian climate had been exonerated, a new cause of race degeneracy was found in the

urban slums of Sydney and Melbourne. The rise of the eugenics movement led Australian doctors to discuss the decline of the birth rate of the 'able' compared with the 'unfit'. Anderson argues that whilst these Australian medical scientists clung to racial categories longer than those in Europe or America, they were more likely to propose environmental than hereditary solutions to these supposedly racial problems.

All Australians, of course, were Black before 1788. Some of Anderson's most intriguing arguments are in his final two chapters, which concentrate on the implications of medical and anthropological research on Aboriginal people for ideas about race and Whiteness. Adelaide-based research between the wars categorised Central Australian Aboriginal people as caucasian, not negroid. Anderson asserts that Aboriginal people had thus become an alternate racial destiny for White caucasians living in Australia. He then describes subsequent physical and social anthropological research on Aboriginal people of mixed descent, which undermined and rendered meaningless the biological racial boundaries of Whiteness.

Anderson argues that medical science, which had provided the basis for racial thinking, had exposed the inconsistencies of ideas about race by the 1940s. But did science or medicine ever drive racial thinking? Perhaps it just hitched a ride with more powerful popular ideas about race—providing the authority of science to racial ideas in exchange for the extra research funds that came from addressing a topical social question. This may explain why medical scientists in the last half-century have never been able to extinguish the considerable populist appeal in Australia of ideas about race and Whiteness, even though these ideas are based on biological nonsense.

David Thomas, Senior Research Fellow  
CRC Aboriginal & Tropical Health



1. Breinl A. 'The object and scope of tropical medicine in Australia', *Transactions of the Australasian Medical Congress, 9th Session, Sydney 1911*, Vol. 1, 524-35. Sydney: William Applegate Gullick, 1913. p. 526.
2. *ibid.*
3. Hill, L. 'The working power of the White man in the tropics and the electric fan', *Br Med J* 1914:325.
4. Cumpston JHL, Brieni A, Osborne WA, Nisbet ATH, Nash JB, Barrett J et al. 'Tropical Australia'. *Transactions of the Australasian Medical Congress, 11th Session, Brisbane, 1920*, 39-69, Brisbane: Government Printer, 1921. p.40.

## The Mantle of Surgery

THE FIRST SEVENTY-FIVE YEARS OF  
THE ROYAL AUSTRALASIAN COLLEGE  
OF SURGEONS

BY AW BEASLEY

*Royal Australasian College of Surgeons,  
Melbourne, 2002 Hbk, pp 310, illustrated,  
notes, bibliography, index, rrp \$75, available  
from the Royal Australasian College of  
Surgeons*

WYN BEASLEY, A New Zealander, a retired orthopaedic surgeon and a former vice-president of the Royal Australasian College of Surgeons (RACS) was invited to write this history: a happy choice as he has been involved in college affairs over many years and had already produced a book *Portraits at the Royal Australasian College of Surgeons*.

He had the benefit of a short account of the early years of the college (1920-35), written by Julian Ormond Smith (Melbourne) who was closely associated with its founders, and an update by Douglas Miller (Sydney), as well as close cooperation with the council, the college archivist and a triumvirate of Bruce Barraclough (president at the time of writing), Donald Simpson (Adelaide neurosurgeon and a noted medical historian) and Vin Massano (chief executive officer) who vetted the manuscript as it developed. The result is an interesting narrative, richly illustrated, and an easy read, with much anecdotal material supplied by the author.

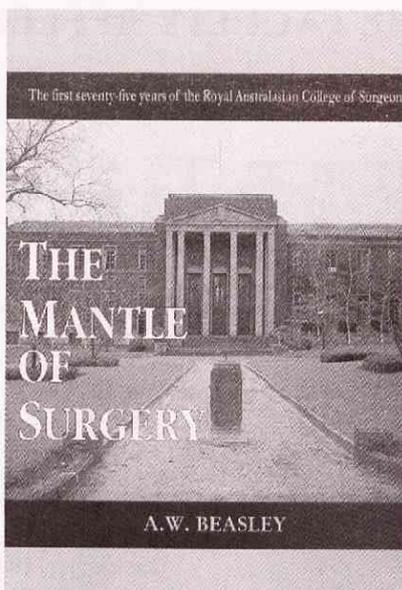
This is a history as seen through the eyes of a New Zealander with a strong feeling of national identity. As an Australian reviewer I think the New Zealand role has been over emphasised.

After the First World War there was a feeling among some surgeons of the need for an association which recognised the trained surgeon and would aim at raising surgical standards. The Surgical Association of Victoria was founded in 1920, and in the same year Louis Barnett, professor of surgery at Otago University, wrote to the surgical section of the Australian Medical Congress (meeting in Brisbane) suggesting the formation of an Australasian surgical society. Barnett could not attend the meeting and the proposal was put forward by Hamilton Russell (Melbourne); it not only met with little support but was actively opposed by the president of the surgical section (HS Newland, Adelaide) and Sir George Syme (Melbourne).

In 1924 a group of prominent American surgeons, which included William Mayo and Franklin Martin, visited Australia. In 1913 Martin had been the driving force in the formation of the American college and he emphasised the profound effect this had had on improving the standard of surgery in the United States.

In 1925 a group of Australian and New Zealand surgeons were invited to the American college meeting in New York and after this meeting Hugh Devine went to Rochester where he stayed with WJ Mayo. Further discussions took place and Devine was convinced that a college of surgeons of Australasia was the way to go. On his return to Australia he convinced Sir George Syme, the elder statesman of Australian surgery, of this. On 19 November 1925, a letter signed by Syme, Hamilton Russell and Devine (all of Melbourne) was sent to inpatient surgeons of teaching hospitals in Australia and New Zealand, and to some other prominent surgeons, inviting them to become foundation members of a body aimed at improving the status of surgery and raising hospital standards. At the 1927 Australasian Medical Congress in Dunedin, Barnett, as president of the congress, hosted 'a group of his surgical colleagues who took the opportunity to form the College of Surgeons of Australasia'.

The early development of the college was dominated by Hugh Devine, who was not only a master surgeon but also a surgical



visionary. As well as being one of the signatories of the original letter seeking foundation members he went on to be president (1939-40) and a councillor for nearly twenty years.

The first annual meeting of the college was held in Canberra, in March 1928, and a permanent headquarters in Canberra was discussed. This was later rejected and two Sydney fellows (HRG Poate and AJ Aspinall) proposed Melbourne as the site—based at least partly on the ease of access by sea, which was the preferred or only method of transport available for all concerned.

Devine successfully negotiated with Premier Hogan the use of part of the present site. After a change of government, far more generous terms were offered by the incoming premier, Stanley Argyle. Devine also played a part in the acquisition of the college mace (a gift from the Royal College of Surgeons of

England) and another of his great achievements was initiating the *Journal of the Australasian College of Surgeons*, as well as chairing its editorial committee for twenty years, and funding the publication of the first two issues himself.

In the early years Devine was strongly supported by Alan Newton (Melbourne). Devine was described (by Douglas Miller) as 'the tactician, the negotiator, the friendly envoy'; Newton, 'the aloof ruler... the elder statesman... articulate to the last syllable... authoritarian and uncompromising'. (I was fortunate to know both these men. Newton is remembered as a brilliant teacher.)

Beasley provides interesting chapters on 'Standards', 'The Impact of War', and on the development of the Faculty of Anaesthetists within the college, and its subsequent exodus. He discusses the college's role in South-East Asia, medical education, and the many changes in the rules of admission to fellowship of the college, taking a firm position that the FRACS should be an exit examination—awarded only after a lengthy period of supervised surgical training.

Another important issue was the involvement of the college in public health issues, particularly the impact of the Road Trauma Committee, which was influential in promoting the compulsory wearing of seatbelts in motor vehicles, improved road engineering and better training of ambulance officers.

The RACS Foundation is discussed. It provides support for vital college activities, particularly surgical research and continuing medical education. Some funding is received from government but (importantly) much has come from the generous contributions of many fellows and friends of the college, both corporate and individual.

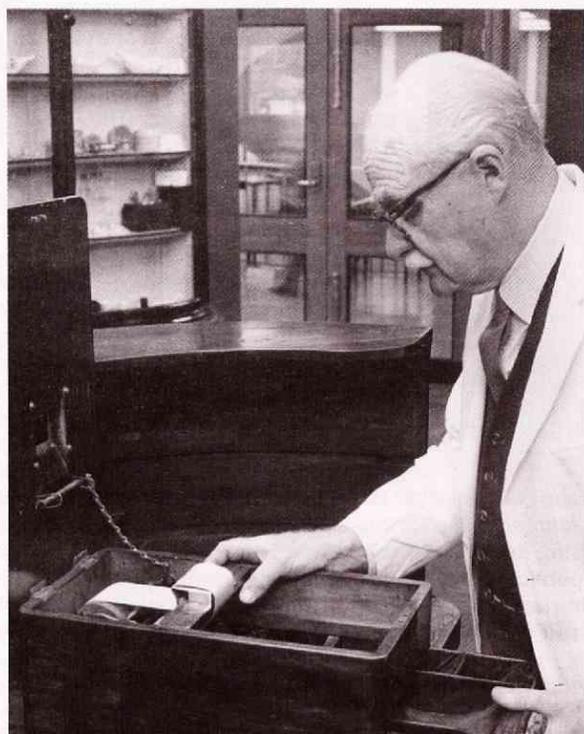
Beasley's final chapter is on 'Unfinished Business'. There is much to do but 'the principles, that moved the foundation in the 1920s—surgical standards and a means of designating those who can meet them—are unaltered'. He sees the college as a living and evolving entity, responding to the needs of society and the ever-changing aspects of surgical practice.

Before memory fades Beasley has produced a valuable written and vividly illustrated (although somewhat self-indulgent) history. A handsome volume very similar in design to that produced by the Royal College of Surgeons in England in 2000, recording '200 Years of History at the Millennium'. If a different author had been chosen we would certainly have a different history, but not necessarily a better one.

*An interesting reflection on surgical history (though not related to this book) in the two countries is that Otago University (Dunedin) appointed its first professor of surgery in 1909. In 1930, Sydney University followed suit—Melbourne not until 1955!*

James Guest BSc 1938, MB BS 1941, FRCS, FRACS

## THE FACULTY REFLECTS— 150 YEARS OF MEDICAL HISTORY



'PROFESSOR RUSSELL  
FIDDLING THE TILL'

Ken Russell behind the counter of the Savory & Moore Pharmacy. The museum was formally opened in 1971 in an august ceremony with the Prime Minister, Sir R G Menzies, officiating and the Australian director and representatives from Burroughs Wellcome & Co attending. The pharmacy was carefully packed up, transported and reinstalled in the Medical History Museum through the generosity of the Wellcome Trust, London

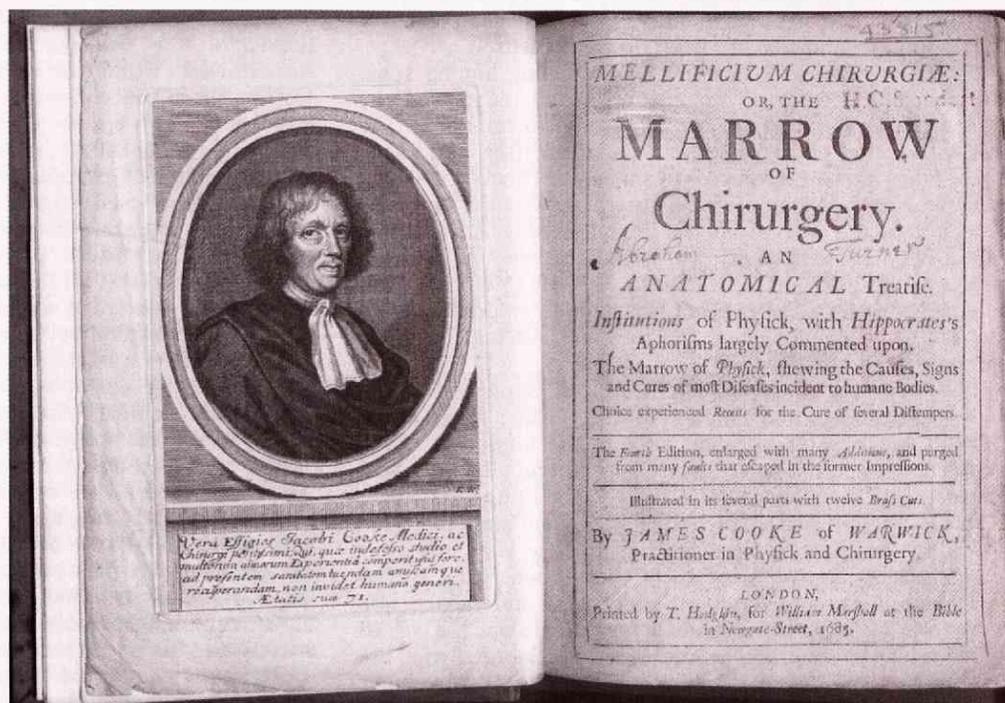
THE MEDICAL HISTORY Museum's second exhibition to mark the sesquicentenary of the University of Melbourne will open in September and run until February 2004. An exhibition catalogue will show the faculty's role in this laudable history.

The exhibition will display early correspondence documenting the strategic and determined steps taken by AC Brownless to establish a Melbourne medical school. As well as acknowledging some of the faculty's finest teachers, a selection of class photographs will draw attention to several exceptional years in which the school produced some of its greatest researchers. The exhibition also provides an opportunity to show some rarely exhibited ceremonial items such as illuminated testimonials and presentation gifts that acknowledged the services of teachers and practitioners to the student body and the community at large.

The Medical History Museum has been important in recording and relaying the faculty's history to subsequent generations, while also presenting the larger history of health and medicine. One exhibition case will be devoted to the history of the museum, which was established in 1967 by Professor KF Russell through a generous grant from the Wellcome Trust, with ongoing valuable support from the Johnstone-Need Medical History Unit.

The Medical History Museum  
2nd floor, Brownless Medical Library  
The University of Melbourne

Open: Monday to Friday, 9am to 6pm or Saturday by arrangement  
Telephone: (+61 3) 8344 5719



MELLIFICIUM CHIRURGIAE: OR, THE MARROW OF CHIRURGERY, BY JAMES COOKE OF WARWICK,  
4TH EDITION, LONDON 1685

This anatomical treatise was presented by Dr FNL Poynter, on behalf of the Wellcome Historical Medical Museum and Library, on the occasion of the official opening of the Department of Medical History, 13 April 1967. It covers the surgical treatment of various wounds and the medicinal treatment of diverse diseases, including a section on Hippocrates' Aphorisms, with commentaries. The volume is illustrated with several 'brass cuts' depicting the anatomy of the body, surgical instruments of the time, as well as the portrait of the author (pictured).

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mid bra

6 of 12 Bones

### Ossification & primary centres

Bone development is termed ossification.

By what process do the majority of bones ossify?

By what other process do some bones ossify?

Where and when does ossification commence?

The image is of a 12-week foetus with bone stained (by alizarin red).

Can you identify sites of primary centres for - intracartilaginous ossification? - intramembranous ossification?

primary centre (frontal bone of skull)

#### Primary centres of ossification

dissectio  
system  
regio  
imagi

main index previous next exit

general anatomy



THE UNIVERSITY OF  
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JOURNAL OF THE UNIVERSITY OF MELBOURNE  
MEDICAL SOCIETY VOL 5 NO 1 JUNE 2003