Setting the agenda in **biomaterials**

Also inside: **Tooth mortality rates in decline; News from the Trust; Teething problems in an alien culture**
West Midlanders ‘need to brush teeth more frequently’

Only three quarters of people in England, Northern Ireland and Wales clean their teeth the recommended twice a day, according to the latest results of the 2009 Adult Dental Health Survey (ADHS). Meanwhile, one per cent, approximately 450,000 people, openly admit to never brushing their teeth.

In a nation famed for tea, queues and bad teeth, the latest findings do nothing to dispel this myth; while continued improvement in oral health is evident, there are still many people who do not meet the best possible standards. Two thirds of the population has plaque on at least one tooth, with the average person having six plaque-covered teeth, representing just under a quarter of their smile.

The West Midlands is one of the worst perpetrators of bad oral hygiene, the survey shows, with only four per cent of the region classed as having excellent oral health – well below the national average of ten per cent and the east of England high of 20 per cent.

The number of dentate adults is also below average at 91 per cent and only 82 per cent have 21 or more natural teeth compared to 91 per cent in London. Ninety-three per cent of the region has visible wear on their teeth while 13 per cent have active decay in their roots.

The reasons behind this are complex, but there is likely to be a link to people’s behaviour in terms of tooth cleaning, diet and visiting the dentist. While most people say they brush their teeth twice a day, there is still room for improvement in the effectiveness of that cleaning, as adults in the West Midlands were less likely than those in other parts of England to report using additional oral hygiene products, reports Professor Deborah White, of the School of Dentistry.

Owen Addison was awarded a prestigious National Institute of Health Research Clinical Fellowship. The NHS Clinical Scientist Award is open to ‘all researchers working in Medicine and Dentistry who are capable of leading research in their discipline’. This award will strengthen interdisciplinary research between Biomaterials and Tissue Injury and Repair and will focus on the inflammatory response to indwelling and skin/mucosa penetrating implants.

We have also seen the benefits of greater research integration through the College system, which has removed previously existing barriers.

This year will see the largest year group qualify from Birmingham – approximately 90. It is the second of our larger years to graduate and we now revert back to 75.

The proposed new Dental Hospital and School of Dentistry project is now live, following a public announcement in May. This project, in partnership with Birmingham Community Health Trust, may see us move from our long-established home in the city centre to the former BBC Birmingham site at Pebble Mill – as early as late 2014. At the time of writing, the project has not yet received planning approval but we will report on progress in future editions of DentalRoots.

Finally, this year has seen a number of retirements of longstanding staff in the School in particular John Matthews, Roger Mosedale, Roger Pearson and Richard Caddick. All three will be missed for their enthusiasm and dedication to their work: John especially in research and the support he has given to many junior members of staff over the years; Roger Mosedale for his boundless energy on clinic, and Roger Pearson for his considered guidance as Head of Clinic and Richard for his outstanding leadership in the Final year of the course for 25 years. We wish them long and happy retirements.

I hope you enjoy reading this issue which gives an insight into just some of the diverse activity that goes on in the School of Dentistry.

Professor Philip Lumley
Head of School of Dentistry
Tooth loss rates in decline, survey shows

The nation’s pearly whites are lasting longer than ever before, according to recently published findings from the 2009 Adult Dental Health Survey (ADHS), which provides an overview of oral health in England, Wales and Northern Ireland. As long as you are not a middle-aged female builder from Birmingham that is, as severe inequalities are still apparent in the state of the nation’s teeth depending on one’s age, gender, social status and location.

According to Professor Deborah White, Director of Education at the School of Dentistry, and a member of the dental academic team which carried out the survey, oral health is improving and more of us can now expect our teeth to accompany us into our senior years.

‘The results are overall very positive,’ she says. ‘A smaller proportion of people have lost all their teeth compared with previous survey results. Although it was expected that this survey would show improvements in oral health, oral health is improving and more of us can now expect our teeth to accompany us into our senior years.

In its fifth outing, the ADHS, which takes place every ten years, identified continued improvement in oral health; however, variations in age, social class and geography were evidenced. As Professor White points out, dental disease is not distributed evenly throughout the population. She reports: ‘While the proportion of people who have decay may be lower than before, there is evidence of social inequalities in many of the disease indicators.’

Tooth decay only affects 26 per cent of those from managerial and professional occupational households, while 37 per cent of routine and manual labourers are sufferers and the proportion of adults with no teeth increases exponentially by age; although for the first time, most adults in every age group were dentate.

There was slight differentiation by gender, with men more likely than women to have some natural teeth, 95 per cent compared to 93 per cent, and perhaps most surprisingly, only four per cent of adults in the West Midlands have excellent oral health compared to 20 per cent in the East of England.

While the increased tooth life expectancy is very positive for the state of the nation’s teeth, Professor White highlights the implications this may have for the dental profession: ‘These findings mean that over the next few decades, the burden of dental treatment need will be concentrated in older people who will retain an increasing number of teeth for their lifetime. People over the age of 45 who have had lots of dental treatment in the past will need increased maintenance, but the prospects for young people are better than they ever have been.’

Amy Cory

New Dental Hospital and School plan unveiled by Trust

Birmingham Community Healthcare NHS Trust with partners the University of Birmingham, Calthorpe Estates and Birmingham and Solihull LIFT (BaS LIFT), have announced early plans for a new building to replace the present Dental Hospital and School of Dentistry. Proposals for the £31 million development, which is earmarked for the former BBC Birmingham site at Pebble Mill, have been submitted to Birmingham City Council for outline planning permission.

The proposed development is part of a plan by Calthorpe Estates to regenerate the site of the old BBC studios at Pebble Mill. Outline planning permission was granted for a Science Park at the site in 2003 and this was extended to include a medical facility in 2009.

The planning application submitted to Birmingham City Council provides details of where the five-storey building would be located on the site. The design for the building has not yet been formulated, but will be developed in close consultation with stakeholders including the city planning team, representatives from the local community, patient groups, dental hospital staff and dental school students plus Calthorpe Estates.

Residents in the area around Pebble Mill were invited to view the proposals at a public meeting last month. The outline plans were shared with staff and students at the Dental Hospital and School of Dentistry at the same time.

The proposed new building aims to provide the services that are currently offered at the existing Dental Hospital and School of Dentistry on Whittall Street, in a modern fit-for-purpose building.

Professor Deborah White
Double retirement

Michelle Shortall, Personal Assistant to the Head of School, and Sue Fisher, Biomaterials technician, have both retired this year totalling more than 70 years service between them.

In December the School said goodbye to Michelle, who had been at the school for a very long time. She had seen several Directors over her time in office and kept them on the straight and narrow.

Thank you Michelle for all your help at the School of Dentistry.

Sue retired from the School in April after more than 40 years of dedicated service. During this time, Sue made a wonderful contribution to the School, particularly in Biomaterials where she looked after the microscopy research area. She was also a mentor to many Biomaterials students who came through the department. All of her friends and colleagues at both the School and Hospital got together to wish her all the very best for her retirement.

A Swiss secondment

Emily Hall, Clinical Lecturer in Orthodontics and Birmingham alumna, will be travelling to the University of Bern in Switzerland to undertake a three-month research secondment.

As part of her PhD in tissue injury and repair, Emily will be undertaking a clinical trial to find out if fixed brace treatment brings about any vascular or inflammatory changes within the pulp tissue of teeth.

She will be using 40 control and test paired premolars previously extracted from 20 of her patients in the Birmingham Dental Hospital as a basis for the research.

Emily said: ‘This is a great opportunity and I’m really looking forward to visiting the University. They have a state-of-the-art immunohistochemistry laboratory, which looks at hard tissues, and I’ll be working with some of the world’s leading professionals in this area.’

When Emily returns to Birmingham in April she hopes to take her research further and to eventually be able to put her research into practice for the benefit of patients.

NIHR Clinician Scientist award winner

Owen Addison, alumnus and Lecturer in Restorative Dentistry, has been awarded a prestigious National Institute of Health Research (NIHR) Clinician Scientist Fellowship. The NIHR Clinician Scientist award is open to all researchers working in medicine and dentistry and provides salary and research costs for up to five years post-doctoral training. The fellowship, which brings more than £900,000 research income to the School of Dentistry, will focus on research into peri-implant inflammation.

Owen explains: ‘Titanium is one of the most common metals used to manufacture artificial joints, plates to fixate fractures or implants to secure artificial teeth. It is used because it is associated with a favourable response when inserted into bone. However, in certain circumstances titanium debris and ions can be released into the surrounding soft tissues over time. This has been shown to modify the inflammatory response and may cause the device to fail.

‘This project will determine the mechanisms underlying the problem both in association with artificial joints and with implants used to secure bone anchored hearing aids. We will then attempt to create laboratory-based models that will enable improved materials to be identified. These interventions and the revision procedures required when they fail cost the NHS hundreds of millions of pounds each year. The study has the potential to significantly impact on this cost burden and contribute to improved patient wellbeing.’

Perryer promoted

Giles Perryer, a Birmingham graduate, has been promoted to the position of Associate Professor.

Giles is currently the Director of e-learning and a Clinical Teacher at the School of Dentistry. He is also President of the Central Counties Branch of the British Dental Association.

His interest for many years has been in dentistry e-learning, and in 2007 he led the team that won the Times Higher award for ‘The Outstanding ICT Initiative of the Year’ for his work in creating the University of Birmingham dentistry e-course. In the same year he won the Dental Defence Union Dentist Teacher of the Year award.

He is a co-founder of Dentaljuce.com, which provides online verifiable CPD for primary care dentists and their teams, and has previously been a postgraduate tutor with the West Midlands Deanery.

Outside e-learning, his teaching interests include virtual microscopy, colour blindness, and visual aids in operative dentistry.

Michelle Shortall, Personal Assistant to the Head of School, and Sue Fisher, Biomaterials technician, have both retired this year totalling more than 70 years service between them.

In December the School said goodbye to Michelle, who had been at the school for a very long time. She had seen several Directors over her time in office and kept them on the straight and narrow.

Thank you Michelle for all your help at the School of Dentistry.

Sue retired from the School in April after more than 40 years of dedicated service. During this time, Sue made a wonderful contribution to the School, particularly in Biomaterials where she looked after the microscopy research area. She was also a mentor to many Biomaterials students who came through the department. All of her friends and colleagues at both the School and Hospital got together to wish her all the very best for her retirement.

A Swiss secondment

Emily Hall, Clinical Lecturer in Orthodontics and Birmingham alumna, will be travelling to the University of Bern in Switzerland to undertake a three-month research secondment.

As part of her PhD in tissue injury and repair, Emily will be undertaking a clinical trial to find out if fixed brace treatment brings about any vascular or inflammatory changes within the pulp tissue of teeth.

She will be using 40 control and test paired premolars previously extracted from 20 of her patients in the Birmingham Dental Hospital as a basis for the research.

Emily said: ‘This is a great opportunity and I’m really looking forward to visiting the University. They have a state-of-the-art immunohistochemistry laboratory, which looks at hard tissues, and I’ll be working with some of the world’s leading professionals in this area.’

When Emily returns to Birmingham in April she hopes to take her research further and to eventually be able to put her research into practice for the benefit of patients.

NIHR Clinician Scientist award winner

Owen Addison, alumnus and Lecturer in Restorative Dentistry, has been awarded a prestigious National Institute of Health Research (NIHR) Clinician Scientist Fellowship. The NIHR Clinician Scientist award is open to all researchers working in medicine and dentistry and provides salary and research costs for up to five years post-doctoral training. The fellowship, which brings more than £900,000 research income to the School of Dentistry, will focus on research into peri-implant inflammation.

Owen explains: ‘Titanium is one of the most common metals used to manufacture artificial joints, plates to fixate fractures or implants to secure artificial teeth. It is used because it is associated with a favourable response when inserted into bone. However, in certain circumstances titanium debris and ions can be released into the surrounding soft tissues over time. This has been shown to modify the inflammatory response and may cause the device to fail.

‘This project will determine the mechanisms underlying the problem both in association with artificial joints and with implants used to secure bone anchored hearing aids. We will then attempt to create laboratory-based models that will enable improved materials to be identified. These interventions and the revision procedures required when they fail cost the NHS hundreds of millions of pounds each year. The study has the potential to significantly impact on this cost burden and contribute to improved patient wellbeing.’

Perryer promoted

Giles Perryer, a Birmingham graduate, has been promoted to the position of Associate Professor.

Giles is currently the Director of e-learning and a Clinical Teacher at the School of Dentistry. He is also President of the Central Counties Branch of the British Dental Association.

His interest for many years has been in dentistry e-learning, and in 2007 he led the team that won the Times Higher award for ‘The Outstanding ICT Initiative of the Year’ for his work in creating the University of Birmingham dentistry e-course. In the same year he won the Dental Defence Union Dentist Teacher of the Year award.

He is a co-founder of Dentaljuce.com, which provides online verifiable CPD for primary care dentists and their teams, and has previously been a postgraduate tutor with the West Midlands Deanery.

Outside e-learning, his teaching interests include virtual microscopy, colour blindness, and visual aids in operative dentistry.

Michelle Shortall, Personal Assistant to the Head of School, and Sue Fisher, Biomaterials technician, have both retired this year totalling more than 70 years service between them.

In December the School said goodbye to Michelle, who had been at the school for a very long time. She had seen several Directors over her time in office and kept them on the straight and narrow.

Thank you Michelle for all your help at the School of Dentistry.

Sue retired from the School in April after more than 40 years of dedicated service. During this time, Sue made a wonderful contribution to the School, particularly in Biomaterials where she looked after the microscopy research area. She was also a mentor to many Biomaterials students who came through the department. All of her friends and colleagues at both the School and Hospital got together to wish her all the very best for her retirement.

A Swiss secondment

Emily Hall, Clinical Lecturer in Orthodontics and Birmingham alumna, will be travelling to the University of Bern in Switzerland to undertake a three-month research secondment.

As part of her PhD in tissue injury and repair, Emily will be undertaking a clinical trial to find out if fixed brace treatment brings about any vascular or inflammatory changes within the pulp tissue of teeth.

She will be using 40 control and test paired premolars previously extracted from 20 of her patients in the Birmingham Dental Hospital as a basis for the research.

Emily said: ‘This is a great opportunity and I’m really looking forward to visiting the University. They have a state-of-the-art immunohistochemistry laboratory, which looks at hard tissues, and I’ll be working with some of the world’s leading professionals in this area.’

When Emily returns to Birmingham in April she hopes to take her research further and to eventually be able to put her research into practice for the benefit of patients.

NIHR Clinician Scientist award winner

Owen Addison, alumnus and Lecturer in Restorative Dentistry, has been awarded a prestigious National Institute of Health Research (NIHR) Clinician Scientist Fellowship. The NIHR Clinician Scientist award is open to all researchers working in medicine and dentistry and provides salary and research costs for up to five years post-doctoral training. The fellowship, which brings more than £900,000 research income to the School of Dentistry, will focus on research into peri-implant inflammation.

Owen explains: ‘Titanium is one of the most common metals used to manufacture artificial joints, plates to fixate fractures or implants to secure artificial teeth. It is used because it is associated with a favourable response when inserted into bone. However, in certain circumstances titanium debris and ions can be released into the surrounding soft tissues over time. This has been shown to modify the inflammatory response and may cause the device to fail.

‘This project will determine the mechanisms underlying the problem both in association with artificial joints and with implants used to secure bone anchored hearing aids. We will then attempt to create laboratory-based models that will enable improved materials to be identified. These interventions and the revision procedures required when they fail cost the NHS hundreds of millions of pounds each year. The study has the potential to significantly impact on this cost burden and contribute to improved patient wellbeing.’
Dear Birmingham School of Dentistry Alumni,

Hope you are well.

I’d like to take this opportunity to introduce myself as the new President and Chairman of ‘Birmingham University Dental School Society’ (BiDSS). As the UK’s oldest and largest dental student society, we’re still going strong!

If you signed up to BiDSS, you may remember this came with the promise of ‘lifetime membership’. It is with this in mind that the committee this year look forward to increasing the involvement of the alumni.

We’d like to extend an open invitation to all the fun and exciting events we have planned for 2011-2012.

So don’t forget to leave space in your diaries for The Annual Dental Ball in January.

This year we will also be hosts to ‘The Dental Schools Northern Sports Day’ on Friday 4 November.

Birmingham is well known for its competitive edge, so as well as being great hosts we hope to win a trophy or two. After all, we have the titles as the UK’s number one dental school to uphold: Best in UK - Guardian University Guide 2011 and Top Dental School - The Complete University Guide 2011.

This year the committee has the honour of having former student Upen Patel on board as Staff President... showing serious commitment to his pledge as lifetime member!

The new committee is looking forward to 2011-2012, we hope to continue the success of previous years and the legacy the alumni have left behind.

Kind regards and best wishes

Sarah Franks
BiDSS President

Zehra Yonel, Final Year dental student, has won the 2010 prize for the best elective presentation by the Sands Cox Society.

Zehra also gave an entertaining and informative account of her elective period at the Department of Forensic Dentistry at Melbourne Dental School. The title of her talk was ‘2D-3D comparison of a portrait with a plaster mask’ and showed results of attempting to identify an unknown portrait with only a 19th Century plaster mask to work with for the project. Her work was published in Aesculapius, the Sands Cox Society annual publication.

Zehra also passed her Final BDS examination, winning the Dentsply Prize for Clinical Excellence – congratulations Zehra! She has contributed hugely to the School and her colleagues throughout her course.

Zehra said: ‘As a Student of Birmingham Dental School, I feel genuinely privileged to have had the opportunity to be taught by a body of staff all of whom are so passionate about their work and are equally dedicated to us students. Whether it’s the effort invested in providing great adjuncts to our learning such as the Ecourse, which is a world class facility of which we at Birmingham can be proud; or the outstanding quality of specialty teaching which has left me wanting to further my knowledge in a range of areas. The holistic support structure and wrap around care provided by the likes of Professor White and her team further demonstrates the time and care that is invested in us at Birmingham.

‘Not only will I always look back on the five years I have spent in Birmingham with warm feelings and great fondness, but also with pride; knowing that I have graduated from an institution whose focus is not solely to produce good dentists, but has encouraged us to be well rounded, well-motivated young professionals. For this I am truly grateful and feel indebted to everyone at Birmingham for the solid grounding that I have been given prior to starting what hopefully will be a great career in a great profession.’
It’s tempting to think that after more than three decades at the cutting edge of dental research, you might feel like hanging up your lab coat and winding down your investigations.

Not Tony Smith. Retirement may be on the horizon for the Deputy Head of the School of Dentistry and Head of the Oral Biology Unit at Birmingham but he remains as passionate about – and committed to – his work as when he joined the school in 1980.

“I don’t see myself as ever giving up completely,” observes Professor Smith. “I may slow down a bit but research is such a big part of my life. It’s great fun interacting with so many dedicated people; and being involved in collaborations, both at home and internationally.

“Because dentistry is a relatively small area it doesn’t matter where you are based, you can work with people all over the world. We can also make the transition between basic science and clinical practice in dentistry much more easily because individual clinicians have the freedom to manage how they treat their patients and to explore new technical developments. Even though many dentists work within the NHS they have considerable scope for planning their own treatment approaches.”

It is people that matter most to the man who has risen from being a lecturer in Oral Biology and Pathology to director of research at Birmingham, with a career portfolio that includes being editor in chief of the Journal of Dental Research from 2004–10 and who received the Distinguished Scientist Award from the International Association for Dental Research in 2004.

“The environment in which you work is paramount,” he says. “There is great team spirit at Birmingham. We have reached a state in the last ten to 20 years where we have a very good sized group here, with an international reputation that gives us the opportunity to interact even more with the other big players in the field.”

Moving from being a school of individual departments to a single department in the early 90s was instrumental in this, he reflects. ‘It brought people together more and we started building strong basic science and clinical partnerships which have been fundamental to our progress. In dentistry today there is a move towards new research models such as practice-based research networks and the concept of translational research has given new meaning to what we are doing.’

His longstanding research into the biology of dentine and pulp in the tooth has focused particularly on tissue regeneration and its clinical translation in endodontics and restorative dentistry. The Pulp Biology Team at Birmingham seeks to understand the molecular and cellular events responsible for regeneration and how inflammatory and immune responses may override them. ‘We are interested in the adult stem cells in mature teeth and the molecular signals that trigger their recruitment and differentiation into dentine and pulp-forming cells.’

His move into dentistry, straight after his PhD at the University of Liverpool, happened purely by chance. ‘I went across the road to my local pub one lunchtime and starting chatting to a bloke in the bar who was a reader in dentistry at Liverpool. We got on well and a few days later he rang and told me there was a postdoctoral research post available and asked when I would like to start.’ He never looked back. Research into basic tooth development has led to the realisation of the potential to mimic these processes for tissue engineering, he explains. ‘In the last five years we have seen huge progress in engineering individual dental tissues as well as whole teeth. Using that clinically will take time, there are many challenges ahead and some advances are a long way off, but I think there is great potential for a halfway house where we can exploit the natural regenerative processes and make enormous progress.’

He remains a visiting professor at Peking University and the Fourth Military Medical University in Xi’an – ‘China brings the opportunity to work with enthusiastic, very motivated researchers in a rapidly advancing work culture’ – and until recently was on the boards of directors and councils of the International Association for Dental Research and the American Association for Dental Research.

Father to two sons, even his love of shooting and fishing, gardening and listening to music at his home in Kinver can’t drag Professor Smith away from work for long: ‘You never really turn off completely. Email and the internet mean you are interacting with colleagues all of the time.’ Having seen the benefits of fluoridation over 40 years, he believes the next step change in dentistry will be using managed approaches based on natural healing and regeneration of dental tissues. ‘If you can dampen down inflammation and control the infection that causes dental decay there is a much greater chance of regeneration taking place. We are already seeing some materials being marketed that have significant antibacterial properties, including the filling materials you treat the surface tissue with. This is very exciting and has the potential for application in many areas.’

Jenni Ameghino
The School of Dentistry and the Birmingham Dental Hospital have a unique and symbiotic relationship. They have shared the same current site on St Chad’s Queensway now for over 45 years. Without one the other could not exist, in the form that it does.

No one benefits more from the School–Hospital relationship than patients and the students. Of course dental undergraduates have to learn about dental disease, pathogenesis, presentation and social aspects, and then they have to demonstrate that they are fit to practice before they qualify. During that time they make a vital contribution to patient welfare and help manage patients alongside our qualified staff. Kevin Fairbrother says: ‘We aim to ensure that the quality of teaching and the experience for students is as good as possible. In the NHS this can sometimes be difficult with patient access targets imposed by the Department of Health and the pressure this puts upon the Trust for service delivery.’

‘For example targets set to treat patients with specialist care can mean that we’re not always seeing those who need general treatment and this can impact upon undergraduate and newly qualified training. But I believe that NHS staff are committed to their educational role and it is certainly a culture I would wish to facilitate.’

The hospital serves a massive population. Birmingham has arguably the most isolated dental hospital in the UK, with the next closest hospital being over 85 miles away. This reinforces the need for a teaching hospital in the city.

Dental education for students has significantly broadened in the past ten years or so, he explains. Their education now includes implants and high level endodontic treatment including microscopy. Sedation methods have also changed and all students practice inhalation and intravenous methods of conscious sedation as part of their general study, while being closely supervised by NHS staff.

‘Ultimately we are training the workforce of tomorrow, helping to produce the highest calibre of students for the workforce and of course I’d like to see as many of those as possible go into the NHS. If we can produce high-quality students that will work for the NHS, then we will be benefiting society as a whole.’

The hospital is starting a challenging new initiative to replace paper patient records with an electronic system. An electronic system is currently used for booking appointments, but not for notes. The initiative will also include digital radiography. The hope is to have the system integrated by 2012.

Decontamination is an important issue in hospital life and ensuring tools are decontaminated is a big priority. The hospital now has a system in place whereby any instruments are now moved off-site to be decontaminated. This means that there is then no need to store lots of equipment in the hospital building and means that students don’t need to carry around heavy boxes!
Setting the agenda in biomaterials

Translational research in the School of Dentistry is pushing the boundaries in new materials and tissue engineering, reports Jenni Ameghino.

Tell the average person that investing in dental research might one day give them a longer-lasting artificial hip and they might well think you were joking. Yet scientific wisdom born out of the need to create a new generation of dental fillings and to grow tissue for use in dental surgery is having a direct impact on other areas of medicine today, including orthopaedics.

Birmingham School of Dentistry is pushing the boundaries in the field of biomaterials – developing new materials and tissue engineering techniques to enable these materials to interact with host tissue.

Every year tens of thousands of UK patients undergo orthopaedic surgery. Figures show that in 2005–06 more than 80,000 total hip and knee replacement operations were carried out. Most will have involved the use of bone cement pioneered in dentistry to ‘fix’ the implant in place.

One of the most commonly used bone cements in the UK is polymethyl methacrylate (PMMA) which, while it has been in use for many years, is associated with several problems caused by its highly exothermic setting reaction, the toxicity of any unreacted monomer that remains after setting and mechanical properties that are quite dissimilar to bone. These problems mean that bone repair may be inhibited, there may be adverse systemic responses and that implants become loose, causing pain for patients.

Scientists at Birmingham are collaborating to explore potential replacements for PMMA, and to find ways to improve polymerisation – the process by which the cement hardens and sets – and the mechanical properties of the cements that retains implants. One strand of research, into resin-based composites, which are currently widely used as tooth-coloured filling materials, involves Dr Dick Shelton and Drs Will Palin and Paul Cooper. They are investigating how to use and improve light transmission through both tissue and the bone cement, to enable complete polymerisation.

‘This has arisen from Dr Palin’s expertise with resins and our interest in the biocompatibility of bone cements and improving their mechanical performance,’ says Dr Shelton, of the School’s Biomaterials Research Team.

‘We believe we have identified a material that performs with superior flexural mechanical properties than PMMA and is not associated with a serious exothermic reaction that can cause cell death.’

There is also improved cellular colonisation compared with PMMA. ‘We were able to polymerise to a particular depth. Dental composites in the mouth are used typically in 2mm increments but we have managed to achieve a depth of cure of the order of 40mm with our new cement. This has been achieved by including particles that improved light transmission through the composite. We are very pleased with the results so far.’

Projects of this nature have evolved from Birmingham’s world-leading work in biomaterials research. The most recent Research Assessment Exercise praised the University’s excellence in this field. ‘It is an area where in comparison with other dental schools we are one of the best in the field, probably the best,’ says Dr Shelton.

His own research specialism is bone, skin and oral mucosal tissue engineering. Having trained as a dentist, he went on to study for a PhD in anatomy and began working with a supervisor who was also a former dentist.

‘I became interested in bone cell interactions with different materials and how you could influence osteoblast (bone-making) cells.’

That was in 1986. Today, he undertakes one session of dentistry a week but focuses on laboratory research, motivated by the drive to improve dental health care and improved understanding of the science.

Identifying materials that promote bone synthesis and finding ways to deliver these cells to replace damaged or defective bone is one of the great challenges in dentistry, particularly in treating periodontal disease and in reconstructive surgery following cancer and traumatic injury. But it also has huge translational potential.

One project at Birmingham involves using different processing routes for octacalcium phosphate, which alters the crystal shape and size and therefore how efficiently the crystals can pack together which is important for subsequent vascularisation if such materials are implanted. ‘What was interesting was that certain of the octacalcium phosphate crystals could promote bone cells grown in culture to synthesise bone which has important implications for bone replacement treatments.’

Dr Shelton is also excited by the promises offered by the next generation of bone replacement materials, particularly in the area of hydrogel tissue engineering and in using rapid prototyping technologies.

‘I’m interested in the use of hydrogels to locate and position cells in more realistic positions with scaffolds. At the moment people make
up tissue-engineered scaffolds that are porous blocks, which look like spongy bone, then seed cells on them and hope they will survive following implantation. My argument is that these cells then experience nothing like the geometry you find occurs naturally and that attempting to more closely mimic interrelations of cell types and position, rather than merely coating the material with them, is more likely to be successful.’

Further possibilities lie in using hydrogels to grow the cells that make up the oral mucosa. ‘We are using a hydrogel to encapsulate feeder cells to grow oral keratinocytes and are looking to deliver these to patients possibly using a hydrogel transfer membrane. We are also looking more towards generating tissues from autologous (the patient’s own) stem cells to ultimately be able to direct them either into mucosa or into bone.’

In future, Dr Shelton would like to pursue collaborative work using rapid prototyping to create 3D structures to replace bone or provide tooth root implants for individual patients. ‘We have been looking at different levels of porosity of titanium alloys to see how well bone cells could infiltrate them and remain viable. I hope to do more on this as time goes on.’
Class notes

Ever wondered what other former Dental Students are doing now?
You can share your news and update your contact information online via www.your.bham.ac.uk, or ring the Alumni office on 0121 414 2744.

‘In 2009 I retired as Head of Restorative Dentistry at the Melbourne Dental School, University of Melbourne, Australia, and now hold a Professorial Fellow appointment. ‘Retired’ is a misnomer, as like most other academics, retirement brings more jobs, but at least I can choose what to do. I’m involved with our dental association at state and federal levels, the Royal Australasian College of Dental Surgeons, the FDI World Dental Federation, the International Association for Dental Research, the International Organization for Standardization, the Australian Defence Force (as a Reservist) and several international journals, as well as doing some sessional teaching in dental materials/g general practice dentistry and running a clinical research project in Vietnam. In the Queen’s Birthday Honours in June 2009, I was invested as a Member of the Order of Australia (AM) for services to dentistry and dental education.’

Martin Tyas (BDS 1967; PhD 1977)

‘My dental career led to appointment as Consultant in Dental Public Health (with huge acknowledgement of debt to Andy Anderson at whose feet I sat in 1970-71 for a postgraduate DDH). In 1985 I crossed the line to become a general manager, eventually as CEO of Fosse Health NHS Trust in Leicestershire. I had the huge good fortune to be elected President of the British Dental Association in 1995. I retired in 1998 and moved to my ‘career in retirement’ on the Council of the University of Leicester, of which I am now Chairman and Pro-Chancellor. My biggest achievement of all, however, is nearly 50 years of marriage and my four children giving Heather and I eleven grandchildren.’

Roger Bettles (BDS 1961; DDH, 1971)

‘I worked in the community dental service in Sandwell for six months after graduation then in private practice in Dudley for 18 months. I then moved to an Australasian private practice in London for two years, where I met my wife. We then moved to New Zealand in 1986 where I worked, and have subsequently bought into a private practice in central Wellington. I have been there ever since, with numerous practice ‘swaps’ back home for three months at a time. I took a Diploma in Clinical Dentistry (Restorative) in 1999, via distance teaching from the University of Otago Dental school in Dunedin, via distance teaching from the University of Otago Dental school in Dunedin. I have three sons 25, 22 and 19 and both myself and my wife, our assistant, I have three sons 25, 22 and 19 and both myself and my wife, our assistant dentalists, a hygienist and two receptionists work happily in our practice. I support the All Blacks and play soccer, golf and do Triathlons. I remember Birmingham fondly and always try and see the old place when I visit my brother who is also a Birmingham graduate in Solihull. I hope to participate in a 30-year reunion in October.’


Congratulations to Dr Janet Clarke, Clinical Director of Birmingham Community Healthcare Trust Community Dental Service (CDS) and Honorary Clinical Lecturer at Birmingham Dental School, who has become the 125th President of the British Dental Association (BDA). Janet qualified from Birmingham in 1981 and also has a Master of Community Dental Health which she received in 1989. Janet is a strong supporter of the School of Dentistry and her local and national work was recognised when she was awarded an MBE in 2010 for services to dentistry.
Teething problems in an alien culture

Alumnus Shu Behari OBE tells Jenni Ameghino about the challenges he faced in leaving his native South Africa to study dentistry at Birmingham.

It may be 58 years since Shu Behari arrived to start an undergraduate foundation course in dentistry at Birmingham, but the memory of his early days here remains as vivid as ever.

Life on the lush, liberal Edgbaston campus could not have been more of a culture shock for the Asian teenager born and raised in a family struggling to make ends meet in the South African township of Durban.

‘At home, because of apartheid, non-white people were not allowed to mix with whites socially, so the first time I did was when I had my passport interview,’ recalls the distinguished dental surgeon who was head of dental services in Wolverhampton for more than 25 years, receiving an OBE in 2000.

‘To suddenly land up in a campus of thousands of white students was terrifying for someone who had only ever mixed with Asian or African people. My reaction was because of the way I had been brought up, but of course to everyone else I was just another student here.’

Even everyday activities were different in what, for Shu, was an alien society. ‘I had never used a knife and fork before – at home we used our right hand to eat – so I had to learn different etiquette,’ he says. ‘I worried about going into shops because in South Africa segregation meant non-whites couldn’t shop at white people’s stores, so I wasn’t sure what I could and couldn’t do here. Fortunately, there were various Christian societies and other organisations that were keen to find out what was happening in South African, so I was invited to speak at their meetings and I got to know people very quickly.’

Before long, he was chairing a diverse selection of international student societies.

‘I soon realised that non-whites in South Africa were so badly treated. Here, I could go anywhere and do anything, just like everyone else. I had never learned to swim, so I began having lessons on campus with Max Madders, who was then also coach to the British Olympic swimming team.’

He also joined a high-profile local anti-apartheid group, which led to the South African authorities branding him a prohibited immigrant. When Shu set off for Birmingham his proud father had explained he would be receiving a priceless ‘universal education’. So it was a particularly harsh blow to discover, when his father died, that he was not allowed to re-enter his own country to attend the funeral.

He chose a career in dentistry after both of his elder brothers qualified as doctors. ‘Non-whites weren’t allowed on dentistry courses in South Africa because the profession involved a one-to-one relationship with patients. I wrote to the University of Birmingham explaining my predicament and was immediately made an offer, pending exemption from matriculation, which I obtained.’

It proved to be a tough first year academically as well as socially. ‘Not having studied chemistry or physics, I was on the foundation course which meant joining 100 or so students who, without exception, had failed to achieve their required A-level grades. In the mock exams I got 15 per cent in physics, the lowest recorded mark, and 35 per cent in chemistry. The professor responsible for the international students asked to see me and said: ‘Look, your parents are wasting their money here, you will never pass’. Finance was difficult but I persuaded a physics tutor to give me some extra tuition. I was able to swot for organic continues over...
Advanced General Dental Practice ten years on

The Masters in Advanced General Dental Practice has been running for ten years this summer. The general postgraduate degree is designed specifically for dentists working in primary dental care and takes in roughly eight students each year.

Professor Trevor Burke, who is the Programme Director, has 25 years’ experience in general practice and recently featured in Dentistry’s Top 50 2011 poll which highlights some of the most influential people in Dentistry of that year. Professor Burke said: ‘This is a unique course that provides dentists with enhanced clinical skills and knowledge that ultimately enables them to provide better patient care. Dentistry is constantly changing and things never stay still – there are always new techniques and better ways of doing things.’

‘We know that most practitioners cannot afford to take a year off from practice, so the course runs on Wednesday afternoons for 32 weeks of the year for three years, although students may complete the course in up to five years if they wish instead. The course is designed to be flexible and it all depends on people’s other commitments and the time they can devote to their studies.’

‘The course has really gone from strength to strength over the ten years and to mark the milestone all those that have taken the course are invited back onto campus for a BBQ in July to celebrate!’

Each module is taught by world-leading specialists in that field. For example, Professor Philip Lumley teaches the Management of Pulpal and Periradicular Disease module, Professor Iain Chapple the Peridontology in Practice module and Dr Neil Wilson, Deputy Course Director, the Fixed and Removable Prosthodontic module.

Students travel from all over the country for the course, some from as far afield as Wales, Northumberland and Kent.

Duncan Chilcott, who is a current student from Shropshire, said: ‘We live in a competitive market and the world doesn’t stand still. It’s easy just to do CPD, but this adds something extra. It’s nice that there’s also a social element to it, meeting people and feeding off each other. I’d recommend it to anyone if they can take the time away from practice and have supportive colleagues.’

Richard Riddell, a second-year student agrees: ‘It’s great to come here and meet everyone else and it’s also good to have a break from general practice and operate in a different environment. So far the course has been really useful. It’s made me question how I do things, how I could do things better and to think more laterally.’

He also recommends spending time working overseas, having joined medical and dental aid teams in strife-torn countries such as Jamaica – after Hurricane Elliot – Vietnam and Indonesia.

‘I will never forget the great spirit of camaraderie and fellowship I found at Birmingham,’ he remembers. ‘We had a lot of fun. For example, in that first year, when my fellow students realised I had never used a knife and fork, some of them secretly made a beautiful plaster of Paris egg and polished it up, then put it in my salad.

‘Of course, when I got to the refectory that day, I picked up my fork to eat the egg and it just went flying across the room.’

Sewunker (Shu) Awath-Behari OBE.
BDS 1999.

Professor Trevor Burke

If you are interested in finding more about the Masters in Advanced General Dental Practice please visit www.mds@bham.ac.uk or contact Professor Burke on 0121 237 2767 or email f.j.t.burke@bham.ac.uk.
Your reunions

Many of you have held reunions recently. Thank you to everyone who has sent in reports and pictures.

- **Class of 1946:**
  The Class of 1946 celebrated their 64th year since graduating on Tuesday 12 October.

- **Class of 1953:**
  The Dental Year of 1953 held a reunion on 14 October 2010, at the Holiday Inn, Homer Road, Solihull.
  
  ‘A very pleasant lunch was enjoyed by the group, along with reminiscences of student days, and all the years in between since qualification at the Birmingham Dental School. News was received from some members unable to be present, and a group photograph was taken.”

  (Mrs Ann-Carol Carrington)

- **Class of 1960:**
  ‘We qualified in December 1960 having spent all our clinical time at the old Dental Hospital. We were 36 in number, which included six women possibly the highest female number the Dental School had ever had.

  ‘Our first year was spent studying Anatomy, Physiology etc and then we moved to the confines of the Dental Mechanics Room at the Medical School. Being together for a whole year helped in the forging of friendships under the watchful eyes of our three demonstrators; Mr Aspen, Mr Webster and Mr Harcourt who added great humour to the course. We then moved on to the cramped conditions of Barwick Street for conservation and phantom head work.

  ‘During our training the airotor began to appear with a number of units set up in room 8. What a difference after the electric foot motor; more tooth substance was lost!’

  (Marilyn Hiscock, BDS 1960)

  ‘During our training the airotor began to appear with a number of units set up in room 8. What a difference after the electric foot motor; more tooth substance was lost!’

  (Marilyn Hiscock, BDS 1960)

- **Class of 1970:**
  The Class of 1970 had their 40-year reunion in Birmingham at the Hotel du Vin in the autumn of 2010. They have had a reunion weekend every single year since they qualified, in various places throughout the UK, also in France and Spain – wherever the person organising the weekend is living at the time.

  ‘We are all still very active, travelling the world, looking after grandchildren, playing golf, walking, being involved in the community, school governors, churchwardens and enjoying our gardens. One of our number has been a magistrate and another a non-stipendary priest and Rural Dean in the Church of England, We also have a guide working in Durham Cathedral.’

  (Marilyn Hiscock, BDS 1960)
Class of 1985:
The Welcombe Menzies Hotel, Stratford was the venue for the Dental Graduates of 1985, silver jubilee reunion. The day got off to a great start with a small group taking part in a golf competition, with a number of prizes up for grabs.

During the late afternoon the lounge bar started to fill up with familiar faces; lots of hugs, handshakes and laughter. There were many stories to be shared and lots of catching up to do; 25 years is a long time but it felt like yesterday. Some people had not seen each other since graduation. The stories continued on into the night with everyone in their finery for the champagne reception and three course dinner. This was followed by a great night of dancing to an 80s’ tribute band and their DJ. Clearly many had not forgotten the great dance moves of the 80s’ and insisted they had not been practising.

A toast was made to absent friends and a promise to hold another one in five years time.

Maria Hardman and Graham Murray (BDS 1985)

Class of 1986 25-Year Reunion

The Sir Arthur Thompson Charitable Trust sponsored the 30-year reunion which was held in September on the University Campus. Over 60 alumni and guests attended the evening with people travelling from as far as the US to be there.

Class of 1995:
In July 2010, the class of 1995 came together for their 15-year reunion. Over half the year gathered at the impressive Radisson Blu Hotel in the heart of the city centre, and the evening was enjoyed by all.

Class of 2000:
The Millennium Graduation Year held its 10-year reunion at the Hyatt Hotel in Birmingham in September 2010. Comments from the Yearbook proved to be very funny 10 years down the line. After the speeches there was a group photo followed by dancing to those songs that were hits in 2000 into the early hours of the morning.

Class of 1991:
The Mint Hotel was the setting for the reunion of the Year of 1991. Twenty years on and many people were trying to remember what others looked like. Many people had not changed and were enjoying dentistry and life in general. Stories were swapped; how many children, and what were they up to.

Class of 1980:
The Sir Arthur Thompson Charitable Trust sponsored the 30-year reunion which was held in September on the University Campus. Over 60 alumni and guests attended the evening with people travelling from as far as the US to be there.

Class of 1981:
The Class of 1981 30-year reunion will take place on Friday 14 October 2011 at the University of Birmingham Edgbaston campus. For more information contact Carinna Chilton on +44 (0)121 237 2764 or via c.chilton@bham.ac.uk

Are you planning a reunion? The Alumni Relations Office can help by putting you in contact with former classmates and advertising your event. Contact the alumni office on +44 (0)121 414 2744 or via alumnioffice@contacts.bham.ac.uk

Forthcoming reunions:

- **Class of 1954**: The Class of 1954 are convening at the Holiday Inn on Wednesday 19 October to celebrate their 58th year since qualifying.
- **Class of 1981**: The Class of 1981 30-year reunion will take place on Friday 14 October 2011 at the University of Birmingham Edgbaston campus. For more information contact Carinna Chilton on +44 (0)121 237 2764 or via c.chilton@bham.ac.uk
- **Class of 1995**: In July 2010, the class of 1995 came together for their 15-year reunion. Over half the year gathered at the impressive Radisson Blu Hotel in the heart of the city centre, and the evening was enjoyed by all.
- **Class of 2000**: The Millennium Graduation Year held its 10-year reunion at the Hyatt Hotel in Birmingham in September 2010. Comments from the Yearbook proved to be very funny 10 years down the line. After the speeches there was a group photo followed by dancing to those songs that were hits in 2000 into the early hours of the morning.
- **Class of 1991**: The Mint Hotel was the setting for the reunion of the Year of 1991. Twenty years on and many people were trying to remember what others looked like. Many people had not changed and were enjoying dentistry and life in general. Stories were swapped; how many children, and what were they up to.
- **Class of 1980**: The Sir Arthur Thompson Charitable Trust sponsored the 30-year reunion which was held in September on the University Campus. Over 60 alumni and guests attended the evening with people travelling from as far as the US to be there.

**Are you planning a reunion?**

The Alumni Relations Office can help by putting you in contact with former classmates and advertising your event. Contact the alumni office on +44 (0)121 414 2744 or via alumnioffice@contacts.bham.ac.uk
Medical School Foyer – time for a change…

Cast your mind back to your first day at Birmingham as a student or member of staff. Remember how you felt when you first walked in to the Medical School. You were confronted by the original 1938 foyer with its stunning marble floor, high ceilings and grand pillars; the expanse of empty, echoing space that still today greets students, alumni and guests as they pass the Security Officers on the way to the Barnes Library.

After 72 years, we will be bringing the foyer and library into the 21st Century, as the fourth phase of our programme to radically improve the student, staff, alumni and visitor experience begins. The College of Medical and Dental Sciences (MDS), working with the University, will transform the foyer into an innovative “hub” for all student services with planned completion for autumn 2011. It will be completed in time for the academic year of 2011.

At a time where attracting the very best students and staff will be critical to ensuring the highest quality teaching, and research, creating a strong first impression will be essential. To do that, we must exceed expectations by superseding the facilities offered by our competitors.

We will preserve the prestigious feel but breathe new life into this underused space. The refurbishment will make the area feel much more welcoming to students, staff, potential students, alumni and visitors. It will provide a reception that recognises our long and proud history of medical and dental education, practice and scientific discovery and the generations of medical and dental professionals on which the College’s success has been built.

Improved student services will include School Office operations, visible and accessible student welfare support services, rooms in which confidential meetings and discussions can be held, soft seating areas with WiFi access, and space for formal and informal student group working, including the latest IT and audiovisual facilities. A prominent and professional reception area desk/service will be created and security staff will be less prominent but still able to continue their vital services.

The foyer will remain the gateway to library services and our collections and will make the best use of library space across all four floors.

Helping to raise funds

Sally Brooks has recently joined the College of Medical and Dental Sciences to help raise funds for health-related projects across the University of Birmingham. She works closely with alumni who wish to make financial gifts to the University, especially donations towards the Medical and Dental Schools.

Sally, who has worked for the past five years in the NHS, said: ‘I have really enjoyed getting to know everyone here at the College of Medical and Dental Sciences, and have particularly enjoyed meeting former dental students and hearing about their time at the school. There are lots of fantastic ways that alumni can get involved, and one of the more popular ways is by supporting bursaries for students who might not otherwise come to University.’

If you would like to talk to Sally, or organise to meet with her, you can contact her on 0121 414 7957 or s.b.brooks@bham.ac.uk.

DentalROOTS is the alumni newsletter for Dentistry at the University of Birmingham’s College of Medical and Dental Sciences. Views expressed in DentalROOTS are not necessarily those of the University or a statement of University policy. All submissions may be subject to editing. The Editor’s decision is final.