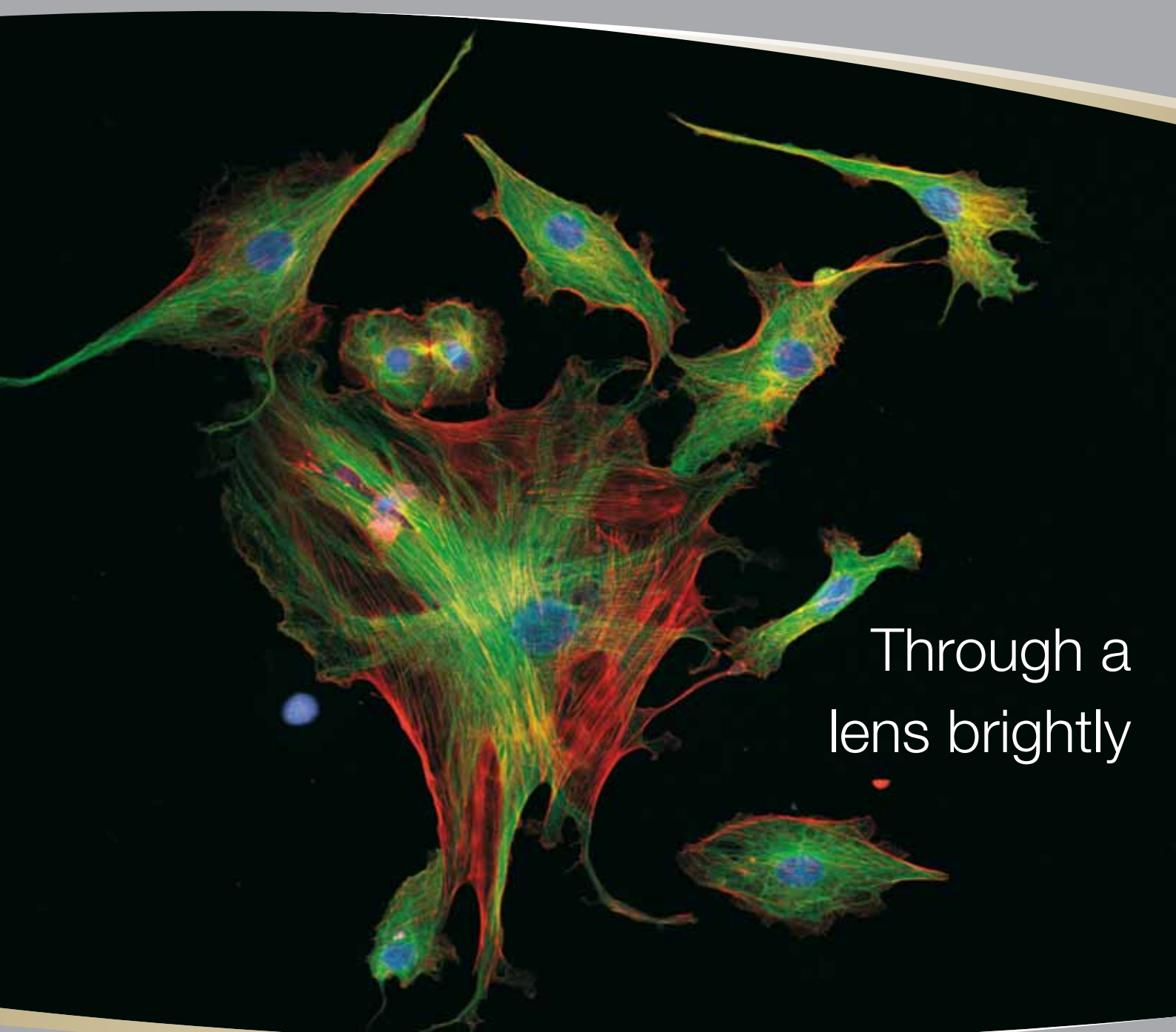




**News, Research  
and People**

Issue 2 – June 2009

**M3**



Through a  
lens brightly

# From the Dean



Above and opposite: Photography by medical student Nicolas Smoll for *Gippsland Medicine*.

The first true microscope dates back to the end of the sixteenth-century and the Dutch town of Middelburg, where an instrument was born that would forever change the nature of science. During the seventeenth-century, Dutchman Antonie van Leeuwenhoek assiduously honed the art of microscope design and became the first person to observe single-cell organisms.

In March, the Faculty of Medicine, Nursing and Health Sciences paid tribute to the refined descendants of these early instruments when we launched the new Advanced Optical Imaging Facility of the Monash Micro Imaging (MMI) centre (see back page). MMI offers Monash and other Victorian scientists access to the world's best microscope technologies and the services of the experts who operate them.

These majestic snapshots dispel any myths that the work of scientists is static or uncreative. The image on the front cover, depicting cytoskeletal proteins and DNA, resonates with the comment by cultural theorist Theodore Roszak that 'nature composes some of her loveliest poems for the microscope and the telescope'.

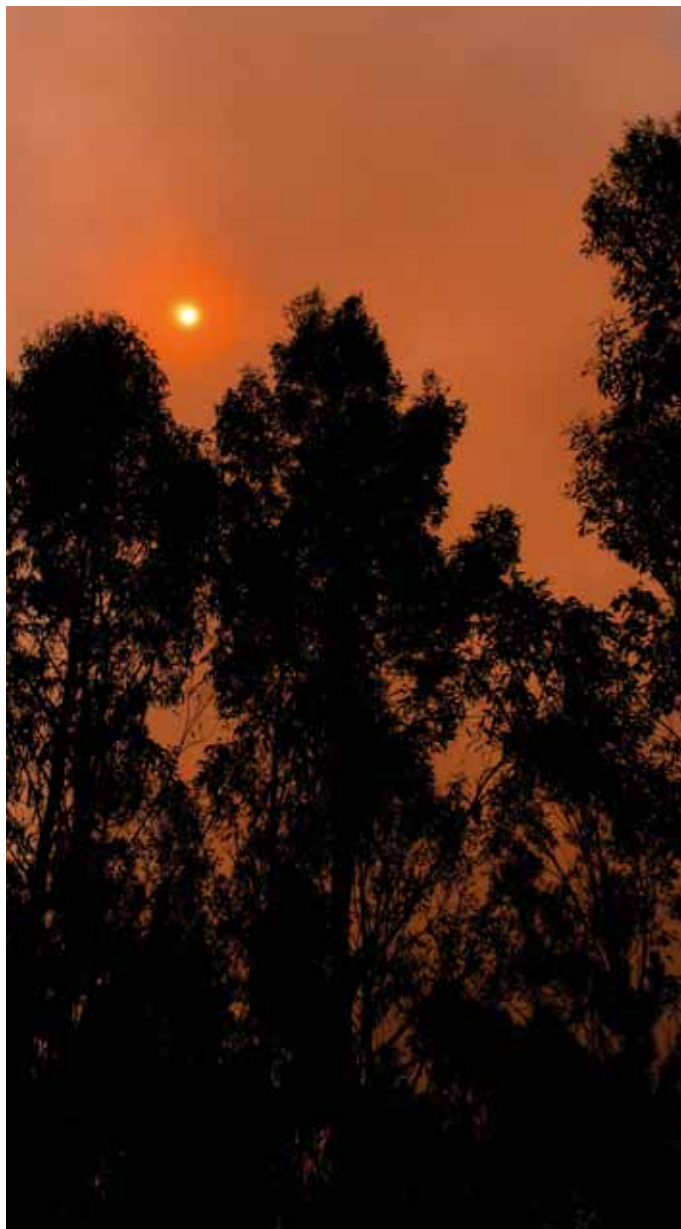
Our cover headline – 'Through a lens brightly' – also refers to images at the heart of another darker event: the Black Saturday bushfires. Along with daily reports on the death toll, it was the photographs from the inferno in the mainstream press that drove home the horror to the public and inspired widespread public giving.

Nicolas Smoll, an international student at the Gippsland Medical School, captured some of these events on camera. Apart from depicting a landscape consumed by orange walls of smoke, the photos also capture the brightness of compassion in the community's readiness to assist victims of the fires. I feel humbled by the efforts of many Faculty staff who donated their time, expertise or money to help with the disaster. We tell some of these stories in our bushfire special on pages four to eleven.

Other stories in this issue of *M<sup>3</sup>* include the recent David de Kretser Awards, which celebrated two great scientific minds, global health expert Professor Michael Alpers and our own Professor Alan Trounson. We also tell the story of a student who fled war and is now using his knowledge in social work and health sciences to support his community here in Melbourne. And we look at developments in the Faculty that will lead to innovations in nursing and midwifery, and to dietary solutions that improve the quality of life of people living with debilitating gut disorders.

As with each edition of *M<sup>3</sup>*, I am reminded that in a Faculty of 4000 staff and 7000 students, there are always too many stories to put under the microscope. *M<sup>3</sup>*

Steve Wesselingh  
May 2009



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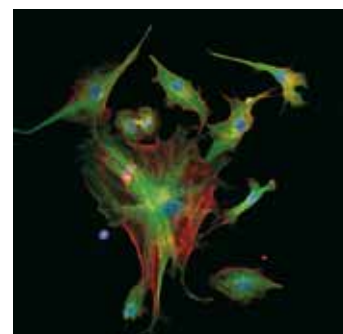
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## From the cover:

### Through a lens brightly

The lenses at Monash Micro Imaging bring to life nature's most secret shapes, such as this image of bovine pulmonary artery endothelial cells with cytoskeletal proteins (green and red) and DNA (blue), captured by Stephen Firth, Manager of Advanced Optical Microscopy.



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# Remembering Saturday

The generosity and courage shown by many Faculty staff during the bushfire disaster brought to light all of the best aspects of community.

Set in pastoral Victoria, the idyllic setting of the Monash Gippsland campus became its greatest threat when the Churchill fires swept within 900 metres of the grounds earlier this year.

The Faculty of Medicine, Nursing and Health Sciences was close to the fires in many other ways than just proximity. The Alfred Hospital – one of our major hospital partners – took over primary care for some of the severe burns survivors from the blazes of Black Saturday.

Forensic specialists from the Victorian Institute of Forensic Medicine (which doubles as the Department of Forensic Medicine) undertook the nightmarish task of identifying those who didn't make it to the burns ward.

Meanwhile, the Monash Gippsland campus became the staging area for the local CFA, as well as a temporary home for evacuees.

"I spent 15 hours one day making bread rolls for the firefighters. That was my daughter's eighteenth birthday and she came up and helped as well," says Judy Lawless, placement coordinator with the Gippsland Medical School.

She was just one of several staff and students whose homes and lives came under threat during the bushfires that began in late January and reached their peak on 7 February.

"The Saturday night of the fires, we stood on our property and watched the tornado of fire that flew across the hills towards Yarraman. We saw a house explode."

The Faculty offered unconditional support to staff who needed time off to defend their homes or who volunteered in various capacities. It also financed new textbooks for several students whose properties had been affected by the blazes.

Medical student Nicolas Smoll chronicled those strange days in a powerful series of photographs. "There is one picture where, standing to my left while I was taking the picture, was a man videotaping his house being burnt to the ground," says Mr Smoll.

These images, along with the stories of three Faculty staff members, illustrate the sense of community and giving that grew from the Black Saturday tragedy and of the force that razed the landscape.

**Right:** Trees from a pine plantation near Darlimurla that were damaged in the first Gippsland fire, with the smoke and ash of the second Gippsland fire seen in the distance.  
**Below:** The air ambulance depot located close to Monash's Gippsland Regional Clinical School at the LaTrobe Regional Hospital. The air ambulance regularly carries passengers from the hospital to the Monash Medical Centre and The Alfred.

Pictures by Nicolas Smoll for *Gippsland Medicine*.





# One of the lucky ones

It took five firefighters seven hours to defend the home of Professor Debra Nestel.



Debra Nestel with her dog Bella and CFA members (from left) Chris Farmer, Norm Inglis and Graeme Chesterton. Supplied by *The Herald* and *Weekly Times Photographic Collection*.

The big white house and sprawling gardens at 400 Glendonald Road, Hazelwood South, back onto a pine plantation where, in February, a fire was allegedly lit that would grow and kill 21 people. This incident led to Glendonald Road becoming one of the epicentres of the Gippsland fires.

Professor Debra Nestel of the Gippsland Medical School lives at 400 Glendonald Road. She considers herself one of the road's lucky ones, surviving with both life and home. Neither blessing was bestowed on her next-door neighbours. "The fire crew said that as they drove down the road, all the animals were running in the opposite direction. The appliance from Glengarry West was actually decommissioned after it had been at our house because it was so badly damaged," she says.

The local strike team designated her property for protection during a reconnaissance on Black Saturday. Having evacuated on the Friday with her dog Bella, Professor Nestel did not know of her home's fate until the following day, when a co-worker who agists cattle on Glendonald Road drove past and saw the house. "Suddenly, this big grey house, which was previously a big white house, was visible from the road," she says.

Later reunited by a journalist with three of the five firefighters from Glengarry West CFA who defended her house, she learnt the details of the day's events. "My CFA crew had been on the firefront but they were moved to asset protection at about 4.30 pm because the firefront was not behaving as expected," she says.

**“The appliance from Glengarry West was actually decommissioned after it had been at our house because it was so badly damaged”**

“One of them jumped off the appliance to turn off the mains power while the appliance was parked by the underground water tank. By the time he got around to the mains electricity, the fire was upon them. There was one man in the appliance, and one in the shed attached to my house and we just don't know how he survived.

He's been back to the house several times and it was obviously a deeply disturbing experience for him. The other three were caught outside and they couldn't get back to the appliance to get an axe because they were caught in the fire.”

Those three broke into the swimming pool enclosure, and then into the house. “They covered themselves in carpets to stop the radiant heat damage. The firefront took about five minutes to pass over and then after that they defended the property for what they think was about seven hours.”

Professor Nestel feels awed by the community commitment among the firefighters, who all live and work in the local area, and remains optimistic about rebuilding. She has since turned her mind to rectifying broken windows, damage by water, smoke and ash, and fixing gutters, downpipes and parts of the roof.

“I didn't realise how important it was for me to see my house,” says Professor Nestel of the emotional impact. Her parents lost their home during the Ash Wednesday bushfires in 1983, and for the moment, her father refuses to visit Glendonald Road. “I suppose that the intensity of the loss is so great for him... The impact is demonstrated in all sorts of weird ways.”



Clockwise from below: St John Ambulance volunteers overseeing the health of evacuees at Monash Gippsland; A group of Nagambie CFA volunteers; Grant O'Neil, a local furniture maker, talks to rangers who are inspecting for damage caused by bulldozers on a farming property; a strike team leader on his phone. Photography by Nicolas Smoll.





Above: CFA volunteers inspecting a small fire.  
Right: A destroyed washing machine lies in the rubble.  
Below: A miraculous escape for a Gippsland home.  
Next page: A cool night after the fires.  
Photographs by Nicolas Smoll.





# Ten carloads for the animals

A decision to donate blankets took on a life of its own for this volunteer.

Mairi Rose Macleod has always loved animals. “The first pet that I really have a memory of was a marmalade cat called Ghandi. He was into passive resistance. We’ve always had multiple cats, dogs and fish. We had a turtle that ran away,” says the research administrator in the School of Psychology, Psychiatry and Psychological Medicine.

News of the Black Saturday carnage inspired Ms Macleod and husband Kane Simons from the Faculty of Arts to help the furriest bushfire refugees.

“On a car trip on our way to work, we were talking about how nothing had really been said about the animals that had been affected. So we said, we’ll take some stuff to the RSPCA or wherever it needs to go, and if some people from our workplaces want to box stuff in, we can chuck it in with the loads we’re going to take,” she says.

But after an email appeal to Faculty staff, Ms Macleod was inundated with donations including towels, blankets, sheets, containers for feeding and watering, animal toys, horse blankets and buckets, fish food, calming spray and harnesses.

“I originally started keeping a count of what was coming in and from whom, but once we started getting into the multiple hundreds of items, I kind of decided that my time would be better spent on other things,” she says.

The donations went to the RSPCA, Animal Aid in Coldstream, Whittlesea Animal Hospital, Lort Smith Animal Hospital, Blue Cross Animal Society in Wonga Park, and the Australian Animal Protection Society in Keysborough.

“We made ten carloads and there’s still another three carloads to go,” says Ms Macleod.

“I had a lot of support from within the School and the Faculty. It made the path easier for people to help.”

“We’ve always had multiple cats, dogs, fish. We had a turtle that ran away”



Mairi Rose Macleod with her two cats.

## Firefront Focus

Bulldozer drivers are an important part of the firefighting team, and the risks they take often go unacknowledged. The bulldozers have special air conditioning systems that permit them to get nearer to the fires to bulldoze trees that may be burning or are about to be burnt. The bulldozers get so close to the fires that getting out of them would mean death, with temperatures inside reaching up to 60 degrees Celsius.

This man described an event where a bulldozer broke down as it was fighting a fire close to the flames. The driver, knowing that getting out of the bulldozer meant certain death, as did staying, called for help. Along with other drivers, the man in the picture had to come to his rescue by clearing the trees around the stranded



Photograph by Nicolas Smoll.

machine. Meanwhile, helicopters loaded with water would drench the bulldozer to keep its occupant safe. The driver had to wait until the fires around him subsided

before he could exit his broken vehicle and get himself to safety. The Loy Yang power station donated bulldozers to the fire efforts. – **Nicolas Smoll**

# Into the fire

The support of his Department and the Faculty meant that this CFA volunteer could take time off to fight the inferno.



During his 16 years as a volunteer firefighter, Alejandro Satragno has confronted some of Australia's most dramatic natural disasters. As a member of his local brigade in Hastings, the Surgery Manager in the Department of Physiology is one of many volunteers who make up the Victorian CFA.

Within this meticulously efficient organisation, Mr Satragno has taken up a range of roles, including crew leader, level 3 incident planner and strike team leader. He will soon train as a sector commander. But despite the rigorous training of the CFA, Mr Satragno, like the other volunteer firefighters, knew that Saturday 7 February would present new challenges.

"We knew it was going to be bad, and we had safety talks the day before to prepare us for it, and it was discussed, putting only the most competent people on that day, and safety was the main issue," he says.

"You couldn't stop that fire. All the statistics, all the figures, everything says you couldn't stop that fire. It was an unprecedented situation. I hope it never happens again."

His week of 12-hour shifts began on Black Saturday with a call to lead a strike team

from the Westernport Group to the fires at Gippsland. On the Monday after the carnage, he was deployed to Kinglake.

"We did a lot of consoling people. We still had fire on the north side. We were still trying to keep the residents who were left at ease. Talking to them. Checking their places. Doing welfare checks on people. We had control lines to try to build or reinforce," he says.

"The CFA rested us for a couple of days and sent us out again. It's a good system. We were not exhausted. When you consider that there were thousands and thousands of people that got sent... and we didn't actually lose any firefighters on the firefront."

He says that people often underestimate the intensity of the fires. "It's a lot of training, experience and intuition which lets you know whether what you're confronting you can cope with or you can't, and where the safety zones are. We have all sorts of systems in place to be able to say 'we have to go, we can't deal with this'. If you get caught, you then have safety and survival drills that you do and you put those in place. By and large you survive."

To fulfil a role that regularly takes him from his paid work, Mr Satragno relies on the support of the Faculty, including that of Head of Physiology, Professor Iain Clarke.

**“When you consider that there were thousands and thousands of people that got sent... and we didn't actually lose any firefighters on the firefront”**

"During the fires, I didn't have to worry at all (about taking time off). That is absolutely terrific. Iain kept ringing every day and checking with Di (my wife) whether I needed anything, and he said 'I don't want to see you at work'. It's just tremendous to know that. It makes it so much easier," he says. M<sup>3</sup>

# Big moves on course for nursing and midwifery

While other Australian nursing schools are feeling the pinch, nursing and midwifery at Monash is growing robustly.



Professor Wendy Cross, newly appointed Head of the School of Nursing and Midwifery.

The expansion to a third Monash campus is just one of many changes for the 22-year-old School of Nursing and Midwifery, which this year grows by two postgraduate courses, a new research strategy and eight staff.

Professor Wendy Cross, previously Head of Campus for the School of Nursing and Midwifery at Peninsula, has moved to the Clayton campus to tackle her new role as Head of School.

Clayton will be home to two of the School's postgraduate courses, which have received funding from the Federal Government for 40 places. They will both commence at Clayton midyear. Overall, the Government has funded 100 new Monash nursing and midwifery places this year, responding to a dramatic shortage of highly skilled nurses in Australia.

The Master of Clinical Midwifery will provide pathways for Bachelor of Nursing graduates who wish to train as midwives, while the new Master of Nursing Practice is an intensive 18 month program available to graduates from any background who wish to train

as Division 1 nurses. The latter course will have a management and systems focus.

"We'll end up with a different mix of graduates from the Master of Nursing Practice. They'll have more life skills and experience, and that will add to a more diverse and flexible group of nurses," says Professor Cross. Both courses will include a significant research component, part of the School's focus on evidence-based practice and its new research strategy (see right).

The School of Nursing and Midwifery Gippsland campus is the site of other exciting changes, with the introduction of the Bachelor of Nursing Practice planned for 2010. The focus of this course is a curriculum that integrates with other areas of primary healthcare.

Other developments include an exchange program with Huddersfield University and Karolinska Institute, and the incorporation into the nursing curriculum of training at the simulation centre at Moorabbin Hospital.

# Finding better care through perfect practice

A new strategy for boosting nursing and midwifery research at Monash University focuses on how to better meet the needs of patients.

Almost ten years ago, when the words 'practice development' rarely passed the lips of Australian health professionals, the Monash School of Nursing and Midwifery was part of a group that stimulated the development of the International Practice Development Collaborative, a network of organisations in the UK, Europe, Australia and New Zealand, that focused on how to ask the right research questions to find solutions to problems in the clinical environment and nursing workforce.

A decade later, Monash continues to strengthen its focus on this important intersection between research and clinical work, and on how to improve the work environments and expectations of nurses and midwives.

"In the health system, you get so pressured by movements of patients in and out, filling out forms, that you forget the person you're there for in the first place. People don't do it consciously, but they do it. And there are also a lot of old workplace cultural behaviours that we need to address," says Professor Wendy Cross, Head of the Monash School of Nursing and Midwifery.

One of the big challenges for the nursing workforce is retention – an ongoing issue in a workforce of women, many of whom are of childbearing age – but also one put under new constraints as young, Generation Y staff seek more flexibility in their professional lives. The School of Nursing and Midwifery's new strategy for research includes a strong practice development direction.

Associate Professor Cheryle Moss, who was Deakin University's first female Dean during the 1980s, joined Monash this year to take a lead in research and practice development. She sees a strong connection between practice development and theories in education and management.

Her work in New Zealand, where she was Research Coordinator at Victoria University of Wellington, included helping health teams to plan their work for the next 12 months and then to measure those achievements.

**“You can have an idea about what’s important, but actually achieving that in practice is a very different reality”**

“You can have an idea about what’s important, but actually achieving that in practice is a very different reality. This is about the science of working in the context of those realities to bring about substantial change and development.”

She says that the environment of scholarship in the University needs to better strengthen the interaction with the everyday work of

nurses, leading to the sharing of knowledge. “There’s often cynicism in clinical workplaces about the relevance of the University. And there’s often cynicism in the University about the relevance of clinical communities,” she says.

“The work of practice development helps those processes because it really sponsors community engagement in scholarship. They’re not just ends that serve the University. They bring into balance those two aspects – the need for production of knowledge and the teaching of knowledge, and then the need for utilisation of knowledge around the most pressing clinical and social questions.” M<sup>3</sup>



Associate Professor Cheryle Moss.

# David de Kretser Awards celebrate determination in medical science

IVF, stem cell science and a brain-wasting illness shared in the spotlight of a recent ceremony at Government House.

The Faculty recently acknowledged two men who stood fearlessly by their theories and discoveries to forever change medical knowledge. Recognising the long-standing contribution of the Governor of Victoria to the Monash Faculty of Medicine, Nursing and Health Sciences, the annual David de Kretser awards celebrate two great minds of medical science. This year, the awards touched upon the themes of disease, reproduction, microbiology and stem cell research.

At a ceremony held at Government House in February 2009, IVF pioneer and stem cell biologist Professor Alan Trounson received the David de Kretser Medal, which recognises an exceptional contribution to the Faculty of Medicine, Nursing and Health Sciences.

Professor Trounson began his scientific career with sheep. His work on reproductive technology in animals had a profound impact on livestock technologies around the world. He joined Monash in 1977 to work with Dr Carl Wood on reproductive technologies for humans, and made headlines in 1980 when he and the rest of Professor Wood's team delivered Australia's first IVF baby.

He pioneered further IVF techniques, and in the late 1990s moved into stem cell sciences. In 2000, his team announced that it had found that nerve stem cells could be derived from embryonic stem cells – a discovery that triggered world interest in the potential of stem cells to help cure many diseases.

Professor Trounson served as Director of the Monash Immunology and Stem Cell Laboratories until 2007. Other roles at Monash included Director of the Centre for Early Human Development, Deputy Director of the Institute for Reproduction and Development, as well as personal chairs in Obstetrics and Gynaecology/Paediatrics, and in Stem Cell Sciences.

In 2007, Professor Trounson was appointed to the position of President of the California



Institute of Regenerative Medicine – a \$3 billion agency founded to support and advance stem cell research and regenerative medicine.

Meanwhile, the Lifetime Achievement Award, which celebrates an individual who has made an outstanding contribution, both nationally and internationally, to human health and wellbeing, was awarded to Professor Michael Alpers AO.

Professor Alpers is John Curtin Distinguished Professor of International Health at Curtin University in Western Australia. He has spent his life studying the degenerative neurological illness kuru, which was endemic to a small cultural group in the Eastern Highlands of Papua New Guinea until the last century.

His studies combined cultural, behavioural, clinical, epidemiological and biomedical aspects, and ultimately led to his groundbreaking conclusion that kuru was transmitted through the mortuary practices of the community,

whereby the community collectively consumed the bodies of relatives who had died. The last kuru sufferer died in 2005, and provided that no new case appears by 2010, this devastating illness will be considered to have died out.

He studied the microbiology of kuru in collaboration with Dr Carlton Gajdusek, who received a Nobel Prize for his work on the disease in 1976. Their transmission experiments revealed the disease as the first human spongiform encephalopathy, an illness caused by prions.

Prions are infectious, self-reproducing pathogens comprised of mis-folded proteins. Professor Alpers' work provided vital building blocks in their discovery and understanding.

View more pictures and read the full profiles of Professors Trounson and Alpers at: [www.med.monash.edu.au/news/2009/ddkawards2009.html](http://www.med.monash.edu.au/news/2009/ddkawards2009.html)

M<sup>3</sup>



Professor Alan Trounson.

*“I feel like I’m standing here really because of the people who work with us, who went up the mountain every time we called for doing something different. I don’t think I’ve ever been thought of as a wilting flower or pansy. I want to acknowledge the partnerships, particularly Carl Wood, who is here but not here, a man I love really deeply, and who is as much what IVF was as anything I did. He said, ‘you lead the science and we will follow you’. It was a magnificent time.”*

**Alan Trounson**

*“I cannot stand up here without thanking all of my colleagues around the world, because without their collegiality I wouldn’t be standing up here. Science these days has to be the work of teams, and one can spend a fair bit of time leading a team, but one always has to be a member of a team, and that is the only way we can go forward... Occasionally you have to go out on a limb, and of course the view from the limb is always beautiful and expansive. Things look different from out there.”*

**Michael Alpers**



The Governor of Victoria, Professor David de Kretser, with Professor Michael Alpers.

# Community leader

A radio program and a community-health team are just two of the activities undertaken by this Monash student to help his people.

“Communities with a refugee background have very complex issues. Some are very depressed, some are very stressed – because of family problems, family separation, war, conflict”

Marama Kufi left the Oromia region of Ethiopia in 1989.

“It is very hard, especially for the first time when you flee from your village, when you risk everything and you run away. Disarray from storm of bombs and bullets. You leave everything behind; you only see saving your life. You don’t know where you’re going... We were travelling day and night for more than three weeks. We didn’t know any direction. We didn’t know the depth of the rivers; just got into them and tried to cross. In my group there were about 100, 120 people – children, young, women, older people... just walking. You live under a tree and if anyone is tired you carry them for a while, support them for a while. Three weeks,” says Mr Kufi. “Where there is no peace, there is no life.”





Marama Kufi with lecturer Dr Andrew Joyce.

One of many Ethiopian refugees from the Oromia region displaced by civil war, Mr Kufi found himself across the border with Sudan in the Yabus refugee camp. The work he would pursue one day in supporting the Oromo community took seed in his new country of Sudan, where his literacy led him to a logistical job with an aid organisation.

In October 1999, he arrived in Melbourne with his wife Lensa Dinka and niece Ayane Galata. Mr Kufi wasted no time in enrolling in an English language course with Adult Multicultural Education Services (AMES) in his home suburb of Dandenong, the first of his many certificates and diplomas, which also include patient service assistance, IT, accounting, and Division 2 nursing. He began the Bachelor of Health Science/Bachelor of Social Work in 2006.

Mr Kufi considers himself lucky to possess the determination to make the most of his new life here in Australia, and is passionate about helping those who cannot equally seize opportunities.

“Communities with a refugee background have very complex issues. Some are very depressed, some are very stressed... because of family problems, family separation, war, conflict,” he says. “I had the same experience where I came from. That’s why I want to support them. We come together, helping each other emotionally, sharing emotionally.”

As part of his Health Science course, he and lecturer Dr Andrew Joyce have established the South Eastern Oromo Community Health Team, which takes a health promotion approach to the issues of mental health, family relationships, domestic violence, drug and alcohol use and the relationships between young people and their families.

Chaired by Mr Kufi, it is a collaboration between the Oromo community, Monash University, and the Cardinia-Casey and Greater Dandenong Community Health Services.

“Where there is no peace, there is no life”

Every fortnight, the team deliver a ten-minute radio spot in the Oromo language on radio station 3ZZZ, discussing health and social issues.

The team’s other projects include a plan to address the issue of infection control for workers in the aged care area, many of whom come from refugee backgrounds.

Dr Joyce describes the South Eastern Oromo Community Health Team as a wonderful example of a health initiative stemming from the community.

“The opportunity for collaboration between the Oromo community in the outer south eastern suburbs, Monash and the two health services is a direct result of Head of Department Professor Helen Keleher’s policy of fostering joint appointments with Monash and local health services,” he says.

“Before even graduating, Marama is able to utilise the experience learnt from the course, as well as his terrific communication skills within his community... We hope that a long-term relationship can be formed to ensure that the various health needs of the Oromo community can be responded to in a manner consistent with its values.”

In addition to his study and work as a Division 2 nurse, Mr Kufi volunteers each Friday in the resettlement program of the South Eastern Migrant Resource Centre. Free time is a rarity.

He feels grateful for the support he receives from the Faculty. Set to finish his double degree at the end of this year, he hopes to work in a capacity-building role with a community organisation, and – if possible – to conduct research in the area of health sciences. “To do something for the community is my dream,” he says. M<sup>3</sup>

# Food for thought

Running a successful trial for a therapeutic diet that offers relief to people living with Crohn's disease and irritable bowel syndrome takes a lot more than pure gut instinct, say researchers at the Eastern Health Clinical School.

“The diet changes how we manage what was previously a very difficult problem”

More than 10,000 meals and 6,000 snacks will be served as part of the Eastern Health Clinical School's latest trial into how to improve functional gut symptoms, which place a huge burden on the Australian Health System each year. Spanning two years, the trial will continue the School's research into diets that eliminate a troublesome group of carbohydrates.

“Functional gut symptoms affect at least one in five members of the community,” says Professor Peter Gibson, gastroenterologist and Head of the Eastern Health Clinical School.

“Symptoms include bloating, with or without abdominal distension, abdominal pain and discomfort and disturbed bowel habits. They occur most commonly in people with irritable bowel syndrome (IBS), but also affect those with inflammatory bowel disease (Crohn's disease and ulcerative colitis) and coeliac disease. The symptoms can vary from being a nuisance to completely disturbing a person's quality of life.”

For this major study, the Eastern Health Clinical School will recruit 26 healthy participants, 26 with irritable bowel syndrome, and 26 with inactive Crohn's disease, feeding them every meal and snack for a period of six weeks.

The diet in question eliminates FODMAPs, a term coined by researchers at the School for a group of short-chain carbohydrates that some people have trouble absorbing.

While the effects of lactose and fructose on some digestive systems have been known for some time – the former to a greater extent – it took the work of Senior Lecturer Dr Sue Shepherd and Professor Gibson to identify that these were only two in a whole group of dietary sugars and other short-chain dietary carbohydrates.

Dr Shepherd devised the first low-FODMAP diet about five years ago. Researchers at the Eastern Health Clinical School have been fine-tuning it since by defining the composition of a vast array of food types.



Professor Peter Gibson, Head of the Eastern Health Clinical School.

## Research in the east

The Eastern Health Clinical School is one of the Faculty's two newest schools. With headquarters at Box Hill Hospital, its activities cover an area of Melbourne served by seven health service centres.

The School's three key activity areas are medical student programs, research (where new ideas and developments are translated into changes in clinical practice), and the Eastern Clinical Research Unit (ECRU), which provides expertise in performing clinical drug trials.

The School's biggest research strengths are gastroenterology and nutrition. Dietary therapy, which is commonplace for the management of coeliac disease, is underdeveloped for the other chronic intestinal diseases. The School conducts a major program looking into the application of diet in the therapy and prevention of such diseases. FODMAPs are a key focus.

Researchers at the School also study other dietary triggers of trouble in the gut, including chemicals, fat, and gluten in non-coeliac disease.

Other active research programs involve neurology (strokes and multiple sclerosis), haematology and medical oncology, cardiology, endocrinology, respiratory medicine, and nephrology.

The diet is now applied by many dietitians in Australia, New Zealand, the United Kingdom, Ireland and the USA. It is also taught in the Monash Bachelor of Nutrition and Dietetics, as well as in Deakin University dietetics courses.

“The diet changes how we manage what was previously a very difficult problem,” says Professor Gibson, gastroenterologist and Head of the Eastern Health Clinical School, who also works on the project with Dr Jane Muir – Head of Research at the School.

“Quality of life is much improved in at least 75 per cent of people who are initiated on the diet. This is anyone from people who just get a bit of bloating, to people who get bloating, pain, altered bowel habits (ranging from constipation to diarrhoea), all sorts of things. It has been a very big thing.”

In previous studies of the FODMAP diet, Dr Shepherd and the research group conducted observational studies as well as a large, randomised, placebo-controlled rechallenge trial that unequivocally established FODMAPs as a major trigger of functional gut symptoms.

A PhD student with the School, Jacqueline Barrett, recently completed a study in people with an ileostomy (a procedure where the end of the small intestine is brought onto the outside of their body so that intestinal fluid can drain into a bag), which helped to identify the reasons why FODMAPs cause problems.

Apart from seeking further evidence for the FODMAP diet, the new trial will also screen for any negative consequences, looking particularly for changes in factors that are said to protect the body from bowel cancer.

While dietary approaches to these illnesses are common, Professor Gibson says that they can be quite problematic, relying primarily on anecdotal evidence and the vigilance of participants in their eating. Placebo effects are also high in dietary trials because of the brain’s influence on gut function.

“You can always find people who’ll do well with a specific diet, and you don’t know whether it’s due to the specific design of the diet, due to a placebo effect, or due to some other change not anticipated in the diet. For example, many people with IBS feel better on a gluten-free diet, but it is usually not removing the gluten that provides the relief, but removing fructans in wheat, one of the FODMAPs. That’s why our whole program has to attack the question in very many ways,” he says. M<sup>3</sup>

## What are FODMAPs?

Fermentable Oligo-, Di- and Mono-saccharides and Polyols are a group of carbohydrates. While each compound has been the focus of therapeutic diets, the Eastern Health Clinical School is the first research group to focus on diets that exclude the group collectively. FODMAPs include:

- **Fructose**, found in apples, pears, fruit juice and corn syrups;
- **Lactose**, found in milk and yoghurt;
- **Fructans**, found in onions and artichokes;
- **Galactooligosaccharides (raffinose and stachyose)**, found in legumes; and
- **Sugar alcohols (sorbitol and mannitol)**, found in stone fruits and used as artificial sweeteners.



## Making light work of it

More than 1700 Melbourne biomedical researchers can now study live cells under world-class conditions. The Monash Micro Imaging centre has opened a \$4 million Advanced Optical Imaging Facility that provides high-powered automated microscopes, some worth half a million dollars, for medical and life science research.

Located at the Clayton campus, the facility houses 13 integrated microscopes from companies such as Leica Microsystems, Olympus and Nikon. The facility acts as a hub for two other imaging nodes at Monash Medical Centre and the Alfred Medical Research and Education Precinct.

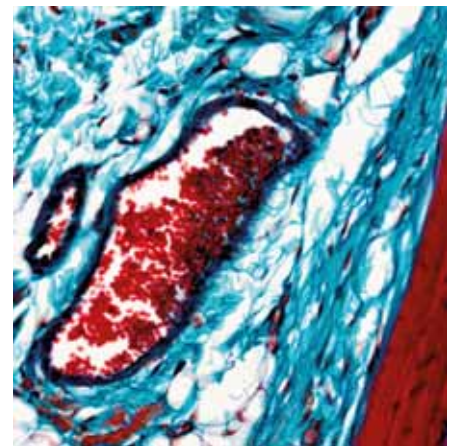
It was launched on 17 March by the Governor of Victoria, Professor David de Kretser, who compared the way he used to work on old manual microscopes with the hi-tech opportunities now afforded to researchers, including access and control of remote instruments.

The centre includes a new OptiPortal, a video wall display of 20 connected screens that can display and transfer high resolution images.

At the launch, Monash Micro Imaging researchers demonstrated its abilities, remotely operating a microscope in Germany and another in the adjacent laboratories. The images were then displayed side by side on the OptiPortal. The images were then switched from a 'Google Earth' type view of a whole tumour on one microscope, to focus on a single cell in a complementary specimen on another microscope.

This ability allows researchers to create a virtual microscope, synthesising new information and possible new data from integrating multiple imaging modes. M<sup>3</sup>

“Located at the Clayton campus, the facility houses 13 integrated microscopes from companies such as Leica Microsystems, Olympus and Nikon”

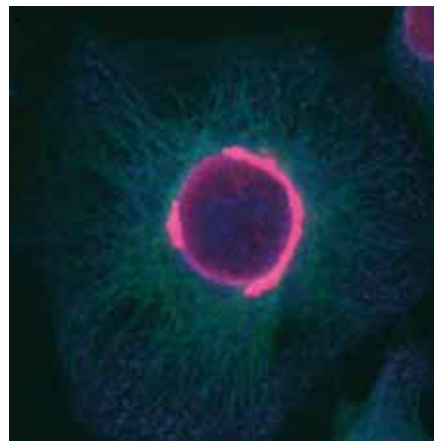
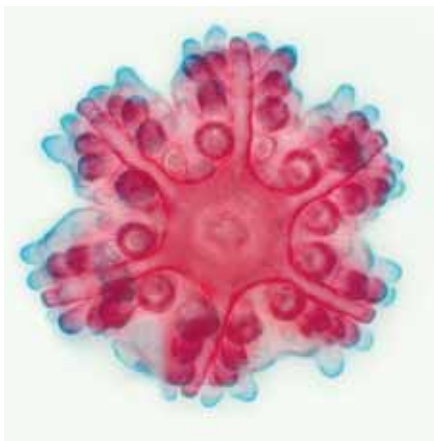


**Below left:** Wholmount slide of a starfish, prepared and imaged by Sarah Walker.

**Below:** Image of cytoskeletal proteins and golgi complex. Image by Chad Johnston

**Below right:** A paramecium, a single cell organism. Prepared by Stephen Firth, image by Chad Johnson.

**Right:** Slide of a rat knee, prepared by Ian Boundy, image by Sarah Walker.



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