The Royal College of Pathologists
Pathology: the science behind the cure

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Annual Report 2015 - 2016

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MESSAGE FROM THE REGISTRAR

The Annual Report provides an opportunity to outline the important work undertaken for patients by College staff and Fellows. The theme of this year's report is '**Engaging with patients, the public and policy makers**'.

As College Registrar, I deal with all queries that are sent to info@rcpath.org. As well as hearing from College members, we receive a wide range of questions about pathology services from members of the public. I have been ably supported in this work by Maxine Mantle, who has moved on to be the Executive Assistant to the President. I wish her well in her new role.

We are also asked to share our expertise by responding to external consultations. This year they have included alcohol licensing and public health; bowel, stomach and cervical cancer; antibiotic resistance; haemochromatosis and blood transfusion. All of these areas directly affect patients and their carers. In particular, our response to the Ministry of Justice's consultation on infant cremation resulted in significant changes to regulation, designed to improve the experience of families at a time of great personal grief.

I am delighted to present the 2015 – 2016 Annual Report.

Dr Rachael Liebmann
Registrar

WELCOME FROM THE PRESIDENT

Welcome to the 2015 – 2016 Annual Report. This year we highlight the very reason why the College exists – supporting the provision of high-quality pathology services for the benefit of patients. As well as learning about some of the College's achievements you can read several patients' stories, which illustrate just how vital pathology is to everyone's healthcare.

I am particularly pleased that the College established a Lay Governance Group this year, ably chaired by College Trustee Sir Rodney Brooke. Along with fellow Lay Trustee Tommy McIlravey, Sir Rodney has helped appoint an excellent lay committee with a diverse group of members who are already contributing to all aspects of the College's work.

The lay trustees and advisors volunteer their time to help the College to ensure that our work reflects the needs of the public we serve, for which I am very grateful. I would also like to thank the thousands of members who give their time and energy to undertake work on behalf of the College in a wide range of roles; it is very much appreciated.

Dr Suzy Lishman
President

WHAT IS PATHOLOGY?

Pathology is the study of disease. Pathologists work with front-line hospital clinicians, vets and general practitioners to prevent, identify, treat and monitor diseases.

Pathologists are involved in the diagnosis of disorders affecting every organ of the body, from before birth to after death.

PATHOLOGY – VITAL TO PATIENT CARE

The work of pathologists and clinical scientists is vital for effective healthcare. The majority of tests requested by doctors will be performed and interpreted by a clinical scientist or medically qualified pathologist. Pathologists carry out millions of tests every day and are involved in almost all patient-care pathways within the NHS.

The case studies on pages 12 to 27 illustrate the enormous benefits that pathologists provide to patients every single day.

THE ROLE OF THE COLLEGE

We are a professional membership organisation with 10,500 Fellows, affiliates and trainees worldwide, committed to setting and maintaining professional standards and to promoting excellence in the teaching and practice of pathology, for the benefit of patients.

Our members include medically and veterinary qualified pathologists and clinical scientists in 20 different specialties, including cellular pathology, haematology, clinical biochemistry and medical microbiology.

We work with pathologists at every stage of their career – from setting curricula, organising training and running exams, to approving job descriptions, publishing best-practice guidance and providing continuing professional development. We also engage with a wide range of stakeholders to encourage them to learn more about pathology and the vital role it plays in everybody's healthcare.

THE YEAR IN NUMBERS

8,336
UK College members

2,159
Overseas College members

700+
registered College examiners

100+
new examiners attended training

We provided examinations and issued results for
1,242
CANDIDATES

9 educational events delivered

500+
delegates at College conferences

We published

4 issues of *The Bulletin*

6 best-practice guidelines

11 cancer datasets and tissue pathways

729
online applications for Spring exams

4,639
Female members

5,856
Male members

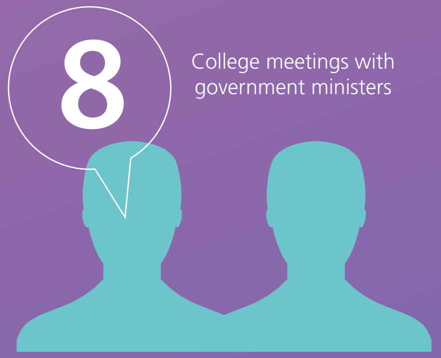
840
Registered Trainees including 135 new ST1/3 trainees

108
Certificates of Completion of Training

14
Certificates of Eligibility for Specialist Registration

67
MPs took part in our National Pathology Week exhibition

5
policy pamphlets for UK parliamentarians



8
College meetings with government ministers

OUR INTERNATIONAL WORK

211
volunteering days spent on LabSkills Africa

30
Country Advisors appointed

11
overseas Part 1 exam centres

6
International Advisors 1 per WHO Region

40
overseas visits by LabSkills Africa mentors

150
international delegates at LabSkills Africa conference in Uganda

17
candidates sat the new Part 2 histopathology exam in Jordan

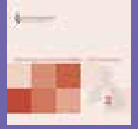
AROUND THE UK

PATHOLOGY PRIORITIES FOR THE FOUR UK NATIONS

The four NHS systems in the UK have developed differently over the last 15 years. Recognising this divergence and eager to support members in influencing their health services, the College has increased engagement with politicians and partners in Northern Ireland, Scotland and Wales as well as Westminster. Each of the College's Regional Councils devised their own pathology policy manifesto, launched in the run-up to the May 2016 devolved elections.They shared two priorities: an increase in efforts to train, recruit and retain the right workforce, and a more systematic approach to ensuring patients get the right laboratory tests at the right time. These priorities were also in the College's *Pathology and the NHS Five Year Forward View* document, launched in November 2015 to inform the development of the NHS in England.

The Welsh manifesto also called for implementation of the medical examiner system, now much closer to being delivered thanks to College pressure, and for equality of access to molecular pathology services. In Northern Ireland, priorities included investment in pathology information technology services and the implementation of pathology service modernisation. The Scottish manifesto also called for the delivery of the Shared Services agenda for laboratory medicine across all health boards and assurances that the expansion of the use of point-of-care testing is both safe and clinically justified.

It is the first time the College has engaged directly in this way with politicians across the UK and we hope it will help bring about positive changes in the way healthcare is delivered, improving patient care and saving money.



NORTHERN IRELAND

The Northern Ireland (NI) Regional Council, chaired by **Dr Peter Sharpe**, continues to represent the College on the NI Pathology Network Board. Achievements included developing plans for Pathology Modernisation; establishing a 'virtual' Genomic Medicine Centre, part of the UK 100,000 Genomes project, to benefit patients with rare disease through faster, more accurate diagnosis; contributing to the establishment of the Precision Medicine Catapult Centre of Excellence in the NI Molecular Pathology Laboratory; regional standardisation of a range of procedures and reporting, and developing standard service level agreements.

Council had its annual meeting with Chief Medical Officer Dr Michael McBride, a strong supporter of pathology and reform of pathology services. They discussed pathology trainees, workforce, modernisation, finance, strategy, planning, proficiency testing, accreditation and clinical scientists.

The Regional Council also held its extremely well supported and highly appreciated annual symposium in June, attended by the President and one of the Vice-Presidents, Dr David Bailey. The meeting was an opportunity for pathologists to hear presentations of general interest from other pathology disciplines, gain CPD and network with colleagues from across the Province. It also enabled members to hear updates from and question the College President.

SCOTLAND

Pathology services are undergoing significant change across Scotland driven by the Scottish Government strategies on realistic medicine and shared services. Members of the Scotland Regional Council, chaired by **Dr Bernie Croal**, have been prolific networkers and are represented on several bodies such as the Scottish Academy of Medical Royal Colleges, the Scottish Intercollegiate Guidelines Network, the Scottish Pathology Network, Scottish Clinical Biochemistry Managed Diagnostic Network and the Scottish Microbiology and Virology Network. In addition, Dr Croal chairs several national groups including the new Scottish Demand Optimisation Committee.

ENGLAND

The newly formed England Regional Council (ERC) held its inaugural meeting in May 2016 and was chaired by College President, **Dr Suzy Lishman**. Priorities were set and responsibilities for the new Regional Advisor role were agreed. Considerable service change is being experienced across all English regions in response to cost pressures in the acute sector, the Five-Year Forward View agenda and Carter Review recommendations. Equally, the evolving knowledge base of molecular diagnostics will result in the increasing use of molecular tests and the need for specialist interpretative input in routine clinical practice. This will be an area of ongoing evolution and expansion for all pathology specialties, which should continue to be factored into curricula development. The ERC will provide an important function in monitoring regional responses to these challenges and the impact they will have on the commissioning of pathology services and the workforce.

WALES

The Wales Regional Council has many new members and a new Chair, **Dr Esther Youd**, the Clinical Director of Pathology at Cwm Taf University Health Board. Dr Youd is pictured below with Vaughan Gething, Cabinet Secretary for Health, Well-being and Sport in the Welsh Assembly. The Council represents the College at the National Pathology Programme Board, working with NHS Wales on the future of pathology services. The Council works with the Academy of Medical Royal Colleges in Wales on topics such as Prudent Healthcare (and the Choosing Wisely campaign) and the consultation about medical examiners. Dr Youd also attended the 'Next steps in cancer care in Wales policy forum', having the chance to engage with a wide audience including politicians, policy makers, healthcare and charity representatives, patients and students. An active, exciting public engagement programme in Wales culminated in the National Eisteddfod in Abergavenny in August.

LAY GOVERNANCE GROUP

In 2015 the College's new Lay Governance Group was established, with the new Lay Trustee Sir Rodney Brooke as Chair. He has a background in public service, including membership of the General Medical Council and several health bodies, both national and local. Tommy McIlravey, the College's second Lay Trustee, who has experience in executive and non-executive management in the voluntary sector, was appointed Vice-Chair.

Recruited by interview, after public advertisement, the Committee is currently nine strong. Some members have a long history of working with the College and all have experience of lay involvement with health and medicine. They come from a wide variety of backgrounds – lawyers, charity workers, regulators and administrators – but all share a commitment to health and to the work of the College.

The Lay Governance Group has begun its contribution to the College's activities. Its main objective is to advise Council and Trustee Board on matters of concern to the public. Every member has volunteered to join a College committee to which they provide a lay view on matters within its remit.

This Group will continue to be of great importance to the College's activities in the forthcoming year.

WASP VENOM ALLERGY

IMMUNOLOGY

Clive's story

Clive Briggs came to the immunology clinic in Bristol in December 2014. He is a keen gardener and had been clearing fruit when he sustained a wasp sting to each forearm. His blood pressure dropped rapidly and he collapsed. He was already prescribed an adrenaline auto-injector in view of a collapse following a wasp sting 20 years earlier, when he was airlifted to the local emergency department for acute medical management. This time, having spoken to the paramedics, his wife administered adrenaline. When the paramedics arrived, his blood pressure was recorded at 84/47, worryingly low. Following management of the acute symptoms, he made a full recovery, but reported swelling and redness at the sting sites persisting for several days. He underwent skin testing and specific IgE assessment, which confirmed wasp venom hypersensitivity.

Clive was issued with antihistamine and steroid as additional emergency treatment in the event of a further sting, with advice regarding adrenaline use. He was also advised how to avoid further stings, and to carry a MedicAlert bracelet. In addition, as he is a keen gardener potentially at risk of further stings, and having had a life-threatening anaphylactic reaction, wasp venom immunotherapy was recommended.

What is immunotherapy?

Immunotherapy involves the administration of increasing doses of allergen to which the patient is sensitive over a period of time, aiming to modify the immune response and thereby reduce symptoms. Venom immunotherapy is the most effective form of immunotherapy in use, reducing the risk of a further serious reaction from 30–60% to 5% or lower. If patients do have a recurrent reaction, symptoms tend to be milder than before. Clive is now almost 18 months into a three-year treatment programme and to date has not sustained a further sting.

Dr Sarah Johnston
Consultant in Immunology and HIV Medicine
North Bristol NHS Trust

"The venom allergy that I have is a serious business – not just a red rash but a matter of life or death, so there is a tremendous reassurance in knowing that each month I am being injected with the equivalent of two wasp stings and suffering no allergic reaction. I am a lot less anxious when venturing outdoors now."

Clive Briggs receiving immunotherapy from nurse Jen Whittle at Southmead Hospital, Bristol

> *“X-rays and lung function tests don’t always tell the whole story. Lab tests on my blood and sputum can tell whether there are bacteria, viruses or fungi that need treatment, and what drugs will work, so I get the right treatment more quickly and recover faster. It’s also more efficient for the NHS and reduces antibiotic resistance. When I get a lab result, I trust it and it helps me feel in control. It’s all going on in the background. Doctors are the detectives and the labs provide the evidence.”*

Emily Hoyle with her brothers, Edward and Harry, at Edward’s wedding in July 2016

LUNG TRANSPLANT

HISTOCOMPATIBILITY AND IMMUNOGENETICS/CLINICAL BIOCHEMISTRY/MICROBIOLOGY/ CELLULAR PATHOLOGY

Emily’s story

Emily Hoyle was diagnosed with cystic fibrosis (CF) as a baby. CF is an inherited condition affecting the lungs, liver and pancreas. Emily has been prone to lung infections all her life and has to have daily inhalers and physiotherapy to clear her lungs. She also has to take tablets to provide digestive enzymes so that she can absorb her food. Through all this, Emily obtained a physics degree and got married in 2008. Unfortunately, her lung function gradually got worse and after many months in hospital she received a lung transplant in 2012 at the age of 28. This provided Emily with over three years of health and a busy life, even taking part in a fundraising climb of an Equadorian volcano in 2015. However due to her lung function again getting worse, Emily needed a re-transplant. A donor was found this year and she is now recovering from the second transplant.

Emily’s younger brother Edward also has CF. He undergoes regular monitoring, is in good health and got married in July 2016. Emily was well enough to attend.

Treatment of cystic fibrosis

CF arises when a baby inherits two copies (one from each parent) of a mutated form of the gene for the protein CFTR, which regulates transport of sodium and chloride (salt) across cell membranes. In CF, the abnormal protein lets too much salt into the cells, resulting in abnormally thick mucus, notably in the lungs and pancreas. The diagnosis is made by DNA analysis, and is now part of the screening of newborns.

People with CF are prone to lung infections and need enzyme supplements to digest their food. They therefore need regular measurement of the levels of glucose, salts and vitamins in their blood, plus checks for anaemia, liver and kidney function. Sputum and urine are also checked for infection.

Lung transplantation requires histocompatibility tests (tissue typing) to ensure a good match between donor and recipient, and extensive laboratory testing of the patient in the days after transplantation to ensure a smooth recovery. Sometimes small samples of lung tissue are examined under the microscope to look for evidence of rejection or infection of the transplanted lungs.

Dr Lorna Williamson
Medical and Research Director
NHS Blood and Transplant

MATURITY ONSET DIABETES OF THE YOUNG

CLINICAL BIOCHEMISTRY

Erin's story

Erin McMinn is 28 years old and had her first child, James, in January 2016.

When Erin was 17 she was diagnosed with type 1 diabetes. She required four injections of insulin a day and frequently had to monitor her blood sugar levels.

However, over the years, the amount of insulin that she needed to control her diabetes kept being reduced to very small doses. There was also a very strong family history of both type 1 and type 2 diabetes diagnosed in her relatives' late teens/early twenties.

In early 2013, at the Exeter Clinical Laboratory in the Royal Devon and Exeter NHS Trust, she had her urine C-peptide/creatinine ratio measured, which demonstrated higher levels than would be expected in type 1 diabetes. In December 2013, she returned for genetic testing, after which she was diagnosed as having 'maturity onset diabetes of the young', or MODY.

Erin's life has been completely transformed as a result of these pathology tests. She was taken off insulin and put onto a tablet of low-dose sulphonylurea, but after a few weeks came off this too, due to frequent low blood sugars.

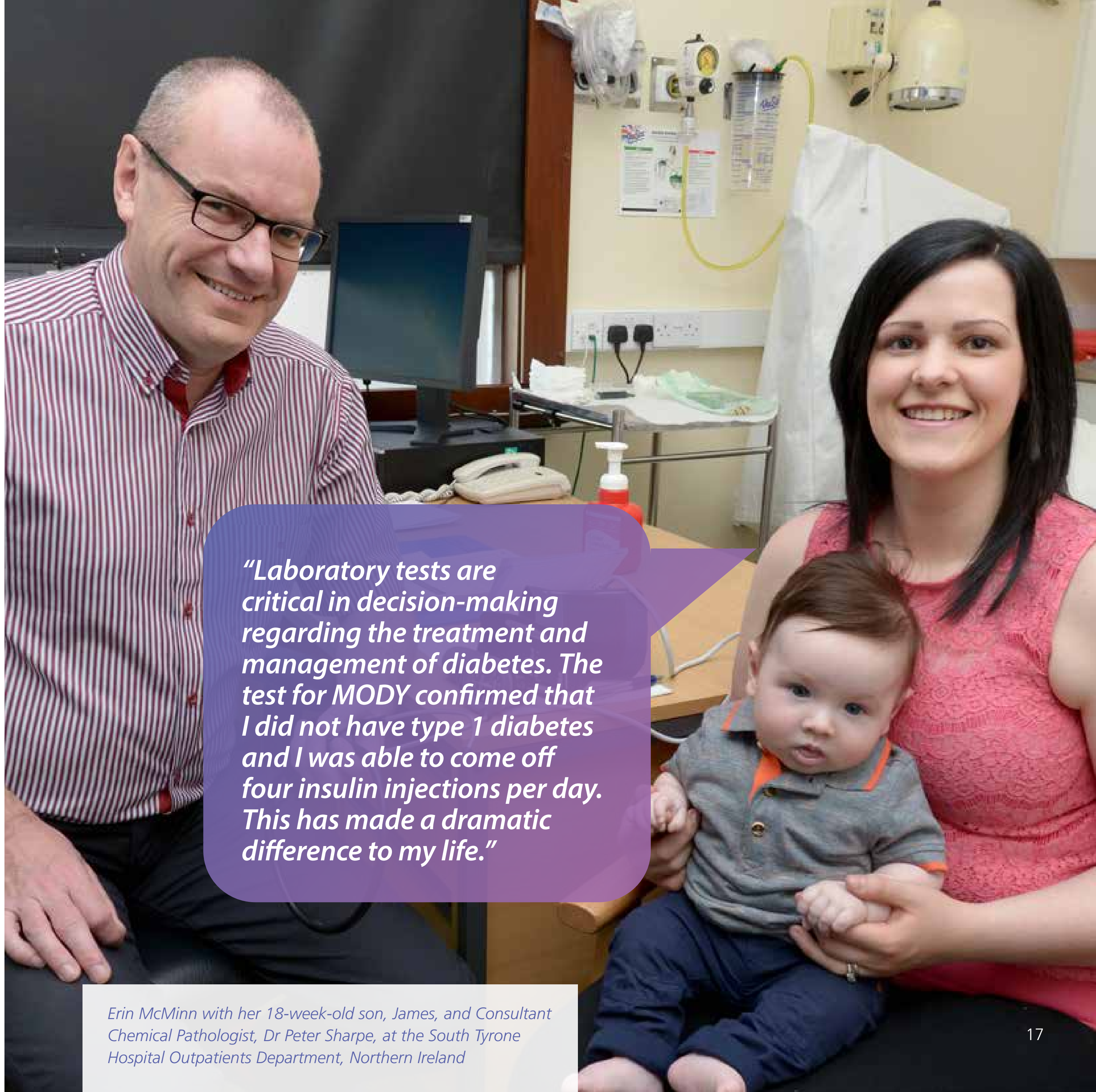
Since early 2014, her diabetes has been fully controlled through changes to her diet and lifestyle alone. She has not needed to go back onto insulin, except for low doses during her recent pregnancy.

What is MODY?

MODY is a rare form of diabetes affecting just 1–2% of people with diabetes. It is frequently misdiagnosed as type 1 diabetes (which is treated with insulin) and often goes unrecognised. The three main features of MODY are that it often develops before the age of 25, it runs in families from one generation to the next, and it may be treated by diet or tablets and does not always need insulin.

MODY is caused by a change in a single gene and there is a 50% chance that it will be passed on by affected parents to their children (autosomal dominant inheritance). Six identified gene changes are known to cause MODY in the UK, one of which is HNF4A, which is responsible for Erin's diabetes. This change in the gene means that she produces less insulin than a normal person.

Dr Peter Sharpe
Consultant Chemical Pathologist
Associate Medical Director, Research & Development
Southern Health & Social Care Trust



"Laboratory tests are critical in decision-making regarding the treatment and management of diabetes. The test for MODY confirmed that I did not have type 1 diabetes and I was able to come off four insulin injections per day. This has made a dramatic difference to my life."

Erin McMinn with her 18-week-old son, James, and Consultant Chemical Pathologist, Dr Peter Sharpe, at the South Tyrone Hospital Outpatients Department, Northern Ireland

> “As a nurse I knew about cord banking, but I didn’t realise what the cord cells could do. I always think about the babies who gave me life.”

Caroline Cooper with hospital staff following her cord blood transplant

CORD BLOOD TRANSPLANT

HAEMATOLOGY/ HISTOCOMPATIBILITY AND IMMUNOGENETICS

Caroline’s story

Caroline Cooper, a specialist Tuberculosis nurse and mum of 11-year-old twin girls, was diagnosed with acute myeloid leukaemia in September 2014. Caroline’s leukaemia cells showed complex genetic changes which meant that her leukaemia carried a high risk of returning after treatment, and chances of long-term cure were very low. She therefore required an urgent stem cell transplant to save her life.

Unfortunately, Caroline did not have a family donor with a good enough tissue type match. Searches of volunteer bone marrow donor registries in several countries also didn’t produce a good enough match. The banks of umbilical cord blood donations worldwide were therefore searched and two suitable cord units were found. One was obtained from a baby girl and the other from a baby boy, both of whom would be approximately 4 years old now.

Caroline had a cord blood transplant using both units in January 2015. Cells from the male cord engrafted and took over Caroline’s blood production and immune system, providing a successful transplant. Caroline has had no major problems following her transplant, remains in remission from her leukaemia and continues to see the transplant team in clinic for check-ups every few weeks.

About umbilical cord blood donations

First used in 1998, most umbilical cord blood donations contain enough stem cells to allow successful transplantation. So far over 10,000 children and adults worldwide have received cord blood transplants. They can be used to treat blood cancer, bone marrow failure and immunodeficiency as well as other inherited conditions. There are more than 400,000 cord blood units available in cord blood banks round the world, such as those run in the UK by NHS Blood and Transplant and the Anthony Nolan charity. Cord blood can be a valuable source of blood stem cells for patients who lack matching sibling or volunteer unrelated adult donors. Because of the immature immune system of the donor (the baby), some mismatching between donor and recipient is possible. Being already in storage, cord blood donations can be sent to transplant centres with no delay for urgent transplantation.

Dr Khaled El-Ghariani
Clinical Director - Therapeutic Services
NHS Blood and Transplant

PREGNANCY LOSS IN A MARE

VETERINARY PATHOLOGY

Breeze's story

The owner of Breeze, one of a group of 80 broodmares at a studfarm, found Breeze in her stable standing over her dead foal. The foal was still enclosed within its placental membranes on the stable floor. The mare had been well and shown no impending signs of delivery the evening before.

Breeze was checked by her veterinary surgeon and moved into an isolation stable, and the foal was submitted to the laboratory for post-mortem examination. While externally the foal appeared normal, post-mortem examination showed body cavity effusions and abnormalities in the lungs and liver. Tissue samples collected for qPCR were tested and, by the afternoon, equine Herpesviral-1 (EHV-1) infection was identified. Histopathology and immunohistochemical staining of the lesions confirmed the diagnosis and further classified the pattern of infection.

Movement restrictions were placed on the studfarm as part of a voluntary code of practice within the horse breeding industry, and mares that had been in direct contact with Breeze were identified and isolated from other mares. Disinfection and other biosecurity measures were implemented and, in this instance, no further pregnancy losses occurred.

Fighting viruses in horses

EHV-1 and EHV-4 are alpha-Herpesviruses that commonly cause respiratory infection in horses and can cause pregnancy loss in mares. EHV-1 also has the potential to cause serious neurological infections in adult horses, more common with certain strains of the virus.

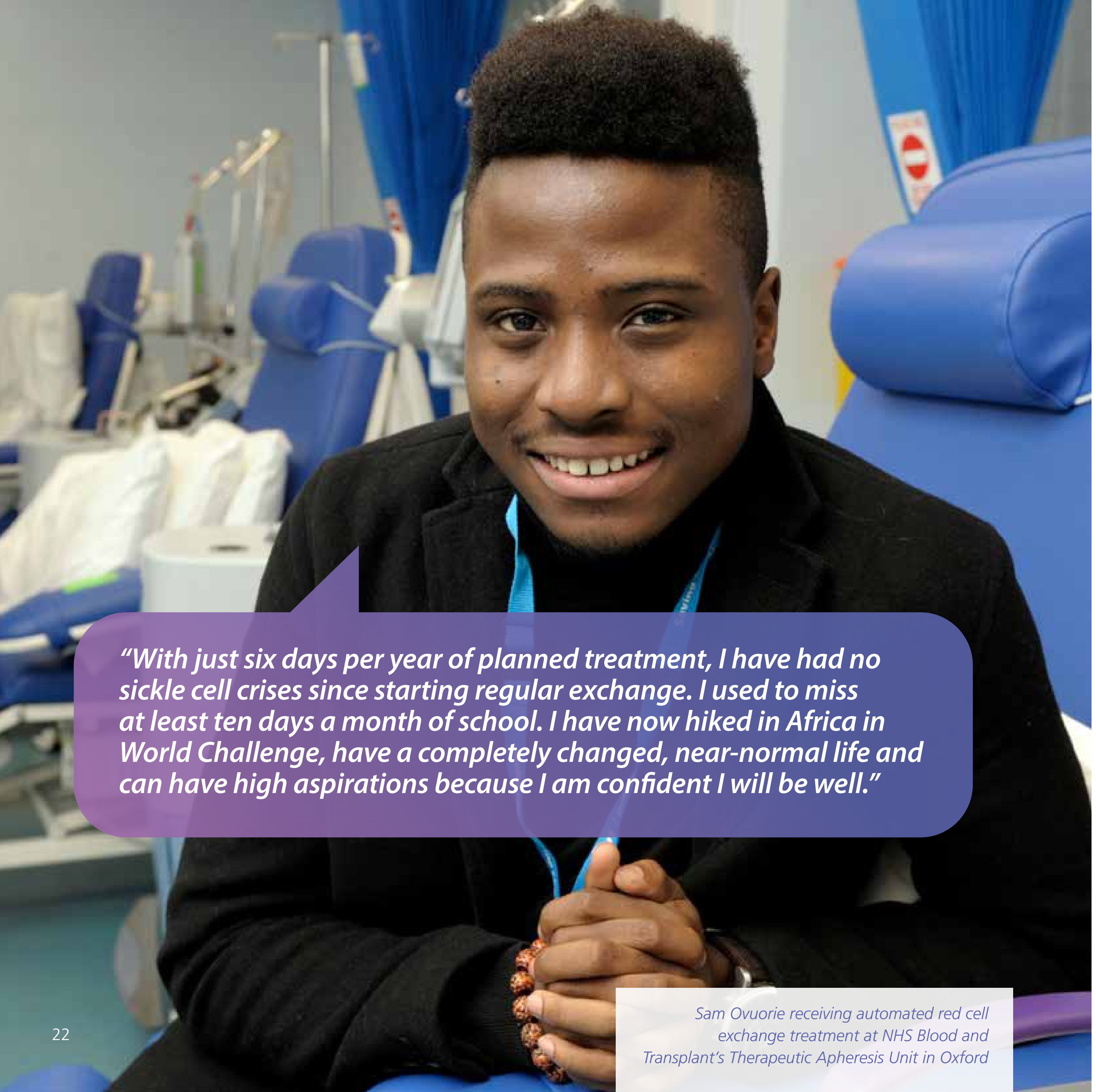
Historically, EHV 'abortion storms' were common, with some outbreaks causing up to 75% of mares on a studfarm to suffer pregnancy loss.

The risk of disease outbreaks has been reduced since the introduction of vaccination and EHV infection now accounts for less than 10% of all pregnancy losses. However, the vaccine is not always fully effective and cases still occur even in well-vaccinated herds. Laboratory testing plays a vital role in confirming the cause of pregnancy loss rapidly, so that appropriate biosecurity measures are implemented. Post-mortem examination is also viewed as a useful means of screening for introduction of non-endemic infectious disease to the UK and surveying for novel disease. Other causes of pregnancy loss in the mare – such as umbilical cord torsion – have interesting comparative aspects cross-species.

Dr Alastair Foote
Veterinary Pathologist
Rossdales Laboratories, Newmarket

> ***"We rely on rapid pathology testing to determine the cause of pregnancy loss in mares, so that infectious causes can be identified and appropriate disease control measures put in place."***
>
> **Ian Cameron, Veterinary Surgeon,**
> **Rossdales LLP, Newmarket**

A broodmare and foal at stud (photo courtesy of Professor Sidney Ricketts FRCPath)



> *“With just six days per year of planned treatment, I have had no sickle cell crises since starting regular exchange. I used to miss at least ten days a month of school. I have now hiked in Africa in World Challenge, have a completely changed, near-normal life and can have high aspirations because I am confident I will be well.”*

Sam Ovuorie receiving automated red cell exchange treatment at NHS Blood and Transplant’s Therapeutic Apheresis Unit in Oxford

Blood donation teams are particularly eager to recruit young donors and those of black, Asian and minority ethnic backgrounds (photo courtesy of NHS Blood and Transplant).

SICKLE CELL ANAEMIA

HAEMATOLOGY

Sam’s story

Sam Ovuorie suffers from sickle cell disease and was referred for automated red cell exchange (RCE) treatment at NHS Blood and Transplant’s (NHSBT) Therapeutic Apheresis Unit in Oxford when he was just 13 years old. At this point he was suffering with excruciating pain in his joints, walking with crutches and was frequently in and out of hospital due to the effects of sickle cell crisis. Sam was unable to lead a normal life and was struggling to attend school.

Now Sam regularly attends the Therapeutic Unit in Oxford for RCE treatment. This procedure, which takes approximately two hours, removes Sam’s abnormal cells and replaces them with donated red blood cells. Sam had orthopaedic surgery to his left hip in December 2011 in Oxford. The RCE contributed to the significant recovery and repair of his hip.

Sam is now 20 years old and studying economics at university.

Treating sickle cell anaemia

Sickle cell anaemia is an inherited condition most common in people with an African background. The normal haemoglobin in the red blood cells is replaced with an abnormal form, which causes the red blood cells to take on a sickle shape. It is diagnosed in the haematology laboratory by looking at the red cells down a microscope and testing for the abnormal ‘sickle’ haemoglobin.

Therapeutic apheresis treatment uses a cell separator machine to add or remove constituents of the blood, such as red cells, white cells or plasma. A procedure tailored to the patient’s needs can treat many other diseases such as cancer and nerve conditions. A recent NICE appraisal demonstrated the marked economic benefit of automated red cell exchange for sickle cell anaemia.

Dr Sylvia Benjamin
Consultant Haematologist
NHS Blood and Transplant &
Oxford University Hospitals NHS Foundation Trust

HAIRY CELL LEUKAEMIA

PERSONALISED MEDICINE IN HAEMATOLOGY

Tony's story

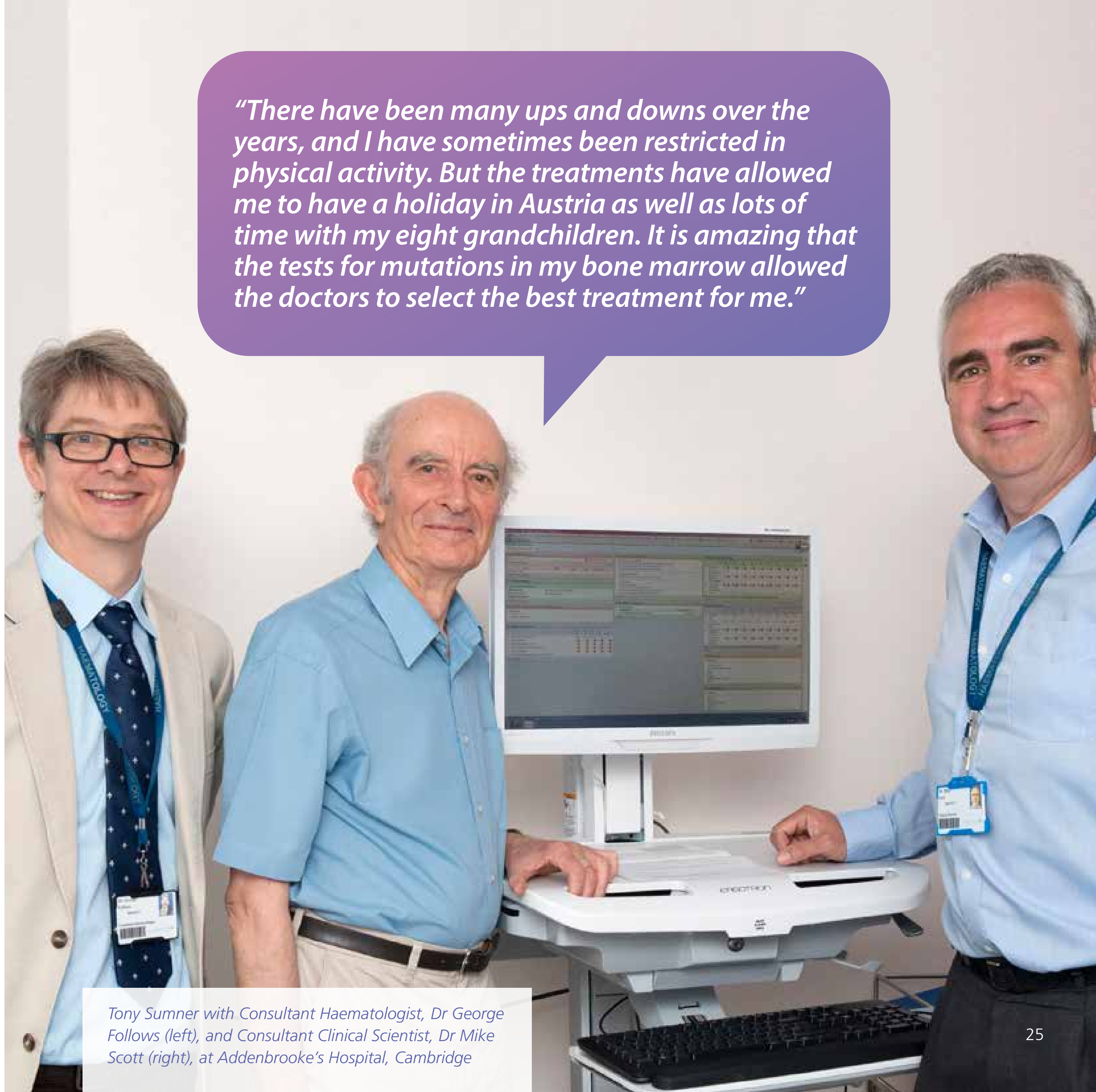
Tony Sumner's blood disorder was first diagnosed over 20 years ago when, during a routine eye test, the optician spotted a small haemorrhage at the back of the eye. He was referred to a haematology specialist, who examined samples of blood and bone marrow, and made the diagnosis of a rare form of leukaemia called hairy cell leukaemia. Tony had his enlarged spleen removed and over the next 12 years required only one block of chemotherapy treatment with a drug called Cladribine. His blood counts started to deteriorate in 2008 and further chemotherapy with Cladribine was necessary, initially supplemented by blood transfusions. In 2011, blood tests, CT scan and bone marrow samples showed the renewed presence of hairy cells, and a course of chemotherapy using Pentostatin, supported by transfusions of blood and platelets, had very limited success.

At this point, DNA analysis of the leukaemic cells showed a mutation that indicated that Tony might benefit from a new targeted therapy called Vemurafenib, usually used for the skin cancer melanoma. A low dose of this, in tablet form, has kept him remarkably well for the last four years, although recently he has had additional benefit from a drug called Rituximab.

A breakthrough using personalised medicine

Hairy cell leukaemia is a rare form of leukaemia named because of the 'hairy' appearance of the cells down the microscope. Precise diagnosis requires microscopic examination of blood and bone marrow aspirate (drawn with a needle and syringe) by a haematologist, and the review of a bone marrow trephine biopsy (small core of tissue) by a cellular pathologist. Additional techniques are used to refine the diagnosis: flow cytometry, which examines the surface profile of the cells, and molecular genetics, which defines the changes (mutations) to the DNA in the leukaemic cells. In Tony's case, there was a mutation at a specific point in the BRAF gene at position V600E. This genetic alteration is common in the skin cancer melanoma, where clinicians can now use targeted treatment with Vemurafenib for most patients with this specific mutation. Tony was only the second patient in the world to receive Vemurafenib for hairy cell leukaemia – a wonderful example of personalised medicine.

Dr George Follows
Consultant Haematologist
Cambridge University Hospitals NHS Foundation Trust



> ***"There have been many ups and downs over the years, and I have sometimes been restricted in physical activity. But the treatments have allowed me to have a holiday in Austria as well as lots of time with my eight grandchildren. It is amazing that the tests for mutations in my bone marrow allowed the doctors to select the best treatment for me."***

Tony Sumner with Consultant Haematologist, Dr George Follows (left), and Consultant Clinical Scientist, Dr Mike Scott (right), at Addenbrooke's Hospital, Cambridge

> *"When it comes to family planning for the future, we now have the gift of knowledge. There are a number of options available to us that will ensure our future children are not born with Tay-Sachs despite the fact that we are a carrier couple."*

Lauren and Richard Kayser with baby Lia

Dr Adam Levine taking blood from Judy, a participant in a Jnetics screening event.

SCREENING FOR TAY-SACHS DISEASE

GENETICS

Lauren and Richard's story

Like many members of the Jewish community, Lauren and Richard Kayser were unaware that a number of life-limiting genetic disorders are relatively more common in people of Jewish ancestry.

When friends informed them about carrier screening for Jewish genetic disorders during Lauren's pregnancy with their first child, they decided to attend an upcoming community screening event at their local synagogue, run by the charity Jnetics. Days after the birth of their daughter, Lia, the Kaysers underwent testing, revealing that they were both carriers of Tay-Sachs disease, giving their baby a one in four chance of having the condition. Tay-Sachs is a rare recessive disorder where children develop as normal for the first few months of life before progressive deterioration of the nervous system, followed by death in early childhood.

Urgent pathology tests were conducted at Guy's Hospital, London, with support from the Jnetics genetic counsellor, to test Lia for mutations in the HEXA gene. There was an agonising 48-hour wait until, to the great relief of Lauren and Richard, she was found to be unaffected by Tay-Sachs disease.

Classic infantile Tay-Sachs disease

Tay-Sachs is a rare autosomal recessive disorder with a carrier frequency in Ashkenazi Jews of 1:25, relative to 1:250 in the general population. It is caused by genetic mutations in the HEXA gene on chromosome 15, which results in accumulation of GM2 ganglioside in the neurones. It is characterised by progressive deterioration of the nervous system beginning at 3–6 months of age, leading to weakness, loss of motor skills, seizures, blindness and eventual total incapacitation and death by the age of 4–5 years. Diagnosis is confirmed by DNA analysis and Hex-A enzyme activity assay.

The Jnetics community screening programme offers carrier screening for severe genetic disorders like Tay-Sachs that are relatively more common in people of Ashkenazi Jewish ancestry. Working in partnership with Liverpool Women's Hospital and Guy's Hospital, the service offers responsibly delivered, subsidised screening for family planning purposes for disorders including cystic fibrosis, familial dysautonomia, Canavan disease, Niemann-Pick disease (type A) and Bloom syndrome.

Dr Joey Ziff
Geneticist
Assistant Director, Jnetics

ENGAGING WITH TRAINEES

JULY

The Learning Environment for Pathology Trainees (LEPT), a web-based system for medical trainees in chemical pathology and histopathology, was moved to a new platform to increase efficiency. LEPT facilitates workplace-based assessment and multi-source feedback to support trainees' competence progression. A new veterinary pathology curriculum and an updated histopathology curriculum were also launched.

AUGUST

This College and Joint Royal Colleges of Physicians' Training Board launched the Combined Infection Training programme for trainees in medical microbiology, medical virology, infectious diseases and tropical medicine.

SEPTEMBER

65 medical trainees attended the New Trainees' Welcome Day at Kings College, London.

OCTOBER

The College submitted feedback on the 'Shape of Training' debate to the Academy of Medical Royal Colleges. The FRCPath Part 2 histopathology examination was also held outside the UK, in Jordan, for the first time.

NOVEMBER

The College's new website was launched, allowing trainees to apply for their FRCPath and Year 1 objective structured practical examinations (OSPE) online for the first time.

FEBRUARY

College representatives went to Dublin to meet with members.
As a result, the Faculty of Pathology of The Royal College of Physicians of Ireland will attend our Specialty Training Committees in order to improve communications and help trainees in the preparations for their FRCPath examinations.

MARCH

The College launched the first FRCPath molecular pathology examination for Higher Specialist Scientific trainees.

SUMMER SCHOOL

The second annual pathology summer school, hosted by the College, the British Division of the International Academy of Pathology and the Pathological Society, was full to capacity with 75 students from 30 medical schools. The programme, delivered by 20 pathologists, included talks on generic topics, specialty-specific lectures and 'find out about' sessions, which gave students the opportunity to meet pathologists in small groups. Feedback from the students was very positive, with 98% saying that they were more likely to pursue a career in pathology as a consequence of attending the summer school.

> ***"Attending the Pathology Summer School is perhaps one of the best things I have done throughout my two years in medicine. The school opened my eyes to both the breadth and the absolute necessity of pathology."***
>
> **Sarah Jarvis**
> **University of St Andrews**

ENGAGING WITH THE MEDIA

Promoting the value of pathology through the media is an important objective for the College.

Throughout the year, College spokespeople featured in broadcast and print media raising a range of issues, from the importance of hospital post-mortems to improving the availability of molecular testing.

Gaining coverage of the importance of implementing a national system of medical examiners was a major priority, with letters published in *The Times* and the College President being interviewed by the *Health Service Journal* and *The Mail on Sunday*.

The College's 'Low Allergy Garden' at the Chelsea Flower Show in May was featured in *The Sunday Times, Waitrose Garden* magazine and on BBC Radio 4's *Today* programme and ITV's *Lorraine* morning show, raising awareness of the role of pathologists in diagnosing and treating allergies.

To help promote World Blood Day on 28 May, the College President wrote a foreword for *Blood Health*, a supplement that was distributed with the printed edition of *The Guardian*.

Blood health

HEALTHAWARENESS.CO.UK

Stem cell donors have a crucial role to play in the future of blood health

Dr Suzy Lishman, President of the Royal College of Pathologists, highlights the need for more stem cell donors to give patients with blood cancers the chance of a cure

Dr Suzy Lishman
President, Royal College of Pathologists

Garden talk

At this year's RHS Chelsea Flower Show, The Royal College Of Pathologists created The Low Allerg
Garden to showcase plants that are ideal for hayfever sufferers

Hayfever symptoms are an allergic reaction to pollen. Ranging from mild sneezing and coughing to allergic asthma, they can occur in anyone of any age – some people have it as children and then lose it as adults, others develop it for the first time in later life, and it can strike at any time between January (when some trees start to flower) through to September.

The problem is mainly caused by plants that rely on wind to transport their pollen – to ensur that at least some of it lands in the right place, billions of pollen grains are produced and we then breathe these in.

'Insect-pollinated plants are much more efficient than those that are wind-pollinated,' s Dr Suzy Lishman, president of the Royal Colleg Of Pathologists. 'Insects fly into the flowers, collect pollen grains – which are much stickier – on their legs and bodies, and transfer them directly onto the stigmas of other flowers. So b avoiding wind-pollinated plants and using inse pollinated ones instead, it's possible to create a low-allergy garden that's insect-friendly at th same time. Poppies, delphiniums and foxglove [above] are all ideal, as are astrantias, geums, geraniums, hebes, lobelias, salvias and scabio

THE TIMES ONE PENNY NEWSPAPER

Doctors' contracts

Sir, Any new contract for junior doctors in England should pay trainees for hours worked, recognise anti-social hours and the effect this has on doctors' lives, reward additional experience and not discriminate against doctors who take parental leave or train flexibly (report and letters, Sept 22).

Currently, experience gained from working in another specialty or undertaking research is recognised as being relevant to a doctor's postgraduate training and is reflected in seniority payments. Under the new contract, there is a very real risk that junior doctors will be discouraged from gaining this valuable additional experience as it will go unrecognised and unrewarded. These experiences provide more breadth and depth to doctors' training, which brings tangible benefits to patient diagnosis, treatment and care.

Only by properly investing in our junior doctors will we attract and
future workforce qualified and
to deliver the care that
deserve.
HMAN
t, Royal College of
ists

new junior doctor contracts
mented they would leave
ior doctors unable to pay off
0,000

● Regarding the announcement that the Care Quality Commission will undertake a wider review of how deaths are investigated by trusts, there is already a tried and tested system to investigate deaths ready to be implemented - independent medical examiners. Inadequate hospital investigations mean families are left without answers and mistakes are not learned from. These problems could be addressed with the introduction of independent medical examiners to scrutinise deaths. Despite medical examiners being recommended by three independent inquiries - Shipman, Mid Staffordshire and Morecambe Bay - their introduction has been persistently delayed. This valuable new role should be introduced without further delay.
Dr Suzy Lishman
President, Royal College of Pathologists

THE TIMES ONE PENNY NEWSPAPER

Rise in death rate

r, Your report "Mystery over
e in deaths in 50 years" (Fe
ghlights a known issue with
ality of death certification.
ve consistently found that u
death certificates are inaccu
ading to poor understanding
ople have died.
This could be addressed wi
tablishment of a national ne
independent medical exam
hich was first proposed in th
the Shipman Inquiry. Pilot
ve shown that medical exam
ork closely with families and
professionals to answer questi
address concerns, increase the
accuracy of death certification

Molecular testing

Sir, Molecular pathology tests have the potential to revolutionise the way cancer and other diseases are diagnosed and treated. However, as your report highlights, this chance is being missed by the NHS ("Doctors' ignorance drives cancer lottery", Aug 20). My experience is that pathologists are aware of the value of molecular testing but that the funding mechanisms to do so easily are not in place.

It is not essential for everyone treating cancer patients to be an expert in molecular diagnostics but it

Hay fever sufferers can breathe easy in low-allergy flower garden

PUBLIC AFFAIRS

The College has increased its work with parliamentarians, civil servants, the health committee and all-party groups to deliver better outcomes for patients.

Launched at a reception in the House of Lords at the end of a week-long pathology exhibition, the College's *Pathology and the NHS Five Year Forward View* policy pamphlet set out the key priorities for the College: implementation of the national medical examiner system; investment in training the pathology workforce of the future; a nationally commissioned molecular diagnostics service to provide uniform, high-quality diagnosis of cancer; the roll out of Choosing Wisely to help patients make informed choices; and standardising test data.

Working with parliamentarians, stakeholders and journalists, the College made the case for a national system of medical examiners to examine every death that is not reported to the coroner. Evidence shows their introduction would improve patient safety and increase the accuracy of death certification. Health Secretary Jeremy Hunt announced that the system would be introduced in 2018 – a great stride in delivering one of the College's key priorities.

To support those engaging with the Department of Health (DH) consultation, the College produced a policy pamphlet to deepen understanding and encourage organisations to contribute their views. In June, the College arranged a roundtable to draw on the expertise of leading patient representatives, health regulators and senior figures from charities, government and local government. With an opening address by Sir Robert Francis QC, who led the Mid-Staffordshire inquiry, participants considered the strategic issues affecting the design and implementation of the medical examiner system. The note of the roundtable was submitted as part of the DH consultation, to be analysed in the autumn.

During the industrial action involving junior doctors in February, the College played an important part in highlighting recognition of the equalities implications of the originally proposed contract and in supporting a return to negotiations.

> ***"As a GP and now as Chair of the Health Committee, I know what a huge contribution pathologists make to patient care. The College's new focus on working in parliament will help show MPs and peers the value of that contribution."***
>
> **Dr Sarah Wollaston MP, Chair of the Health Committee**

56

'Art of pathology' school workshops delivered

240

National Pathology Week events in the UK

1

Chelsea Flower Show garden

56

People on three Science Communication Training courses

51

International organisations took part in International Pathology Day

8

Projects funded through Public Engagement Grant scheme

ENGAGING WITH THE PUBLIC

The theme for our flagship programme, National Pathology Week (NPW), was 'Pathology: the key to your health' and many of its events showcased molecular pathology. As part of NPW, we ran an interactive exhibition in the House of Commons to engage parliamentarians and highlight the importance of pathology for patients, so they can make informed decisions regarding funding. Over 70 MPs and peers visited our stands.

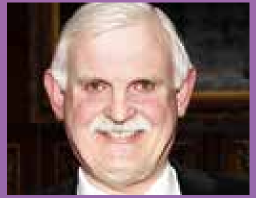
Events to increase the public's understanding of pathology included our 'Virtual autopsy' events, run by President Suzy Lishman, and we created an educational low-allergy garden at the Chelsea Flower Show, which won a silver-gilt medal and attracted over 15,000 visitors.

Science communication training continued to be popular and participants have gone on to organise over 50 engaging and varied events for all ages.

The College is strongly involved in the annual Schools Science Conference and as part of the organising committee we were delighted to receive a 'Healthcare Science Ambassador of the Year' award from the Chief Scientific Officer.

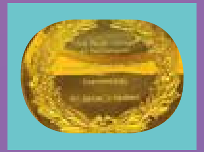
AWARD WINNERS

College Medals



The College Medal is an occasional award made by decision of Council to any Fellow who has undertaken exceptional work for the benefit of the College. Recipients this year were histopathologist Professor Kevin West, for his unparalleled involvement in medical training and assessment, and microbiologist Dr Peter Cowling, for his outstanding work in the sphere of professional standards and beyond.

Research Awards



Gold Medal

Dr Vanessa Wong, for the best research undertaken in any specialty

'Phylogeographic analysis of the dominant multidrug-resistant H58 clade of Salmonella Typhi identifies unappreciated inter- and intra-continental transmission events'

Specialty medal

Dr Susanne Burdak-Rothkamm, histopathology

'BRCA1, FANCD2 and Chk1 are potential molecular targets for the modulation of a radiation-induced DNA damage response in bystander cells'

Specialty medal

Dr Jaimini Cegla, clinical biochemistry

'Co-infusion of low-dose GLP-1 and glucagon in man results in a reduction in food intake'

Specialty medal

Dr Susanne Hodgson (nee Sheehy), medical microbiology

'Evaluating controlled human malaria infection in Kenyan adults with varying degrees of prior exposure to Plasmodium falciparum using sporozoites administered by needle and syringe'

Specialty medal

Dr Paolo Gallipoli, haematology

'JAK2/STAT5 inhibition by nilotinib with ruxolitinib contributes to the elimination of CML CD34+ cells in vitro and in vivo'

The Furness Prize for Science Communication

Dr Elaine Cloutman-Green
Dr Cloutman-Green, an Infection Prevention and Control Practitioner at Great Ormond Street Hospital (GOSH), has been involved in science communication since 2007, through outreach work for GOSH and as a STEM Ambassador. She has represented GOSH at local events and on national TV and has inspired audiences to engage with microbiology through projects for the Wellcome Trust and a series of talks on healthcare science.

Medical Undergraduate Essay Prize

This competition was held as part of National Pathology Week 2015. It was won by William Ryan Huddleston, a medical student at Queen's University Belfast, who wrote a highly detailed and well-structured essay on 'Molecular pathology: the future of diagnosis and treatment'.

OUR PRIORITIES FOR THE FUTURE

Although there are many outward-facing priorities for the College, such as building on our growing record of political engagement, preparing for the implementation of medical examiners in 2018, supporting training for scientists and pathologists in molecular pathology and continuing to support the implementation of the National Laboratory Medicine Catalogue, I would like to focus on a challenge closer to home.

It is vital that we make supporting our trainees a priority, not just in the coming year but every year. Junior doctors, vets and scientists are the future of the profession and we must do everything we can to ensure that they have the opportunity to develop in a supportive environment.

The junior doctors' contract dispute highlighted several non-contractual areas in which we can work with trainees to improve their experience. We commit to doing this and to working with other agencies to ensure that trainees are valued. We all have a role to play in helping to make training in pathology an attractive choice and an enjoyable and fulfilling experience.

NEW PREMISES

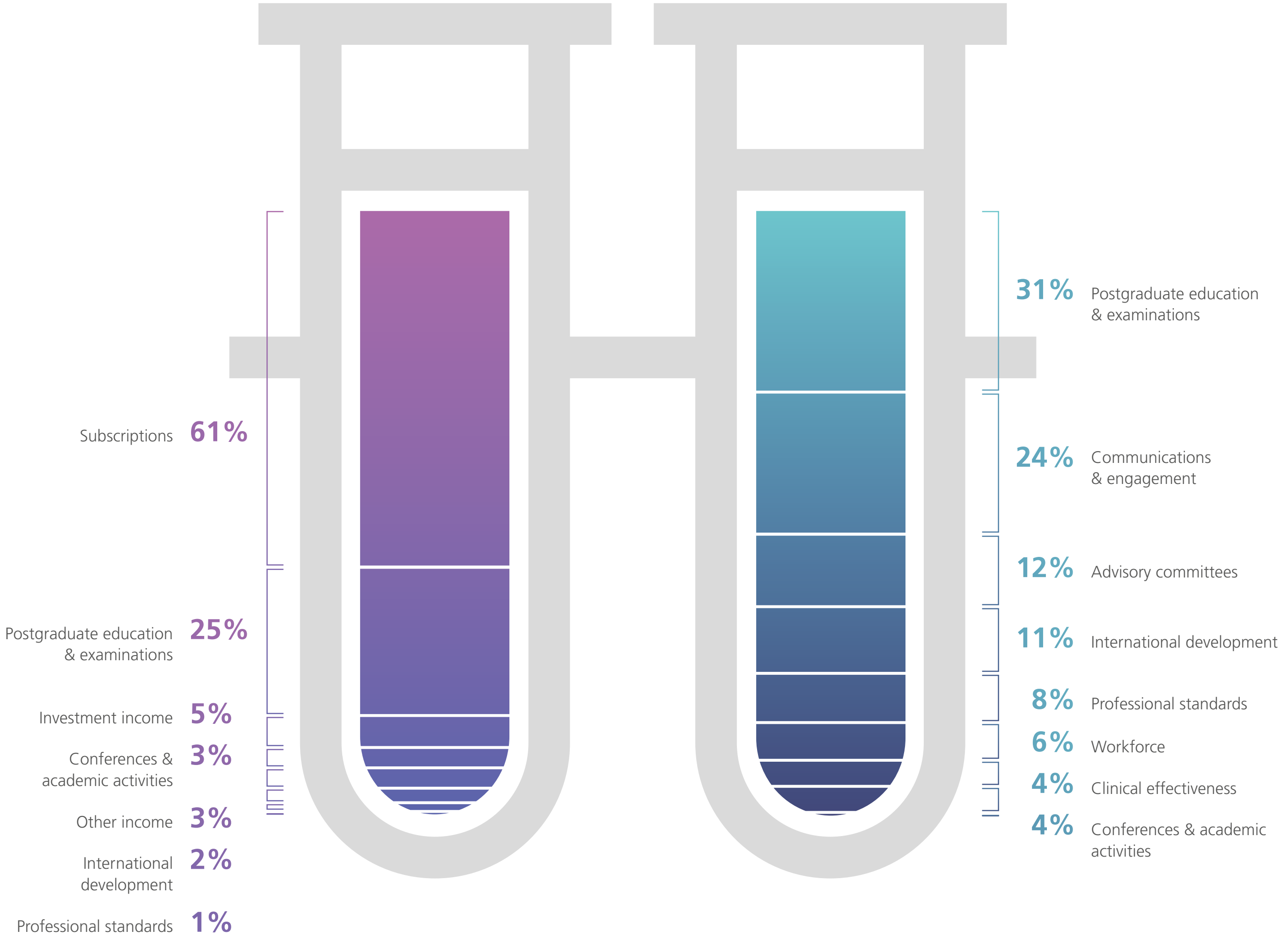
The College was granted planning permission for its new administrative headquarters in March 2016 and demolition is underway. Located on Alie Street in Whitechapel, east London, the new building will replace a 1980s office block and will become the new permanent home for the College. It will provide flexible, environmentally efficient spaces that will allow its staff and officers to realise the College's future objectives and provide excellent facilities for public education and a wide range of conferences and events.

A double-height reception area will provide a dramatic entrance space for the building. The ground to fifth floors will house flexible office space, a library, meeting rooms and a 200-seat conference room, whilst also allowing space for future expansion. The sixth floor will include a flexible, open-plan pavilion with panoramic views over London.

In anticipation of our arrival, the College ran a project with the neighbouring English Martyrs Catholic Primary School to create attractive and informative hoardings to surround the site during the building works. Science-based artist, Dr Lizzie Burns, showed the children images of viruses, bacteria and cells and together they developed a kaleidoscope of shapes and colours to create the artwork for the hoardings.

INCOME **£4,843,354**

EXPENDITURE **£5,310,951**



Notes: The deficit shown above was budgeted and planned. It is the result of a loss of a source of income and the additional costs of being in temporary offices following the sale of the previous College premises, and will reverse once we have moved into new premises in 2018.

The summarised financial report and the auditors' statement can be found in the separate Financial Report sent to members and on www.rcpath.org. The full financial statement is available from the College's Chief Executive on request.


Dr Suzy Lishman


Dr David Bailey


Professor Tim Helliwell


Dr Lance Sandle


Dr Rachael Liebmann

COUNCIL MEMBERS

(as of September 2016)

Trustees	
President	Dr Suzy Lishman
Vice-President for Communications	Dr David Bailey
Vice-President for Learning	Professor Tim Helliwell
Vice-President for Professionalism	Dr Lance Sandle
Registrar	Dr Rachael Liebmann
Assistant Registrar	Mrs Avril Wayte
Treasurer	Dr David Cassidy
Chair, Scotland Regional Council	Dr Bernie Croal
Chair, Northern Ireland Regional Council	Dr Peter Sharpe
Chair, Wales Regional Council	Dr Esther Youd
Lay Trustee	Sir Rodney Brooke
Lay Trustee	Mr Tommy McIlravey

Chief Executive	Daniel Ross
Nationally elected members	Professor Simon S Cross Dr Nicki Cohen Professor Graham Jackson Dr Mike Scott
Regionally elected members for England	Professor Roger Feakins (England – London) Professor Kate Gould (England – North) Dr Adrian Bateman (England – South) Dr Laszlo Igali (England – Midlands/East)


Mrs Avril Wayte


Dr David Cassidy


Dr Bernie Croal


Dr Peter Sharpe


Dr Esther Youd

Co-opted Council members	
Chair, Interspecialty Committee on Molecular Pathology	Professor Finbarr Cotter
Chair, SAC (Specialty Advisory Committee) on Toxicology	Professor Atholl Johnston
Chair, SAC on Immunology	Dr Siraj Misbah
Chair, SAC on Genetics and Reproductive Science	Professor Angela Douglas
Chair, SAC on Veterinary Pathology	Professor Cheryl Scudamore
Chair, SAC on Medical Microbiology	Dr Prema Singh

Observers	
Director of Clinical Effectiveness	Dr Bridget Wilkins
Director of Examinations	Dr Andrew Day
Director of International Affairs	Dr Maadh Aldouri
Director of Professional Standards	Professor Peter Furness
Director of Publishing and Engagement	Dr Lorna Williamson
Director of Training and Assessment	Professor Philip Cachia
Chair, Ethics Committee	Professor Terry Cook
Chair, Research Committee	Professor Ian Cree
Chair, SAC on Cellular Pathology	Dr Anne Thorpe
Chair, SAC on Pre/Perinatal/Paediatric Pathology	Professor Neil Sebire
Chair, SAC on Transfusion Medicine	Dr Megan Rowley
Chair, Trainees Advisory Committee	Dr Alice Wort
Chair, Intercollegiate Committee on Haematology	Professor Tony Pagliuca
Dean, Faculty of Pathology, Royal College of Physicians of Ireland	Professor Hilary Humphreys
Institute of Biomedical Science representative	Mr David Wells