Chapter 3

Education: beyond the medical program
Ann Jervie Sefton

Introduction

A diversity of additional educational activities that support ongoing learning for medical students and graduates are described in this chapter. The educational activities of staff are supported by the Office for Teaching and Learning in Medicine and the Centre for Innovation in Professional Health Education, both described in Chapter 2.

The highly regarded Bachelor of Medical Science [BSc(Med)] degree formerly provided an opportunity for medical students to pursue a research interest during the course; with the adoption of the graduate-entry program it is now discontinued. A short account is provided here, recording its history and acknowledging its importance.

For many years, members of Faculty have taught a number of well-received traditional coursework master’s degrees in specialist areas. That range of professional postgraduate coursework degrees will be expanded by developing a flexible suite of master’s programs online, for those seeking specific professional knowledge and skills.

The students’ learning is supported by a range of other professional resources, including the libraries which have changed their functions dramatically with the increasing sophistication of information technology. The libraries continue to be at the forefront of new developments. Museums (Anatomy and Pathology) contribute to the students’ learning, both from three-dimensional museum specimens and increasingly from electronic images.

The changes to the medical program have highlighted the need to link aspects of science to the humanities. Some aspects are discussed in the context of the Personal and Professional Development Theme in Chapter 2. Specifically, the Centre for Values, Ethics and the Law in Medicine and the Pam McLean Cancer Communications Centre provide support for those essential dimensions of students’ learning. Opportunities are now available for undergraduates and postgraduates interested in exploring the medical humanities.

It is not always realised that members of the Faculty of Medicine make major educational contributions beyond teaching medical students. Staff in the medical sciences have for many years taught substantial numbers of dental and pharmacy students; both faculties were until recently
within the College of Health Sciences. The dental students share many aspects of the medical program, particularly the first two years, and pharmacy programs that are currently undergoing further development are supported by staff in the medical sciences.

More recently, teaching within the Faculty of Science has increased dramatically for the medical science staff, particularly since the inception of a Bachelor of Medical Science (BMedSc) degree in the Faculty of Science. Substantial numbers of well-performing students continue to take an honours year, analogous to the former BSc(Med) and some proceed to MSc or PhD degrees in medically-related areas. Medical Faculty staff also teach increasing numbers of BSc students interested in studying a medical science. Indeed, for many campus-based Faculty staff in the medical sciences, teaching in faculties outside Medicine substantially exceeds their contributions to the medical program because of the large and increasing numbers of students enrolled.

Academic staff in the clinical schools have traditionally supported the development both of young graduates in hospital practice during their early postgraduate years and those undertaking clinical training for the professional colleges. The Faculty has also strongly supported continuing medical education through the Postgraduate Committee in Medicine, now the Coppleson Institute.
The BSc(Med) and other honours degrees

Since 1890 medical students who were performing well were offered the opportunity of spending one year to acquire a BSc degree and some undertook that option. In 1949, the Faculty of Medicine instituted a BSc(Med) degree at honours level, requiring a year to be spent in supervised research in one of the medical sciences. Almost all returned to graduate in medicine, although a small number completed a PhD before either rejoining the medical program or continuing in research. With the change to the graduate-entry program, the degree is no longer awarded, but a number of the students who enter medicine already hold equivalent honours degrees by research. It will be interesting to review their future careers, as holders of the BSc(Med) degree have previously been strongly represented on Faculty staff and have contributed extensively to research.

The Centenary Book records that 356 students had received the degree between 1950 and 1981 and a very small number had achieved a BSc(Hons) (which allowed for the award of a medal). Between 1982 and 1999, the last date at which students in the former program were eligible to complete the degree, a further 194 had graduated with the BSc(Med). Results of a survey undertaken by John Young and Ann Sefton were reported in the Centenary Book. Most of those who graduated before 1981 had trained for a clinical speciality, while 80 chose academic careers, many at the University of Sydney. Most (88%) would have made the choice to undertake the research year if offered it again. At that time, it was noted that Sydney BSc(Med) graduates have been Members of the Australian Academy of Science and Fellows of the Royal Society; the numbers have grown since.

In 1990 Alan Harvey from the University of Western Australia carried out a national survey of the equivalent intercalated research degrees across Australia in the previous 10 years. At that time, Sydney reported the largest numbers, numerically and proportionally (140) representing on average 6% of the class each year. Figures from other universities over that period were: Melbourne 90 (4.9%), Queensland 88 (4.4%) and Monash 76 (4.5%). Between 1980 and 1999 when the program was discontinued as the six-year program was phasing out, the annual number of candidates in the University of Sydney remained about 11 each year, or 6.6%. In the rather different undergraduate programs in several UK universities, the numbers were higher – up to 28% at Manchester.

Research degrees in the University of Sydney Medical Program

Current medical students interested in research who enter with an honours degree can and do spend additional time to undertake research for a PhD or MPH during the program. Because they enter as graduates, there are also options for undertaking other coursework or research master’s degrees. Initially, some students were selected into the graduate program specifically for a combined PhD program, but that no longer represents a special category for admission. Discussions are continuing on how to encourage and support initiatives for students with an
honours degree to participate in one of the Faculty’s research programs. Particular problems arise after graduation for those committed to research, when the clinical demands of internship and residency limit opportunities to maintain research activities. There is an urgent need to support initiatives for new graduates with a strong commitment to research, to develop a cohort of talented and committed clinician scientists.

Professional master’s degrees and diplomas

In addition to the focus on teaching students, the Faculty has offered a number of programs to upgrade the qualifications of graduates in medicine and medical science. Coursework master’s degrees at different times were offered in a range of disciplines including Public Health (also available by research), Surgery, Medicine, Venereology, Perinatal Medicine, Pain Management, Sexual Health Medicine and more recently, International Public Health and Clinical Epidemiology. Some of these programs continue to attract substantial numbers of students, some of whom progress to a doctorate. In 1980, 61 students were enrolled in coursework master’s programs; in 2005 the total was 471.

The educational skills acquired in developing the medical program have now broadened into other fields. The Centre for Innovation in Professional Health Education (CIPHE) (see Chapter 2) is contributing to the development of a suite of Specialist Professional Master’s in Medicine Programs (SPMMP). They are designed to be modular, with options, and delivered flexibly online, along with some face-to-face units. The programs will be developed collaboratively with other faculties in the College of Health Sciences to provide broader choices of units. An earlier interdisciplinary Master in Pain Management, developed at Royal North Shore Hospital, has been very successfully delivered online. A Master in Medical Education degree was established in 2004, and is partly available online.

Teaching and learning within the Faculty of Medicine are both supported and enriched by various organisations across the Faculty and the University. Courses are available for teachers to certificate, diploma and master’s level in higher education (through the University’s Institute for Teaching and Learning) and in medical education (through the Faculty) or in health education (through the Faculty of Health Sciences). Some units may be shared to provide a greater range of opportunities.

Learning support

Libraries and museums provide specific help to students in the vital task of locating medical knowledge and applying social developments within a changing environment.
3. Education: beyond the medical program

The role and function of libraries in the education of students has changed enormously over the last 25 years. Libraries, vital to the study and research needs of students and staff alike, have had to adapt, respond to and anticipate the changes in information technology. Librarians have expanded their roles; they are key figures in managing information.

Similar revolutions have taken place in the role of museums in teaching. Once a required component of any medical student’s learning experience, visits to the Anatomy and Pathology museums remain just as valuable in providing crucial three-dimensional perspectives on normal and abnormal tissues, structures and organs. In addition, the sense of size and proportion is more readily grasped. They complement two-dimensional images in books or computer screens that do not so easily provide the sense of depth and proportion.

With changes to the medical curriculum and broader social changes there has also been a conscious attempt within the Faculty of Medicine and more broadly through the University to establish a link between science and the humanities. Some aspects are discussed in the Personal and Professional Development theme of the USydMP curriculum. The aim is specifically embodied in three developments within the Faculty of Medicine: the Centre for Values, Ethics and the Law in Medicine; the Pam McLean Cancer Communications Centre; and the teaching of Medical Humanities within the Faculty of Arts.
Libraries

John Shipp, University Librarian

Like sand on a beach, libraries adapt subtly to shifts in their environment. Outwardly they may appear as serene oases but they are perpetually sculpted by the tides of academic life and the winds of technological innovation. Change has been particularly constant over the past 20 years for all libraries within the University and particularly for those supporting medicine and the health sciences.

During that time, libraries have evolved to accommodate developments in medical information, pedagogy and research. Communication and information technologies have been adopted to improve access to resources especially by off-campus users. Commencement of graduate-entry to the medical program required services which supported evidence and problem-based approaches to learning and which facilitated life-long learning. Collections have remained important, but providing access to required information has been emphasised in preference to mere acquisition.

The history of library support for medical education and research at the University of Sydney is liberally peppered with examples of high commitment from individuals and the constant striving for resources. It has been characterised by close collaborations between academic and Library staff aimed at ensuring the best possible support for learning and research within the Faculty.

The provision of a separate medical library, however, dates only from 4 February 1934. Services for students prior to that date were provided through the University Library located in the Quadrangle. As the University Library could not support research adequately, academic staff supplemented it with their own collections. These private libraries often formed the basis of departmental collections which later became branches of the University Library.
Construction of the new Medical School in 1934 led to the creation of the Medical Library in what is now the Blackburn Building. This was the first branch of the University Library and was established specifically to support staff and students working in clinical and para-clinical areas. The attractive architecture of the new library did not compensate, however, for a chronically poor collection. Financial assistance from the Medical Society was necessary for many years to supplement the budget available to buy books for students.

Despite many vicissitudes, the collection gradually grew and the library became increasingly overcrowded and old fashioned. It was often unbearably cold in winter and smells from adjacent animal facilities precluded open windows in summer. There was general relief when space for a new library was provided in 1968 as part of the Bosch Building.

Meanwhile, departmental libraries developed at the other end of campus. Arthur Burkitt donated his extensive private collection when he retired in 1955 and it was the basis of the Burkitt Library which supported pre-clinical disciplines in the Anderson Stuart building. From 1963 it primarily supported research as space constraints forced the transfer of undergraduate resources to the Fisher Library.

Across Fisher Road, the School of Public Health and Tropical Medicine opened in 1930 with a library collection transferred from the Australian Institute of Tropical Medicine. It operated as a departmental library until 1997 when it merged with the Burkitt Library to become the Burkitt-Ford Library. The newly-named library commemorated the contributions of Arthur Burkitt and Sir Edward Ford as researchers, educators and bibliophiles. The merger took almost a decade of negotiation and the School of Public Health continued to provide financial support for library staff and collections until 2005.

The 1990s was a time of considerable stress for academic libraries which were facing severe difficulties in maintaining collections in the face of rapidly rising costs. Libraries were also trying to come to grips with the potential effects of the Internet and campus networking on information access and delivery. In 1993, the then Vice-Chancellor Don McNichol appointed a committee to review the University Library and to provide a framework for the future development of library services.

The review recommended the consolidation of the 19 libraries on the Camperdown and Darlington campuses into five locations.
The proposed Biomedical Library would have brought together the Medical, Burkitt, Public Health, Pharmacy, Biochemistry and Badham Libraries. The recommendation was never achieved, nor was a subsequent attempt to create a combined Science-Medical Library on the site of the Transient building opposite the Ford building.

The review of the library also identified deficiencies in the University network as barriers to the development of effective online access to library resources. At the time of the review, the University’s network did not extend to every building, there were bandwidth restrictions and remote locations, such as teaching hospitals, were not connected.

The 12 years following the library review witnessed widespread change in the provision of library services. Significant upgrade of the campus network and its external connections enabled the Library to take advantage of changes in scholarly communication, especially digital and online technologies.

The Medical Library had introduced online searching of the Medline database in 1976 and later provided a range of resources on CD-ROM. While these services improved access to medical information, they had their limitations. Use of Medline was largely undertaken by library staff as it required significant training. When CD-ROM technology was introduced, the library commenced computer searching skills programs to enable students to undertake their own searches. Access to the resources was initially restricted to computers located in libraries, but limited access was provided later through the University network, SydNet.

By 2000 information and communication technologies had matured sufficiently for the library to introduce network access to indexes and journals. CD-ROM technology was abandoned in favour of Internet access to servers maintained by publishers. This was possible due to the confluence of a number of factors. Firstly, publishers had begun to provide online versions of their publications from the late 1990s. The quality of Internet links between Australia and the Northern Hemisphere improved and the cost of using them became affordable due to collaborative effort by universities through the Australian Academic and Research Network (AARNet).

Also significant was acceptance by the academic community of online access to information as a viable, and preferred, alternative to print for many purposes. Members of the Faculty of Medicine were the vanguard that recognised the benefits of providing access resources irrespective of where the staff member or student was located and at times which suited them. Implementing the vision was not always straightforward as access was sometimes blocked by security measures installed by hospitals to protect their computer networks.

Possibly the greatest impetus for improved online access came with the introduction of graduate-entry to the medical program in 1997. The new program introduced clinical problem-based
learning which required students to identify, analyse and manage issues using relevant information. This approach to learning encouraged greater interaction and collaboration with the library, with librarians represented on Faculty committees and planning groups. The then Medical Librarian, Monica Davis, and library staff worked closely with program coordinators to provide links to information resources. They also provided advice on copyright and other issues with distributing information. Almost every assignment now involves links to documents scanned by the library or to online publications located elsewhere. Library staff also work with the Faculty to ensure that students develop information research skills which facilitate use of the online resources and enable them to be independent learners.

Greater use of networked information would seem to suggest that physical libraries are no longer necessary. This may well be true for many academic staff who prefer to access resources from their workplaces. It is certainly true for some students in clinical placements whose work schedules conflict with library opening hours, and for those in off-campus and remote locations. Yet there remains high student demand for places which are conducive to study, which are safe and which have a range of resources to support learning. Students continue to rank highly the assistance they are able to receive from library staff and the general facilities which the libraries provide.

Library facilities have been subject to ongoing review for the past decade. This process has taken into account developments in information technology, emerging needs of the Faculty, as well as changes in the overall environments in university and higher education more generally.
The creation of the College of Health Sciences in 1997 brought the Faculty of Medicine into closer contact with the Faculties of Dentistry, Health Science, Nursing and Pharmacy. Since that time there has been greater emphasis on research involving disciplines outside of the College. These changes have been accompanied by considerable growth in student enrolments, relatively static University budgets, and greater competition for resources, especially space, throughout the University.

In response to these factors, the University Library has sought to contain operating overheads in order to maintain services and to improve the amount and quality of information resources available. In December 2001, space in the Faculty of Pharmacy was released when the Pharmacy Library was relocated to the Medical Library. The move was motivated by a desire to improve services to students and to take advantage of the cross-disciplinary use of resources available from the Medical Library.

From late 2003, administrative responsibility for the five libraries supporting the College of Health Sciences was allocated to the Director of Health and Medical Libraries. The Dentistry, Burkitt-Ford and Medical Libraries were re-organised to form the Medical Sciences Libraries led by Dianne van Sommers. These libraries operate as a single, but distributed, service. Library staff in this unit also support staff and students in the clinical schools and in the various research centres.

Future development of library services supporting the Faculty of Medicine will involve greater reliance on digital technology. Publications will be acquired in digital rather than print format where appropriate. This policy has been in place since September 2004, and during 2005 the library invested heavily in digitised back files of the major medical journals.

There will also be increased collaboration with the Faculty to develop digital repositories of data created within the University to support research and teaching. Collaboration already underway with the Centre for Innovation in Professional Health Education builds on expertise in both the Faculty and the library. It is also transferable to other University projects which are providing facilities for research data to be organised and made available for further research or to support learning.

The blurring of differences between academic disciplines will necessitate further changes in the library as the Faculty moves toward its second centenary. There will continue to be physical libraries that will provide a range of services, including book and journal collections as well as being gateways to scholarly and other information resources. In the next decade, however, libraries will increasingly offer a mix of facilities that combine their traditional roles with greater support for learning through access to computing, informal meeting places and a range of environments to suit different study requirements.
The maze of information resources is likely to become more complicated as more knowledge is available digitally. The need for information specialists will be heightened, but more flexible approaches to learning, research and work will require assistance to be available on a 24-hour basis unrestricted by geographical location. In 2003, a project initiated in Pharmacy enabled the searching of library resources from Personal Digital Assistants (PDAs). The service has been extended to medical resources and reflects capability available in some hospitals. In the future, it is expected that the same functionality will be available through mobile telephones and other devices.

Continued close collaboration with the Faculty will be essential to ensure that library services contribute to the quality of research, teaching and learning. Services will extend beyond Faculty staff and students to include research undertaken by affiliates in Australia as well as internationally. An important future emphasis will be support for life-long learning by providing alumni with continuing access to library and information resources.

The J T Wilson Museum of Human Anatomy

Peter Mills, Curator
Ken Parsons, Former Curator

The Museum is situated in the Anderson Stuart Building. Unlike most museums, it is not open for public viewing. The nature of the exhibits render it a restricted access museum.

The Museum's origins can be traced to 1882 when Thomas Anderson Stuart from Edinburgh University was appointed to the newly created Chair of Anatomy and Physiology. Early teaching took place in the temporary medical school but with completion of the Barnett medical school in 1889, Anderson Stuart set up the Museum in the area now occupied by the Common Room. He had been collecting specimens enthusiastically up to that period and is thought to have brought with him many from hospitals and universities overseas. There is substantial correspondence still on departmental files from as early as July 1882, referring to Anderson Stuart's search for museum specimens in Sydney.

In 1887, J T Wilson arrived from Edinburgh to take up the position of Demonstrator. Three years later, Anderson Stuart appointed Wilson to the foundation Challis Chair of Anatomy. Wilson's appointment started a massive accumulation of specimens for the Museum of Normal and Morbid Anatomy, as it was then called. His searches extended far afield with many difficult negotiations; for example, the release in 1914 of a rare collection of skulls which were the product of head hunting in southern New Guinea.

Wilson's greatest contribution to the Museum collection was the appointment of Prosectors, usually forth or fifth Year medical students, to provide quality specimens for the Museum and act
as demonstrators. The prosectors were a great success and, at some stage, the scheme developed into a competition for second Year students. Many went on to professional eminence. The title of Prosector was highly valued and considered a worthwhile addition to a person’s curriculum vitae. The earliest photograph of prosectors in the department is dated 1903. The oldest remaining specimen is a dissection of the heart by G H S Lightoller in 1908. A dissection of the sympathetic nervous system by T K Potts in 1924 received international acclaim when featured in the Journal of Anatomy, 1925. Wilson also collected over 400 embryos which became the nucleus of the collection for the Department of Histology and Embryology.

In an address celebrating the ‘Majority of the Medical School’ in 1902, Anderson Stuart’s pride in the Museum was obvious when he mentioned that it “possesses 24,000 specimens and is well worthy of a visit”. He went on to express the desire to construct a building between the Medical School and the main building specially to house the Museum and its astonishing number of specimens. Drawings exist of this proposal and of a similar idea to the south of the old medical school. These plans did not eventuate as expansion of the medical school was given priority, but it served to indicate the enthusiasm with which Anderson Stuart and Wilson set about building up a worthwhile collection and the important role it played in the teaching program.

At some stage, the Museum was relocated to its current site, formerly the Cullenian Lecture Theatre, but the date is uncertain. An early photograph by Harold Cazneaux in 1927 reveals the museum in its new location. James Semple Kerr, in his plans for conservation of the Medical School, 1992, reveals that it was the architect, Leslie Wilkinson, who installed the gallery (now Shellshear Museum) but sheds no light on when the lecture theatre was converted to the museum. The vast collection of specimens referred to by Anderson Stuart in 1902 indicates that the Museum was spread over several sites depending on the subject material.

Wilson left Sydney for the Chair of Anatomy at the University of Cambridge in 1920. During those 30 years, Wilson’s contribution to the Museum and Department had been enormous. Notwithstanding the demands as the foundation professor, his capacity for research and teaching had been inexhaustible. Some of his students included Sir Grafton Elliot Smith, S A Smith, John Hunter, R A Dart, J L Shellshear and A A Abbie, all of whom became professors in various universities. It seemed only fitting that the museum was renamed the J T Wilson Museum of Human Anatomy by Arthur Burkitt in 1936.
Anderson Stuart had encouraged John Shewan to follow him from Scotland in 1883 to serve as general factotum and no doubt the demanding task of curating this huge collection of exhibits was his responsibility. His ability to cope obviously did not go unnoticed as he became Curator of the Macleay Museum from 1915–1933. Recorded comments attributed to Shewan indicate that his relationship with Anderson Stuart and the University was not a happy one.

Wilson’s successor to the Chair was the famous John Irvine Hunter who was appointed Challis Professor in 1923 at the age of 24 (Anderson Stuart was 26 when appointed) but died in 1924 in tragic circumstances, contracting typhoid fever on a trip to the UK. As a student, Hunter was a prosector in the scheme initiated by Wilson and his exhibit remains a display in the Museum. Hunter’s early maturity and prowess as a researcher and lecturer was confirmed by his appointment at such an early age.

A N St G Burkitt was appointed to the Chair in 1925. During his tenure, the specimen range continued to expand, including fossils from Java, Tasmanian Indigenous stone implements, ritual carvings from various islands, a diversity of creatures including bamboo bats from Malaysia, salamanders from Japan, Indian monkeys, Australian marsupial moles and the remains of lions, dolphins and sawfish. Also acquired were plaster casts of early man, death masks of criminals, 50 wax models, physical anthropological instruments, anatomical charts, and reproductions and portraits of medical notables. He prepared a dissection of the thyroid gland which remains on display to this day. However, it was obvious that this endless collecting had to cease, as neither space nor staff was available to provide proper care for such a diverse collection.

The first reduction of this vast array took place around 1925 when the Museum relocated from its original location to the current one. A further reduction occurred when the embryological collection was given to the Department of Histology and Embryology which had become (unofficially) a separate department in 1928. This was formalised in 1957 by the appointment of Ken Cleland to the Bosch Chair of Histology and Embryology. Following completion of the Blackburn Building (New Medical School), pathological specimens were transferred there to form the nucleus of the Pathology Museum.
In 1948 the Royal College of Surgeons, London requested that a large number of specimens be sent from various sources to replace the collection destroyed by aerial bombing in World War II. A selection of excellent specimens was sent, but unfortunately misplaced aboard a ship in Gibraltar for more than 12 months, and thus eventually arrived in London in very poor condition.

Later, in the 1970s, obstetric and teratological specimens were donated to the Department of Obstetrics and Gynaecology.

By 1955, when N W G Macintosh (‘Black Mac’) succeeded Burkitt in the Challis Chair, a great deal of deterioration had occurred in the various collections. Macintosh took the drastic step of closing the Museum for major refurbishment in 1956. All material not directly related to teaching and research in the department was disposed of to various institutions such as the Dental Hospital, the Australian Museum, and the Institute of Anatomy in Canberra (now the National Museum). The Wilson Museum was gutted, the gallery closed over to form a mezzanine floor and the museum was recreated in an austere but functional fashion. All anatomical specimens of value (around 700) were retained in the Wilson Museum and the physical anthropological and comparative anatomy collections were displayed on the new mezzanine floor.

In 1959, Macintosh was granted permission by the Senate to name the new section, the J L Shellshear Museum of Comparative Anatomy and Physical Anthropology, after his friend and mentor Joseph Shellshear. During Macintosh’s tenure, the Wilson Museum retained its reduced and austere format but he did set about rejuvenating the specimens with the introduction of a complete remounting program.

In 1964 Macintosh appointed Ken Parsons to organise the rejuvenation process. He was assisted by Peter Mills who had joined the department earlier that same year. They were well supported financially
by Macintosh; new laboratories and a workshop were set up to facilitate the process. By the time Macintosh retired in 1973, all 600 specimens had been remounted from glass to acrylic containers. New specimens generated by the annual Prosectors’ Competition were also mounted in tailor-made acrylic containers. Macintosh’s contribution was essential as it restored sanity to the method and range of collection and provided two smaller museums of manageable proportions for the staff.

Macintosh was succeeded in 1973 by Michael Blunt who had been Foundation Professor of Anatomy at UNSW. Blunt continued to support improvements in the Museum. A pleasant environment more conducive to contemplative study was introduced by Parsons, with new and additional lighting, comfortable furniture, drapes and blinds, carpeting, ceiling fans and heating. Better access to specimens was provided by removing the glass doors from the cabinets.

A major innovation occurred in this era with the introduction of self-quiz catalogues. These were largely the accomplishment of Toby Arnold who joined the department in 1974 as a tutor. The catalogues include a description of structures that can be seen in each specimen, a photograph with numbered headers radiating from the structures and a key, purposely separate, to encourage identification before confirmation. In recent years, the catalogue has been rendered as digital images which can be accessed on the University intranet.

In the early 1980s Blunt provided funds for Parsons to attend a plastination workshop in Heidelberg, Germany. After returning to Sydney, he implemented the new technique here. A good collection of cross-sections and several plastinated specimens are on display in the museum in addition to a substantial collection of plastinated prosections in the anatomy tutorial rooms.

On his appointment at the University of Sydney, Blunt eliminated student dissection and introduced a teaching method which relied on the use of dissected parts in tutorial discussions rather than conventional dissection room methods. During Blunt’s time, the Prosectors’ Competition persisted for medical students in their fifth year but few specimens resulted from that period. Fortunately, Dentistry continued with dissection in their curriculum and Barry Barker introduced a Dental Prosectors’ Competition around 1968 with the R M Howe Prize as its feature. The Museum was able therefore to benefit from a continued source of head and neck specimens from 1975 to 1990.
Jonathan Stone was appointed to the Chair in 1987 and quickly reintroduced some dissection for medical students. The Prosectors’ Competition recommenced in 1991 and continues to the present time.

Following implementation of the Graduate Medical Program in 1997, obligatory student dissection was again removed from the curriculum, concomitantly reducing the number of experienced dissectors available to participate in the Prosectors’ Competition. However, there is usually an eligible cohort of students who have gained experience at other universities or here, in dissection courses offered through the faculties of Dentistry and Science. In recent times, under the leadership of Bill Webster, optional dissection has been offered to medical students and is outstandingly popular.

Bill Webster is also driving a major refurbishment proposal for the Museum which will culminate in the first major works in the museum for more than 40 years. Plans are well developed for a contemporary space to facilitate teaching and learning within a restored architectural fabric.

Items of medical interest are also held in the Macleay Museum in the School of Biological Sciences.

The Interactive Centre for Human Disease – the Museum of Pathology

Murat Kekic, Curator

The Centre of today results from the contributions of many, over years. As an educational institution, the Centre plays a vital role in the current teaching of pathology to medical, dental and allied health students.

The earliest medical museum on campus was in the Anderson Stuart Building: the Museum of Normal and Morbid Anatomy. The ‘new’ medical school (now known as the Blackburn Building) was made possible by the generosity of George Bosch, a Sydney businessman. When it was completed in 1933, the pathological specimens were transferred to a new museum space in the fourth floor of the octagon block in the centre of the building. It was known then as the Museum of Pathology. D A Welsh was the first Honorary Curator.

In 1934 H W Chambers was appointed the new Acting Curator, holding that position for the following 32 years. When Welsh retired in 1936, Keith Inglis was appointed to the Chair of
Pathology. He is remembered as an energetic and colourful personality who returned from World War I to Australia in 1920. He brought a valuable collection of pathological war specimens which were distributed among some of the Australian universities. This collection included gun lesions and gangrenous examples in different organs and tissues. The collection contained a large number of abnormalities because of his interest in congenital malformations. Royal Prince Alfred was the original source of specimens, but after 1946 Inglis cut all ties with the hospital. For the rest of Inglis's tenure, specimens came from Sydney Hospital. He created a catalogue, using his own cyclic system. He loved to illustrate his lectures lavishly with examples, so the Curator prepared up to 40 specimens for each lecture.

The Museum at that time occupied two floors of the octagon. The lower floor contained 14 free-standing cabinets, accessible from both sides, radiating from the centre. Along the walls were benches with microscopes for students. The upper galleries housed rarer pathological specimens, old surgical instruments, and microscopes of historical interest.

In 1952 Inglis retired and Frank Magarey was appointed to the Chair of Pathology. As Head of Department, he reorganised the Museum. He considered that the collection was essential to support teaching of medical students. The basic principles should be covered, he felt, without undue emphasis on extraordinary and spectacular examples. Thus the museum must contain a balanced representation of common diseases to give the students a basic grasp of pathology and its processes. Hence the extraordinary specimens were removed to provide the essential and more common examples. He diplomatically renewed contacts with the Royal Prince Alfred Hospital, and due to his initiative, University staff would again undertake autopsies two days a week in the hospital. Thus current and common cases were again easily available.

Magarey introduced the internationally valid cataloguing system invented by Maud Abbott: an adaptation of the Dewey System used in most libraries. It codes an anatomical reference number and the pathological condition; e.g. heart as a whole (11), atrophy of a whole organ (21), therefore, atrophy of the whole heart:11.21. Of course, the system becomes more complicated for sub-classes of different tissue layers showing various lesions.

Compulsory attendance and study in the Museum was introduced for all fourth year medical and third year dental students who were examined on the Museum exhibits. A comprehensive catalogue was printed in book form in 1958 for students. This catalogue was discontinued in 1977 by the new head, D A Cameron. There were 160 pages of specimens for the medical students, with a smaller number for the dental students. Each specimen was represented by a brief clinical history and description.

To make the collection easier to use, Magarey arranged to print a smaller catalogue book for each cabinet, providing additional detailed microscopic images and descriptions of the minute features
for all specimens. Each leaf was placed in a clear envelope in a leather-covered book. The books were kept in a permanent pigeon-hole in the same cabinet. This strategy proved to be a great success, as students had easily available information close to hand.

The advent of plastics shortly after the World War II revolutionised the museum. In order to study closely the various pathology examples, students had to handle the specimens; accidents were unavoidable, with inevitable losses. With advice from members of the dental profession, Chambers, the then Acting Curator, investigated the use of the plastic material, methyl methacrylate. Since the plastic for the Museum containers was provided in solid sheet form, it had to be cut and ‘soldered’. Thus individually sized containers could be made to accommodate the specimens precisely and the original glass bottles were progressively replaced with plastic containers.

In 1961 Chambers visited Pathology museums in USA, Canada, UK and Switzerland to investigate the use of a new polyester resin: a whole specimen could be embedded in a solid plastic block. The cost of the equipment at that time was exorbitant, due mainly to the complicated dehydration apparatus required for organic tissue and the need for cellular injection with polyester resin material. When it was realised that dehydration of only 2–3mm was necessary for hard specimens (e.g. bones), he was able to achieve good results.

Back in Sydney the idea of a ‘wet specimen in a solid mount’ was shelved for a more urgent problem. A serious lack of space in the Museum was due to ever increasing numbers of students. Magarey gained an extra floor by eliminating the upper galleries of the Museum, using the new space for tutorials and the study of pathological histology. He transferred the medico-legal
specimens (which included evidence from some sensational murder cases), to the NSW Division of Forensic Medicine for training police in forensics. The old medical instrument collection was presented to the University’s Macleay Museum or the Royal College of Surgeons.

In 1966, after 32 years, Chambers retired and G L Morrison became Acting Curator. He produced a new method of embedding. Instead of the bulky solid mount, he coated a large bone with the polyester resin, leaving it free-standing on a base of resin. Thus he achieved the best possible visibility with greater opportunities to inspect the specimen. After careful experimentation with solid mounts of wet specimens, in time he produced many magnificent results. Minor problems, e.g. contraction of a specimen or loss of colour after embedding, were still encountered. He emphasised the aesthetic presentation of the Museum to make it more effective for learning. For example, the hard fluorescent lights were changed to a softer pink light in order to enhance the colour of the tissues.

In 1975 Magarey relinquished the position of Honorary Curator in favour of Morrison who developed many new methods, some in collaboration with Raymond Bullock, the Honorary Curator in the Veterinary Anatomy Museum (now the Raymond Bullock Museum of Veterinary Anatomy). He improved and modified mounting techniques, effected plastic embedment procedures and simplified macropathological staining. Thus the old classical examples as well as more recent specimens are maintained and displayed at a high standard.

The curator educated other staff, both overseas and local, in the complexities of medical museum techniques. Two notable overseas trainees were K Tapora, a Churchill Fellow from Papua New Guinea (1965) and A Dias, a Colombo Plan Fellow from Sri Lanka (1979) who stayed for one year and six months respectively. They planned to develop museums in their respective countries. In addition, Morrison was called on to prepare displays for the Australian Fauna Exhibition to China: 11 kangaroo joeys were presented to the Museum of Natural History, Peking.

The use of audiovisual equipment (photographic transparencies and audiotapes) was first introduced into the Museum of Pathology; lectures and tutorials could be revised in the Museum. Initially, 35 mm photographic transparencies were paired with taped descriptions of each slide, and in 1997 this method of teaching was further upgraded when computers were introduced into the museum.

Susan Dorsch proposed that old medical instruments be re-introduced into the Museum. When the Faculty celebrated the centenary of medical education in Sydney, Morrison raised finance from various organisations to purchase special display cabinets. Many exhibits highlighted the achievements of past graduates. This display was officially opened by the Dean of Medicine Richard Gye, in August 1986.
In the same year, at the urging of Janet McCredie, Morrison introduced miniaturised radiological, displays to complement the various pathological conditions. They were added to the existing catalogue books to give some specimens a clinical, macroscopic, microscopic, as well as radiological description. Funding was provided by A Goldin. This display was replaced early in 1997 when computers were introduced into the Museum.

In 1990 autopsies were no longer performed by staff from the Department of Pathology and the Museum was starved of a constant supply of new specimens. Thus the focus was on maintaining existing examples, some of which were obtained during the early 1900s. Increasing other duties also reduced the time available for museum work.

In 1987 G J Holden commenced as Assistant Curator. In 1996 a Centenary Fellowship allowed him to visit medical museums in the UK. He used his computer skills to develop extensive programs for computerised learning now in use in the Museum.

The Interactive Centre for Human Diseases section of the Museum of Pathology was officially opened by Gavin Brown, Vice-Chancellor and Principal, University of Sydney, in August 1997. Morrison retired in 1998 and Holden in 2001. The current Curator is Murat Kekic, while Morrison continues to assist on a casual basis.

At present the Museum is highly organised, with more than 1600 pathological exhibits on display, providing both an efficient educational and aesthetically acceptable environment for the teaching and learning of pathology.
The Centre for Values, Ethics and the Law in Medicine
Miles Little and Ian Kerridge

Miles Little was the Foundation Professor of Surgery at the new Westmead Hospital Campus in 1977. He started the forerunner of the Centre for Values, Ethics and the Law in Medicine in 1995, with the help and encouragement of Les Bokey and the Department of Surgery. The idea emerged from Little’s long-standing interest in medical philosophy, bioethics and the humanities. He spent six months of sabbatical leave in 1995 learning about the philosophy of medicine and its relationship to public policy, particularly with Uffe Juul Jensen in Aarhus, Denmark, and Robin Downie in Glasgow, Scotland. He ‘retired’ officially in 1996, and became the first Director of the Centre.

Stephen Leeder, as Dean of the Faculty of Medicine, strongly supported the development. With his help, the Department of Surgery found three offices and a salary for an Administrative Officer. Little raised money from a variety of sources to pay three research salaries, and recruited a voluntary ‘Core Group’ from interested people of many disciplines – including medicine, philosophy, ethics, law, theology, sociology and anthropology. The Centre was officially recognised by the University in 1996.

From the start, the Centre proposed to fill five major functions – research (predominantly qualitative) and research supervision; advanced education for graduates; consultation on issues beyond those normally tackled by Research Ethics Committees; an intellectual forum for researchers working in areas of wide social interest; and a source of community education.

The Centre’s activities developed rapidly along all lines, which are strongly interconnected.

Research and research supervision

The first research project examined the different values and understandings brought to medical management by major stakeholders: patients, their family carers, clinical staff, business people, policy makers and people from the media. The research used stakeholder narrative as its raw data, and the original research group – Miles Little (clinical surgeon), Chris Jordens (graduate in philosophy and public health), and Kim Paul (anthropologist) – developed appropriate techniques of narrative analysis, based largely in Grounded Theory. The work quickly led to new insights into the misunderstandings that arise between the stakeholders. It also opened a new field of study into
the experience of people surviving cancer, and this work is now widely recognised and taught. It was originally coordinated by Emma-Jane Sayers, a law graduate and cancer survivor, and is now run by Catherine McGrath, also a law graduate and cancer survivor.

A further development from this work led Chris Jordens to explore the potential of social linguistics as an analytic tool for narrative research. His PhD used this approach, and his work remains a landmark in the field of illness and clinician narrative.

**Advanced education**

Members of the Centre provide much of the ethical teaching for the University of Sydney Medical Curriculum, but its main emphasis is on postgraduate education.

The Centre combines its research and educational functions by offering supervision to master’s and PhD students. Four PhD students are currently working in the Centre.

It also provides advice to other students on matters of study design and qualitative analysis and will contribute to two new master’s courses that will be offered by the University of Sydney in 2006.

**Consultation**

Some issues fall outside the usual scope of Research Ethics Committees, such as advance directives, religious medical schools and direct-to-consumer advertising. The Centre offers consultative services to government departments, area health services, medical colleges and policy making bodies in matters that are complex, are disputed, and have broad social implications. It makes use of the skills of its Core Group to provide the broadest base of skills and knowledge.

**Intellectual forum**

Each month, the Core Group meets to hear and discuss a paper given by one of its members or by someone invited from outside the Centre. Each meeting lasts for about 90 minutes. Speakers may present research in progress, analyses of major social or ethical issues, or their current thinking on philosophical issues that influence health care.
Community education

The main general educational effort has been directed toward cancer survivors and their family carers. The Cancer Survival group have constructed a series of workshops using their own research and the skills of a number of other professionals, including psychologists and actors. These workshops have achieved national and international recognition by Cancer Councils, forums on illness experience and cancer support organisations. A teaching package, supported by the Cancer Council of New South Wales and the Leukaemia Foundation, will be made available to Cancer Councils around Australia, and to cancer support groups. They are at present teaching their material through the Continuing Education Centre’s extension program at the University of Sydney.

Development of the Centre

By 1997, the Centre consisted of four research staff assisted by Lindy Gaze as Administrative Assistant; she was the only salaried staff member. Little raised money for the other staff through grants and donations. The Core Group, usually numbering between 20 and 30 people from many disciplines, has remained at much the same size, although its membership has changed over the years. In 2002 the Faculty of Medicine decided that the Centre had sufficiently established its credentials, and approved the appointment of Ian Kerridge to a full-time salaried Director.

Throughout its short history, the Centre has invited visiting scholars, who have spent time working, lecturing and teaching in the Centre and beyond. Several regular visitors have been made Associate Members to recognise their long-term help, advice and supervision. Others have come from US, Europe and Canada.

The Centre collaborates closely with the History and Philosophy of Science Unit in the Faculty of Science, and with the Department of Linguistics and Faculty of Law at Macquarie University.

Future plans

Like many other Centres and Departments, the Centre for Values, Ethics and the Law in Medicine struggles for money. The majority of the staff are paid from grants and donations; there is a constant battle to maintain funding. This difficulty is compounded by the priority naturally given to biomedical research. Qualitative research is still poorly understood by medical scientists, and
its importance is underestimated. Securing longer-term funding remains a high priority, and preparing grant applications unfortunately takes up a large proportion of staff time.

As the Centre's work has been recognised and acknowledged, however, biomedical researchers have shown increasing interest in using the staff's distinctive skills in ethics and values to supplement their own research. An indication of the possible future for this kind of collaboration is given by the project entitled 'Interdisciplinary clinical and health ethics research and training to improve outcomes in immunosuppressed haematology patients', which is a well-funded study involving staff from the Centre with the Haematology and Infectious Diseases Department at Westmead Hospital. This kind of interdisciplinary work has been pioneered by the Centre, and perhaps offers great promise for the future.

The Centre for Values, Ethics and the Law in Medicine has existed for only a few years, but it has established a remarkable national and international reputation. It has evolved distinctive ways of conducting qualitative research, and developed great expertise in collecting and analysing narratives. It has grown from very small beginnings to the point where it has outgrown its available office space. Its publication output has been remarkable. Over the next few years, it will need to find a more secure funding base. Whatever happens, however, its short career has demonstrated that its presence is needed in today's medical environment. That need is likely to become more marked as biotechnology develops along paths still barely comprehensible to scientists and ethicists alike.
The Medical Humanities  
Jill Gordon

“The truth is that medicine, professedly founded on observations, is as sensitive to outside influences, political, religious, philosophical, imaginative, as the barometer is to changes of atmospheric pressure.”

Currents and Counter-Currents in Medical Science. Address to the Massachusetts Medical Society Annual Meeting, May 30 1860, by Oliver Wendell Holmes

The term Medical Humanities was coined by an Australian surgeon Anthony Moore in 1976. He used literature in teaching undergraduate medical students at the University of Melbourne, arguing that literature could be used as a way of understanding and exploring relevant ethical issues.

The fact that this was seen as an innovation at the time demonstrates the problem of the increasing divide between biomedicine on the one hand and the arts and humanities on the other. In 1959 C P Snow had described the alienation of the ‘two cultures’ of science and the arts, an idea that was not new, but that appeared to resonate with many who were concerned with the apparent neglect of each by the other. At the University of Sydney, as elsewhere, the ‘divide’ was reflected in and reinforced by the selection of medical students largely on the basis of their high marks in science and mathematics in the Leaving (and later the Higher School) Certificate. As the competition for a place in medicine increased in the post-war years, students with broad academic interests in the arts and humanities found themselves less likely to secure a place. A small number of students attempted to pursue a combined Arts-Medicine degree, but practical problems with timetabling meant that relatively few were able to persist (see Chapter 2).

The medical curriculum was overloaded with biomedicine, with very few opportunities to take a broader view of the historical, social, psychological and philosophical aspects of medicine and healthcare. ‘Ethics’ and ‘communication skills’ were seen as additional rather than core subjects. The problems that resulted in the divide between science and the humanities were well described by the then Dean, David Maddison in a 1978 article in the journal Medical Education. Miles Little pointed out in his book Humane Medicine that the achievements of modern medicine were being countered by increasing public dissatisfaction reflected in medical complaints and
litigation, often due to communication difficulties between doctors and patients. He advocated the interweaving of value-laden issues in clinical medicine with the necessary science.

During the 1980s and 1990s, in an attempt to remedy the problem within the existing medical program, Yvonne Cossart and colleagues from various departments pioneered a new one-semester course in history and philosophy of medicine. The student workbook for the course explained the reason for placing it at the beginning of the medical program. (It is designed) “to help you place your studies of the biomedical sciences and your experience of clinical practice against a background understanding of the way medicine has developed and continues to change”.

The objectives of the course were to assist students to:

1. recognise ideas and individuals of major importance in the development of modern Western medicine and to place them in the context of their times;

2. analyse and discuss issues in biomedical ethics in relation to different cultural systems, past and present;

3. distinguish between the evidence provided by primary and secondary historical sources, and make appropriate use of both; and

4. present ideas clearly, both orally and in writing.

The influence of this course, however, was soon diluted by the overwhelming attention to subjects devoted to the biomedical basis of medicine. Even the students’ Medical Journal, a vehicle for literary and artistic expression, succumbed to the unremitting pressure of an overcrowded curriculum.

It was not until the USydMP was introduced in 1997 that the Faculty had the opportunity to plan and implement a fully integrated, problem-based curriculum. As Miles Little had predicted, the natural effect of studying clinical problems within a realistic social context has been to enable students to consider the ‘whole patient’. The four curriculum themes that underpin the USydMP include the theme of ‘Personal and Professional Development’. PPD encourages students to reflect on their own development as future members of the medical profession. In addition, early clinical experience enables students to see patients as people rather than as vehicles for interesting clinical conditions. In Year 3, students in small groups for the PPD theme examine the contribution of the humanities to medical care.
Among graduates who were part of the traditional curriculum and who are now established medical practitioners, there has been interest in the postgraduate degree in Medical Humanities offered by the Faculty of Arts in collaboration with the Faculty of Medicine since 2003. This degree allows students to explore a wide variety of units of study in English literature, philosophy, history, religious studies, art history and theory, etc. Among the units of study offered to date are Medicine and War (convened by Yvonne Cossart) exploring the paradigm shifts that have occurred in medicine as a result of war (and in war as a result of advances in medicine) and Medicine and Music (convened by Michael Field).

Part of the Faculty of Medicine Strategic Plan is to develop a combined Arts/Medicine degree. This will follow the plan on which the Science/Medicine degree has been based, and will be followed by a Music/Medicine degree to provide a unique opportunity for students who are gifted in both music and the biomedical sciences (see Chapter 2).

The Pam McLean Cancer Communications Centre
Stewart Dunn

Extensive research demonstrates that good communication between health professionals and patients leaves both parties feeling more satisfied with their treatment and produces better outcomes. Patients are diagnosed more accurately, suffer less pain, recall important information more clearly, and comply more readily with treatment.

Despite this research-based evidence, 20% of all formal complaints about health practitioners are in the category of communication and diagnosis; this proportion continues to increase (data from NSW Health Care Complaints Commission). Their statistics confirm anecdotal evidence available to all of us that something different needs to be done. The Pam McLean Cancer Communications Centre is a response to this need.

In 1997 the Northern Clinical School of the Faculty of Medicine looked for ways to apply the results of this research in a systematic and creative way to improve patient-doctor communication. The Australian Health Communication Centre (AHCC) was established under the leadership of Steward Dunn, Professor of Medical Psychology in the Faculty and Royal North Shore Hospital. Dunn has been involved in research and teaching in medical communication since the late 1970s.
with the University-based Medical Psychology Research Unit, which has received more than $4m in competitive grant funding since 1984.

Paul Heinrich, the Centre’s Creative Director, who has a PhD in drama and extensive experience in this field, worked with a group of doctors to develop innovative educational programs to teach students, doctors and nurses better ways to communicate with their patients. Programs are based on current research, an extensive body of theory and best clinical practice in the fields of education, communication, and clinical and behavioural sciences. Workshops are designed to provide safe learning environments for health professionals. Participants are encouraged to explore options, make mistakes, extend their repertoire of behaviour and practise skills ‘without harming real patients’. The emphasis is on practical experience, and on finding ways to transfer skills and insights back into the workplace. Since the inception of the AHCC in 1997, the list of topics, workshops and clients has grown steadily.

In 2001 David Mclean, President (Asia/Pacific) of Sudler and Hennessy, approached the Northern Clinical School with an offer of sponsorship for that part of the work of the AHCC that focuses specifically on cancer communication. A new unit of the AHCC was established and named the Pam McLean Cancer Communication Centre after David’s wife Pamela, who died of breast cancer in 1995.

Educational relationships within the College of Health Sciences
Ann Sefton

Departments in the Faculty of Medicine have for many years provided service courses for students of other health-related faculties. The more recent development of the college structure has enhanced opportunities for greater collaboration.

Faculty of Dentistry

From early in his tenure as Dean, Anderson Stuart argued for the development of a School of Dentistry, supported by staff in the Faculty of Medicine and the wider University. Insisting that the program be scientifically based, taught and examined by the University, a curriculum was planned. The newly-established Dental Board, however, considered that practice should be based on an apprenticeship, examined by the Board. The Dental Act was passed in 1900, giving automatic
Board registration to those with a dental degree or license obtained at a university. The School was to be based at Sydney Hospital, but the arrangements fell through. The program started in 1901, in rooms on the corner of Bridge and George Streets; it became the University Dental Hospital, designed to ‘assist the deserving poor’.

Since those early days, staff in the basic medical science disciplines in the Faculty of Medicine have taught dental students. In many cases, special courses were developed to highlight issues of oral relevance, including practical work. That commitment to dental education continues, albeit in a different form. The Dental Faculty is currently located at the Sydney Dental Hospital opposite Central Railway and at Westmead.

Once the planning for the medical program was well established, the Dean of Dentistry (Keith Lester) and dental staff initiated discussions. They were keen to establish a four-year, graduate-entry program (BDent). Ann Sefton was seconded half-time as Associate Dean to assist in the developments; many other members of the Medical Faculty also contributed substantially to planning the curriculum and training the staff. Key individuals in Dentistry in the early stages included Deborah Cockrell, Ward Massey, Michael Thomas, Tania Gerzina, and Shalinie Gonsalkorale; many more have contributed since. The dental students are now selected as University graduates on criteria similar to those in medicine (success in a first degree, GAMSAT, interview) with the addition of a manual skills test. The new BDent started in 2001 with the first graduates entering practice early in 2005.

Dental students now study all but three of the same clinical problems as the medical students in Years 1 and 2, attending lectures and practical classes. Aspects of oral health and disease are included where appropriate, and a specific web-based Oral Learning Topic is relevant to each week’s medical problem. In Years 1 and 2, problem-based learning groups in Dentistry and Medicine are separate because of constraints on space; if the number of tutorial rooms could be increased on campus, both sets of students could, with benefit, learn together.

The Faculty of Dentistry adopted the thematic structure of the core medical program. The ‘Patient and Doctor’ theme is replaced with ‘Total Patient Care’ when students in Years 1 and 2 spend one day each week engaging in developing communication and procedural skills in preclinical and clinical dentistry. The Life Sciences theme incorporates the basic science materials provided for medical students with additional items relevant to oral health. The Community theme is integrated with Personal and Professional Development to include Evidence-based Practice and social issues
along with ethical practice. A dental website has been developed, with access to shared resources from medicine, but with a growing database of orally relevant materials. Written assessments in Dentistry in Years 1 and 2 are based on papers prepared in Medicine. About 90% of the questions focus on the generic basic sciences and the remainder are targeted at issues specific to oral health and disease.

Difficulties arise because of the geographical separation of the small Faculty of Dentistry (between the Camperdown Campus, Sydney Dental Hospital and Westmead Centre for Oral Health). Nevertheless, more opportunities for sharing a number of educational developments are pending and some collaborations are under way. The result has been a growing relationship between the two faculties with some economies of scale from combining common elements.

The content in Years 3 and 4 is focused on oral and dental issues, diverging from the medical program. Nevertheless, a web-based oral reasoning guide – initially based on the medical model has been developed and PBL continues in the clinical settings. New opportunities for rural experience in Dentistry have been developed; senior dental students now spend time in rural rotations, where there is potential for interdisciplinary learning if they are co-located with medical or other health science students. Some of the first graduating class chose to work in rural areas where there is a substantial and growing need for oral health services.

It has been recognised by both faculties that some graduates will need to gain skills in both Medicine or Dentistry if they are to undertake oral maxillofacial surgery, oral pathology or oral medicine. A double degree is to be offered, and a small number of graduates from the current medical or dental programs will be able to enrol in the other faculty. Both medical and dental graduates will complete the clinical requirements from the first two years prior to joining Years
3 and 4 in the other program. The current Dean of Dentistry Eli Schwarz has supported and encouraged the developments, in collaboration with the Dean of Medicine Andrew Coats. The excellence of that educational collaboration has been recognised; the University has recently nominated the developments for the prestigious Carrick educational awards.

Another recent initiative of the Faculty of Dentistry has been the development of a Bachelor in Oral Health. It started in 2005, educating oral hygienists and dental assistants in conjunction with the Faculty of Health Sciences. Some graduates may well in future apply to enter dentistry or medicine.

**Faculty of Pharmacy**

Around 1840, the Pharmaceutical Society of NSW attempted to enhance the qualifications of pharmacists, by providing some lectures to complement their practical experiences as apprentices. A Board of Pharmacy was established by the relevant Act in 1897 and specified that students be educated in Chemistry, Practical Chemistry, Botany and Materia Medica at the University of Sydney. A program was adopted in 1902, built around an apprenticeship model, supplemented with academic training. Anderson Stuart actively championed teaching pharmacy at the University, both to pharmacy and medical students. A course of 75 lectures in Materia Medica was established, comprising pharmacology, pharmaceutical chemistry and botany. Many of the early lectures were shared.

Pharmacy students were apprenticed and studied part-time for two years at the University, although a three year degree program had originally been planned in 1920. Apprenticeship and formal academic learning were thought to be complementary, but, at different times, unsuccessful attempts were made to transfer the pharmacy students to the Technical College. Pharmaceutical chemistry was later added to the academic requirements. In 1933, as the educational demands increased with new subjects, the program extended to three years, leading to a diploma. In 1952 the University assumed responsibility for the final examination of pharmacy students, and in 1959 Pharmacy became a department in the Faculty of Science. In 1960 a three-year program was established for a BPharm degree, later extended to four years.

The medical science disciplines in the Faculty of Medicine taught pharmacy students for many years within the Faculty of Science. The early commitment was small: records show that between 1941 and 1979, 103 courses in Physiology or Pharmacology were delivered to them.
Numbers rapidly increased after 1980: over 2000 units of study in Physiology and over 4000 in Pharmacology were delivered to 2005. In 1998, the Department of Pharmacy became a Faculty in its own right, joining the College of Health Sciences. The commitment from the Faculty of Medicine remains substantial to Pharmacy: currently, Physiology and Pharmacology are taught each year to an average of 270 second year Pharmacy students, while 230 students in third year take an additional course in Pharmacology. A recent approach has been to offer a two-year coursework master’s program in Pharmacy to those with science degrees; 10–15 each year also study Physiology and or Pharmacology.

Effective communication is an increasing focus, along with a sophisticated understanding of the modern medical and pharmaceutical sciences underpinning practice. The nature of the teaching contribution from the Faculty of Medicine is likely to change as the program is currently moving to a more integrated approach, along with more interactive learning. Greg Ryan, recently recruited from the Office of Teaching and Learning in Medicine, will lead Pharmacy’s new educational directions.

**Faculties of Nursing and Health Sciences**

Geographic constraints limit easy participation with the Faculties of Health Sciences (at Lidcombe) and Nursing (in Mallett St, Camperdown), but interactions have occurred both in teaching and research. Graduate-entry is now an option in Physiotherapy and Occupational Therapy. Nursing is moving exclusively to graduate-entry and combined degrees, both to reflect the increasing complexity of the profession and to enhance research. A review in 2005 of basic science teaching in the College is likely to lead to further collaboration; discussion of the relocation of the Faculty of Health Sciences to the Camperdown Campus has commenced.

Interprofessional clinical learning is a focus of interest in educating the health workforce, to encourage teamwork and develop an understanding of the different roles. There is strong support for developing effective strategies for collaboration, and some programs are being trialled. Michael Field, at Royal North Shore Hospital, is leading local developments in interprofessional learning. There are, however, significant difficulties when nursing students from other universities are co-located with University of Sydney medical students, and when nursing and health science students are placed in hospitals or clinical sites outside of the University of Sydney hospital network. Rural
placements provide opportunities for interdisciplinary learning for University of Sydney students, in conjunction with Charles Sturt University.

In research and research training, the recent development of multi-disciplinary centres has encouraged collaborations; they provide an impetus for new methods of teaching. Examples include ageing, and men’s health, at Concord Hospital. Common interests draw active researchers from all parts of the College of Health Sciences. Projects in different areas of public health and health service research are also particularly attractive to researchers across the College.

A historical footnote: Massage and the Faculty of Medicine

It is not generally appreciated that the University of Sydney played an early role in health science education. An Australasian Massage Association was founded in Sydney in 1905. A six-month program of training was introduced with the support of Charles Bickerton Blackburn (later Sir Charles and Chancellor of the University) and a local medical graduate, Grace Boelke. Soon afterwards, the course was extended to two years for a diploma awarded by the Association. Massage students (overwhelmingly women) attended lectures in Anatomy and Physiology with students in Dentistry, Arts and Science. They were, however, isolated from the undergraduate life of the campus. In 1910, seven students were enrolled, increasing to 61 by 1916 and 130 by 1918, no doubt in response to the increased need during and immediately after World War I. After the war, numbers dwindled, to 42 in 1920, 14 in 1922 and 10 in 1924. The program, however, persisted.

During and after World War II, the course became one in physiotherapy and it was offered until the late 1960s, although the students were never fully integrated into the University. Indeed, they were specifically excluded from its privileges as their qualification came from their Association, not the University. Their only concession was a poorly equipped and dingy common room in the basement of the Anderson Stuart Building which, for a time, they uneasily (and reluctantly) shared with female medical students. Subsequently, the program became a degree course offered by the newly emerging Cumberland College of Health Sciences, now the Faculty of Health Sciences, located at Lidcombe.

The Medical Sciences and the Faculty of Science

Ann Sefton

Staff in the School of Medical Sciences teach substantial numbers of students enrolled in the Faculty of Science, which is included in the College of Science and Technology. Indeed, for many staff in the Basic Medical Sciences, the commitment exceeds their teaching of medical students. Biochemistry, a strong contributor to medical teaching, is in the School of Molecular and Microbial Biosciences in the Science Faculty. The numbers of science students studying
units of study in the Faculty of Medicine has grown substantially as attractive modern cross-disciplinary options are developed. More recently a small contribution from the medical sciences was invited to contribute to Biomedical Engineering.

From the earliest days, occasional students from faculties outside of Medicine took a course in Physiology or Anatomy. From the 1970s, the medical science departments (Anatomy, Bacteriology (later Infectious Diseases), Histology, Pathology, Pharmacology and Physiology) began to provide courses for students in the Faculty of Science. Each department then had an entirely separate identity and budgets were allocated on historical grounds rather than on enrolments (see Chapter 1). The programs offered were independent and not coordinated. Over time, difficulties arose because of rigid systems of weighting and grading examination results in Science. For a number of years, the undesirable effect was to disadvantage students in the medical (and some other biological) sciences, limiting their later eligibility for postgraduate research scholarships. In 1992, the issue was resolved when Beryl Hesketh became Dean of Science. A (now very successful) Bachelor in Medical Science degree was introduced as an initiative of the Dean of Medicine, John Young.

The new degree program was introduced in 1991 within the Faculty of Science. Later, Gareth Denyer (Biochemistry, in Biotechnology and Molecular Biosciences) and Roger Dampney (Physiology) led the development of a novel integrated curriculum which has proved to be increasingly popular with students and staff. It was implemented in 1997. Its centrepiece is an integrated Year 2, introducing students to key aspects of the medical sciences. They then choose to undertake more specialised units in Year 3 and a number progress to honours by research.

**BMedSc Year 2**

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<td>1. Cells and cell communication</td>
<td>4. Digestion, energy balance and metabolism</td>
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<tr>
<td>2. Genes and genetic engineering</td>
<td>5. Interaction with the external environment</td>
</tr>
<tr>
<td>3. Regulation of the internal environment</td>
<td>6. Body defences and microbial diversity</td>
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In 2000 the basic departments were aggregated into a School of Medical Sciences in the Faculty of Medicine, to include five different disciplines: Anatomy and Histology; Infectious Diseases; Pathology; Pharmacology; and Physiology with a strong academic link to the school of Molecular and Microbial Biosciences. The discipline of Immunology, based in the Faculty’s Central Clinical School, now also contributes to Science teaching. The inter-faculty grouping has been very effective in enhancing collaborative interdisciplinary research and teaching.

Students enrolled in the BSc can elect to study at least one of the medical sciences. The increase in students in both science programs has been dramatic; the range of options is very wide.

Courses include:

- Cell and Molecular Life Sciences
- Cellular and Integrative Neurophysiology
- Drugs and People
- Experimental Pharmacology
- Forensic Osteology
- Fundamentals of Pharmacology
- Heart and Circulation
- Histology
- Human Cellular Physiology
- Human Life Sciences
- Immunology
- Infectious Diseases
- Microbes and Body Defence
- Microscopy and Histochemistry
- Molecular Pharmacology
- Musculoskeletal Anatomy
- Infectious Diseases
- Neuro- and Cardiovascular Pharmacology
- Pathological Topographical Anatomy
- Transmission and Scanning Electronmicroscopy
- Visceral Anatomy

Student numbers by discipline

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<th>Imm Pass</th>
<th>(Med) Hons</th>
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<td>14</td>
<td>1540</td>
<td>37</td>
<td>1453</td>
<td>2089</td>
<td>40</td>
<td>799</td>
<td>7173</td>
</tr>
<tr>
<td>1986–1990</td>
<td>928</td>
<td>17</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>12</td>
<td>3</td>
<td>778</td>
<td>31</td>
<td>1043</td>
<td>12</td>
<td>619</td>
<td>4325</td>
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<tr>
<td>1981–1985</td>
<td>495</td>
<td>17</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>7</td>
<td>4</td>
<td>489</td>
<td>16</td>
<td>1055</td>
<td>717</td>
<td>32</td>
<td>561</td>
<td>3393</td>
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<tr>
<td>1960–1980</td>
<td>77</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>63</td>
<td>4</td>
<td>32</td>
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<td>357</td>
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<tr>
<td>Total</td>
<td>9597</td>
<td>201</td>
<td>1618</td>
<td>57</td>
<td>1781</td>
<td>97</td>
<td>1916</td>
<td>112</td>
<td>11119</td>
<td>248</td>
<td>7199</td>
<td>15075</td>
<td>224</td>
<td>4471</td>
<td>53715</td>
</tr>
</tbody>
</table>

Numbers of units of study taken by students in the Faculty of Science delivered by the medical sciences (Anatomy, Infectious Diseases, Immunology (in the Department of Medicine), Pathology, Pharmacology, and Physiology – 1950–1979 and 1980–2005. Pharmacy is now a separate Faculty but the teaching delivered by the Departments of Physiology and Pharmacology has been included here. Pharmacy students take Physiology for two semesters and Pharmacology for three.

Students in the Faculty of Science have graduated with honours in one of the medical science disciplines, requiring a year in supervised research (analogous to the former BSc(Med) for undergraduate medical students). Some science graduates then continue research studies in one of the medical sciences. The numbers below are additional to those who have achieved comparable diplomas and degrees in medical sciences within the Faculty of Medicine. More than 20 individuals
(including staff and former students in the Faculty of Medicine) over those 25 years have been awarded a DSc on the basis of their published work in the medical sciences.

<table>
<thead>
<tr>
<th>Year</th>
<th>Anat</th>
<th>ID</th>
<th>Immunol</th>
<th>Pathology</th>
<th>Pharmacol</th>
<th>Physiology</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1975–2004</td>
<td>201</td>
<td>57</td>
<td>97</td>
<td>112</td>
<td>148</td>
<td>220</td>
<td>835</td>
</tr>
</tbody>
</table>

Numbers of students who graduated with honours in the basic medical sciences, 1975–2004

The increasing numbers of science students have been supported by new staff who bring novel research interests to the School, supporting diverse, attractive units of study. Linkages have been made between campus-based staff and those in laboratories in clinical schools and research institutes. They now contribute to medical science education, including supervising honours and postgraduate students. One consequence has been a greater sense of collegiality across the institutions, resulting in new collaborations. In consequence, a range of diverse projects can be offered to honours and postgraduate candidates, as well as to undergraduates participating in programs for talented students and those taking advanced options.

<table>
<thead>
<tr>
<th>Dept</th>
<th>AH</th>
<th>Im</th>
<th>Path</th>
<th>Phar</th>
<th>Phys. Neur</th>
<th>ID</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deg</td>
<td>DSc</td>
<td>PhD</td>
<td>MSc</td>
<td>Dip</td>
<td>PhD</td>
<td>MSc</td>
<td>Dip</td>
</tr>
<tr>
<td>total</td>
<td>3</td>
<td>24</td>
<td>21</td>
<td>22</td>
<td>3</td>
<td>8</td>
<td>1</td>
</tr>
</tbody>
</table>

Numbers of graduates in the Faculty of Science who achieved DSc (higher doctorate), PhD, MSc or graduate diplomas from the basic medical science departments, 1975–2004

Since 1997, students accepted into the University of Sydney medical program have local degrees including BMedSc or BSc with majors in one or more of the medically-related sciences. Some have completed a research honours year. A number of interstate or overseas students also bring similar qualifications.

Enrolment in BMedSc by gender since its inception
The Coppleson Committee for Continuing Medical Education

Tarina Rubin

The need for ongoing postgraduate work in medicine was identified early in the 20th century. It was not until 1935, however, that the Senate of the University adopted a new by-law which established the NSW Postgraduate Committee in Medicine. This Committee took over the functions of its progenitor, the NSW Permanent Postgraduate Committee (which had consisted of representatives of the British Medical Association, the University of Sydney, and the main metropolitan hospitals). Victor Coppleson was already a driving force at this time and, in 1936 the NSW Parliament established the Prince Henry Hospital as a Postgraduate School of Medicine, organised by the Postgraduate Committee.

Between 1944 and 1947 the Committee moved its office from the Royal Australasian College of Physicians building to 131 Macquarie Street, Sydney. Victor Coppleson became the Honorary Director of Postgraduate Medical Studies and Selwyn Nelson joined the Committee. During this time many correspondence courses were conducted for practitioners returning from war service. In 1960 the Committee moved from Macquarie Street to Herford House in the grounds of the Royal Hospital for Women, Paddington. Then, in 1965, it moved to Lucas Street, Camperdown, into buildings owned by Royal Prince Alfred Hospital. In 1977 it moved to the Coppleson Institute on campus, fulfilling Coppleson’s dearest wish but, unhappily, after his death.

An Australian Postgraduate Federation in Medicine was formed in 1948, largely as a result of Victor Coppleson’s efforts; he was Honorary Secretary and became President in 1960. In 1962 the Federation was incorporated in Canberra with representation of all postgraduate organisations, all medical bodies, the Royal Colleges and other appropriate bodies. Jim Lawrence also became heavily involved in the Federation, elected President in 1989.

The Postgraduate Medical Foundation was established by Senate in 1958. Its object was “to assist the Postgraduate Committee in promoting education and research in every possible way”. Initially funds raised by the Foundation were administered by the Postgraduate Committee to finance fellowships, equipment and visiting lectureships;
however, the Foundation has since become a separate entity with its focus on the funding of research. It was renamed The Medical Foundation in 1983 by Senate.

In the late 1970s and early 1980s, the Postgraduate Committee in Medicine found itself facing serious financial difficulties. In 1980 the Committee became a committee of the Faculty of Medicine (no longer a committee of Senate) and the Dean ex officio its Chair. The Committee has remained self-funding since this time.

As Sir Victor Coppeloson said in 1957, the role of the Postgraduate Committee was originally “to assist the practising doctor in the diagnosis, management and treatment of his patients by the most modern and scientific methods”. In recent decades the primary role of the Committee has been to develop and implement educational programs for medical graduates, including vocational trainees and clinicians practising in a range of disciplines. The realisation emerged that the Faculty had a responsibility for continuing education beyond the provision of undergraduate and postgraduate degrees. The notion of education as a continuum and the need for feedback and communication between the practice and research sectors were identified – medical practitioners needed to be actively updated on research developments which were occurring at a rate far exceeding any previous, and conversely, it was important that academics maintained an understanding of what constituted good medical practice. The Postgraduate Committee was a site where this could occur through the delivery of a broad range of continuing education courses.

During the 1990s, the Committee operated at its most profitable levels. Courses were conducted across the Sydney metropolitan region in the fields of Radiology, Paediatrics, Cardiology, Dermatology, Obstetrics and Gynaecology, Ophthalmology, and Geriatrics. Regional courses were also run across the state in conjunction with the New South Wales Perinatal Services Network (although these have since been terminated).

Since its inception in 1984, the Basic Physician Trainees Program has been a flagship of the Committee. The course prepares students for the Royal Australasian College of Physicians examinations and is recognised for the excellent standard of its speakers and content. It has been consistently well-attended, with well over 100 enrolling each year. The course was designed and introduced by Jim Lawrence who continued to convene it until 2001. The program has since been convened by Emily Hibbert from Concord Hospital. The General Revision course has been another successful long-running program. The Committee convened this course annually for nearly 70 years until the mid-1990s when (as with a number of other programs) it was taken over by the Royal Australian College of General Practitioners. The monthly journal, the Bulletin of the Postgraduate Committee in Medicine of the University of Sydney, was terminated in 1990 due to diminishing readership after more than 50 years of publication.
3. Education: beyond the medical program

In recent years the changing environment both in Canberra and in the education market has resulted in an increasingly fragmented education sector, dramatically altering the operation of the Committee. The expansion of specialist medical colleges and organisations (such as the Medical Training and Education Council of NSW) into continuing education means that the Committee has been subject to far greater competition. The majority of courses that ran during the 1980s and 1990s have now been taken over by these other organisations. Such extensive competition in the field has meant that the Committee has needed to become more corporate in its dealings, adopting a business model to sell the well-respected Coppleson ‘brand’.

The Committee has formed partnerships with groups external to the University in order to maintain competitiveness. To this end it has successfully run courses in conjunction with the Pharmaceutical Services Branch of NSW Health and is presently administering a program for general practitioners in association with the journal Australian Doctor. In previous years it was the case that the Committee would convene and advertise a course in which practitioners would then enrol; however, more recently, the situation has evolved to a point where groups instead approach the Committee with specific curriculum objectives and ask it to develop program content according to these needs.

The Committee moved from the Coppleson Building to the Edward Ford Building in 2000 in order to become more integrated in the educational functions of the Faculty, and was incorporated into the Faculty’s Department of Medical Education which has since expanded to become the Office of Teaching and Learning in Medicine. In 2002, the Committee was renamed and became known as the Coppleson Committee for Continuing Medical Education – a tribute to the vision and legacy of Sir Victor Coppleson.

Teaching workshop in the medical school in Kota Bharu, Malaysia, facilitated by Jim Lawrence who visited regularly, and Ann Sefton
The precise role that the Coppleson Committee will adopt in the coming years remains somewhat ambiguous. Its position is being reassessed, both internally as a committee of Faculty and externally, as part of the dynamic and increasingly competitive continuing education market.

In 1982 Jim Lawrence was appointed Honorary Director of the Postgraduate Committee and remained in this role through the ensuing period of change until 2002. He was supported by administrative staff and a committee representing academic and practising doctors, including particularly the growing departments of Community Medicine and General Practice. Distinguished stalwarts who gave generously of their time, skills and enthusiasm included Gaston Bauer, Volney Bulteau, Kim Oates, Ian Fraser, Simon Willcock and Michael Kidd among many others. They helped to select programs and then to identify appropriate teachers from all the teaching hospitals and elsewhere to mount and sustain attractive, effective programs in continuing education. All teachers and programs were rigorously reviewed and utilised modern educational approaches with active feedback. These activities were supported and monitored by an administrative team led with distinction by Suzie Power. During this period there was close liaison between the University of Sydney and the equivalent bodies in the University of New South Wales and the University of Newcastle.

Simon Willcock has been Honorary Director of the Coppleson Committee for Continuing Medical Education since 2002.