

Script

THE MAGAZINE OF THE CARDIFF SCHOOL OF
PHARMACY AND PHARMACEUTICAL SCIENCES

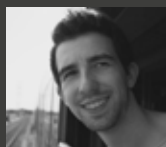
Issue 8
Summer 2016

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carving out a career in
veterinary pharmacy

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Croeso/Welcome

from Head of School, Professor Gary Baxter

ARRIVING in my office this morning, I was greeted by the heavy-duty carrier bags, emblazoned with the University logo, containing exam scripts that we tend to see rather a lot of at this time of the year.

Examinations may be formidable for students, but are no less so for the staff tasked with marking them – and they are a reminder of the passing of another academic year.

It has been an eventful year for the School but one tinged with great sadness. In March, the untimely death of Professor Chris McGuigan came as a great blow to all in the University, and most especially to colleagues in the School and the countless past students and associates who worked with or were taught by him during his two decades in Cardiff. Chris was a truly inspirational scientist and teacher.

Much has been written in recent weeks about his far-reaching professional achievements but he was first and foremost a warm, cheerful and charismatic individual who supported and encouraged everyone he dealt with. Many of you reading this issue of *Script* will have personal memories of being taught or supervised by Chris or working alongside him. A brief tribute appears opposite, but we hope to be able to commemorate him and his work with an event in the School in the next academic year.

FOND FAREWELL

A number of staff changes occurred this year, most notably the retirement of two of our most long-serving academic colleagues, Professor Glyn Taylor and Professor Roger Walker. Although neither seem particularly old, their combined service amounts to 60 years – which represents an awful lot of experience and wisdom!

Glyn was appointed lecturer in 1980 and will be remembered fondly by many who were taught by him, especially pharmacokinetics and pulmonary drug delivery.

But he also played a key role in developing and maintaining our collaboration with Taylor's University in Malaysia, a partnership that made the first two years of the Cardiff MPharm programme available to many students in Kuala Lumpur. Navigating the logistics regulatory frameworks of this enterprise was no small task but one that Glyn accomplished with great skill and good humour.

Roger was appointed in 1990

to run the postgraduate diploma in clinical pharmacy and then became Director of Pharmaceutical Public Health for the Gwent Health Authority. His influence on pharmacy practice and policy have been far-reaching. Walker and Whittlesea's *Clinical Pharmacy and Therapeutics* is the leading textbook of its kind and one that will continue to have the input of the School (through Dr Karen Hodson) after Roger's retirement.

Arguably, it is in the role of Chief Pharmaceutical Officer for Wales, a post which he held from 2011 to the beginning of this year, that Roger made his most direct impact on the development of the profession in Wales. His retirement leaves a void that will be difficult to fill.

Last summer we welcomed Lizanne Duckworth to the School as School Manager. This is a new post providing leadership and management of our professional services team.

Lizanne has vast experience of the University's administrative processes and structures and was for some time Head of Admissions in the University Registry.

She has been overseeing a number of projects since her appointment, with one of the most important the coordination and writing of the School's Athena SWAN renewal application. The Athena SWAN charter mark, administered by the UK Equality Challenge Unit, furthers and supports equality and diversity in higher education institutions across all four nations of the UK and focuses especially on gender equality issues that affect women studying and working in science.

Since 2013, the School has been proud to hold the Silver Athena SWAN award in recognition of its exemplary practices and ambitions for gender equality. The renewal of this external recognition is important for us because equality and diversity are key aspects of the School's culture and business.

Collating the evidence in support of our application and the construction of a narrative that illustrates this culture has been a massive undertaking, involving people across all parts of the School, expertly coordinated by Lizanne.

SUCCESSFUL STUDENTS

In March this year, the British Pharmaceutical Students Association was welcomed to the School, for the first time in many years, for its annual conference. The

week-long event was organised by two of our undergraduate students, Charlotte Cox and Isobel Portergill.

Among the many delegates from most of the UK schools of pharmacy and other pharmacy organisations was Ash Sony, President of the Royal Pharmaceutical Society.

His appearance as old father Noah in one of the themed evening social events (unsurprisingly, Noah and the ark) created an enduring memory for anyone who saw him. The conference was hugely successful and many delegates commented that it was the best BPSA conference for many years. Charlotte and Lizzie are to be warmly congratulated on organising such a successful national event.

With exams drawing to a close, our minds have already turned to graduation. The graduating class of 2016 is the 96th cohort of pharmacy students to leave the School. Each cohort has its own unique identity, its memorable characters and special achievements.

Recently, the final year students had their leavers' dinner and I spoke to them about their current and future roles as the leaders of their generation. Leadership was a theme I returned to later in the week. At the Welsh Pharmacy Awards ceremony, a new category was introduced this year, the Student Leadership Award.

I am delighted that six of our undergraduates were nominated for this prize. Each undertook specific tasks which displayed hallmarks of leadership in one form or another, but all were linked by their inspiring dedication and sense of service to others. The winner was Will Northwood, a final-year student who has led a team of volunteers that has helped to shape open day activities for prospective students.

Will has been a tremendous ambassador for the School and stands out as a role model. But all of our students are ambassadors for the School in many different ways.

The Class of 2016 who are about to depart with the Cardiff MPharm after graduating in the summer will represent the School and the University to the wider world: I and my colleagues wish them much success and fulfilment.

Professor Gary Baxter,
Head of School

If you have any comments about *Script*, please email [Bernadette Corby at Script@cardiff.ac.uk](mailto:Bernadette.Corby@cardiff.ac.uk) or visit www.cardiff.ac.uk/phrmy +



‘A constant inspiration’

School of Pharmacy and Pharmaceutical Sciences remembers esteemed colleague

TRIBUTES have been paid to “inspirational” academic Professor Chris McGuigan following his untimely death.

Prof McGuigan passed away on March 11, 2016 after a battle with cancer.

A specialist drug designer and developer, Professor McGuigan was at the heart of vital scientific research for more than 30 years.

Professor Gary Baxter, Head of the School of Pharmacy and Pharmaceutical Sciences, said: “Many of us have lost a friend as well as a colleague and mentor. Let me record the privilege of working with a man whose scientific achievements and personal attributes were inspirational.”

Professor McGuigan was an exceptionally gifted inventor and chemist and had devoted more than 30 years to leading a major research team of international renown.

Dr Michaela Serpi, a post-

doctoral research associate who was one of more than 100 PhD students and post-doctoral researchers from 22 different countries to join the team, praised the academic’s charisma and mentorship.

She added: “Chris was so passionate and dedicated to his job that he was a constant inspiration to all of us.

“Among many different topics he taught us medicinal chemistry and drug discovery, but most importantly diligence and perseverance.

“He was always patient and humorous and always able to bring out the best in each of us, encouraging us to show our strength and to overcome our weakness.

“Over the decades Chris has guided many of us to reach their goals, having a decisive influence on our lives and careers.

“I can say that many of us, myself included, can thank

him for who we are today.

“Though Chris may have left this world, his legacies and contribution to science will live forever.”

Professor McGuigan was one of the UK’s leading scientists in the field of anti-cancer drug discovery.

He had a strong drive to use his scientific ideas for social good, working tirelessly to address medical needs where they were unmet.

He was Chair of the Life Sciences Hub and directed the Life Sciences Research Network Wales, a £15 million scheme hoping to fund 100 drug discovery projects.

Professor McGuigan’s research expertise was in new drug discovery and development for cancer, HIV, hepatitis B and C, shingles, measles, influenza and Central Nervous System disease.

He was inventor on four new experimental drugs that have entered human clinical trials, published more than 200 scientific papers and submitted in excess of 100 patent applications, requiring collaboration with scientists across Europe and the USA.

His loss will be felt across the University and the wider scientific community. +

CHRIS MCGUIGAN

Qualifications: B.Sc., Chemistry, Hons (Class 1), University of Birmingham; PhD, Anti-cancer Drugs, University of Birmingham.

Posts: Professor of Medicinal Chemistry; Director National Research Network in Health and Life Sciences; Chair of Life Sciences HUB Wales; Pro Vice Chancellor of Research and Innovation.

Previous Posts: Post-doctoral Fellow, Edmonton, Alberta; Demonstrator, University of Exeter; Lecturer, University College London; Lecturer, University of Southampton; Reader, Welsh School of Pharmacy; Professor, Welsh School of Pharmacy.

KEY ACHIEVEMENTS

+ **Inventor of phosphoramidate ProTides: a new drug delivery / discovery motif.** ProTides have been applied by: GSK, Roche, Nucana, NewBiotics, Inhibitex/ BMS, Gilead, Pharmasset and others, and have lead to clinical trials for the last five of these: two with us.

+ **Inventor of the first anti-cancer Pro-Tide drug** being tested in humans.

+ **Inventor of two novel antiviral drug candidates to reach clinical trial, FV100 for shingles and INX-189 for hepC.**

+ **Co-inventor of Cf1743 and its prodrug FV100, successfully completed phase two human clinical trials for VZV/shingles.** This is the most potent anti-VZV agent reported to date.

+ **Co-inventor of new anti-HCV ProTide INX-08189.** This was the most potent compound in class for HCV and was the key driver behind the \$2.5 billion buyout of Inhibitex in 2012.

+ **Co-inventor of acyclovir ProTides as new anti-HIV agents** (pre-clinical; with KU Leuven and NIH).

+ **Inventor of Phosphorodiamidates: A brand new phosphate pro-drug motif with two patents filed 2010.**

+ **Co-inventor of new glucosamine phosphates with potential use in osteoarthritis.**

+ **Co-inventor of brand new family of anti-measles virus agent (2013).**

+ **Co-inventor of a brand new family of anti-MS agents (2014).**

+ **95 researchers trained in the group and 11 in current study.**

“““

Though Chris may have left this world, his legacies and contribution to science will live forever

Dr Michaela Serpi, Post-doctoral Research Associate

Dispensary

THE LATEST UPDATES FROM THE CARDIFF SCHOOL OF PHARMACY AND PHARMACEUTICAL SCIENCES

Contribute to centenary celebration



Pictures, from top:

Telemicroprojection facilities in the pharmacognosy lab in the 1960s; Pharmacy students and staff from the 1970s – but which year?; Staff in the mid-1960s; George Thomas, Secretary of State for Wales, shown with Sue Wightman during a visit to the school; *Chemist and Druggist* reports on a 1952 WPSA visit to Glaxo.

BRIONY Hudson, Curator of the School's historical Turner Collection and professional pharmacy historian, has been commissioned by the School to research and write a publication describing its first 100 years.

On Wednesday 8th October 1919, the Right Honourable Lord Mayor of Cardiff officially opened the Welsh College of Pharmacy.

More than 70 students had enrolled, including 50 ex-Servicemen under a special funding scheme to get men back into work after the First World War.

The Lord Mayor also commented specifically that he was "delighted to see that young women had the same opportunities as men".

William – later Sir William – Glyn-Jones gave a speech as Secretary and Registrar of the Pharmaceutical Society informing this first cohort that they "would set the traditions of the College so high", he hoped, "that in after years to be able to say that one was educated at the Welsh College of Pharmacy would do much to secure a berth in advance of others not so fortunate".

RICH HISTORY

The rest is history. The College, originally part of Cardiff Technical College, has survived and thrived within a number of parent organisations.

It moved from its first home in the current Bute Building into the Redwood Building in 1960, officially opened by HRH the Duke of Edinburgh in 1961.

The "New Building", as it was first known, saw Pharmacy sharing with the Maritime Studies, Applied Chemistry and Applied Biology Departments.

It has gone from a school offering the Pharmaceutical Society's Qualifying Examinations to the external University of London degree in 1928; a University of Wales Bachelor of Pharmacy degree in 1937; to today's four-year MPharm.

And the facilities have changed beyond recognition from the original set-up of two lecture rooms and two laboratories purely for teaching in 1919 to the cutting-edge equipment, laboratories and suites for undergraduates, postgraduates and research work today.

PEOPLE POWERED

But it is people that make an institution, both students and staff. Recovering details of the

earliest lecturers and students can only be carried out via documents and sources held both within the University, its Library Special Collections (SCOLAR) and Glamorgan Archives. Finding out about the experiences of more recent students and staff means asking for your help.

Briony wants to gather material including anecdotes, photographs, student publications and memories about all aspects of studying or teaching at the School from alumni and so is keen to hear from anyone with information that they are willing to share.

Don't think that you're too old or too young – the publication aims to cover all 100 years, so information or mementos about recent experiences are as relevant as those from earlier decades.

GET INVOLVED

Please get in touch either by emailing pharmacyhistory@cardiff.ac.uk or by letter to the School. At this stage, please do not send any original materials without making contact with Briony first. She looks forward to hearing from you. +



The facilities have changed beyond recognition from the original set-up of two lecture rooms and two laboratories purely for teaching in 1919 to the cutting-edge equipment, laboratories and suites today



Happy return:
The class of 1965
return to Cardiff for
a 50-year reunion

Pharmacy graduates' major milestone

Alumna **Barbara Stewart** reports on the 50-year reunion of the class of 1965

WITH great anticipation, 16 graduates from the Welsh School of Pharmacy gathered in June 2015 to celebrate our 50-year anniversary.

A total of 24 of us, including partners, travelled to Cardiff from far and wide, including Canada, California, the Isle of Mann and many points in England and Wales.

At least six of our group could not make the event, resulting in a mini-reunion for some in August!

What were the abiding sentiments on the day? Firstly, how fortunate we were to have been part of such a special, friendly class group during our undergraduate years.

The 1960s was a great time to be a student and there was much reminiscing.

We agreed that pharmacy has been good to us, thanks in great part to the foundation provided by our BPharm course. Hard work, yes, but

collectively our resulting successful professional careers have spanned academia, community and hospital practice, industry and management.

And what of the future? We now use social media to keep in touch and maintain our friendship; we have enjoyed a total of five reunions over the past 25 years and plan to keep going. And perhaps we won't wait until 2020 for the next one!

RESISTANCE FIGHTERS

STUDENTS and staff came together to raise awareness of one of the biggest health threats facing modern society.

To mark European Antibiotic Awareness day, members of the School of Pharmacy's Student Staff Panel (SSP) encouraged colleagues, pharmacists, families and the wider public to sign a pledge to become more aware of antibiotics and to try and slow resistance.

Without effective antibiotics, many routine treatments will become increasingly dangerous. Setting broken bones, basic operations, even chemotherapy and animal health all rely on access to antibiotics that work. Slowing resistance will require a cut in their unnecessary use.



Organiser Dana Esmail said: "We had a very successful day with a mass amount of pledges completed from a range of different people. Special thanks to SSP, Louise Hughes and Mary Williams for helping with this event."

BUMPER YEAR FOR STUDENT SOCIETY

THE Welsh Pharmaceutical Students' Association celebrated another prosperous year of fundraising after making £4,795 for mental health charity Mind Cardiff.

Members of the group made cakes for a bake sale, laced up their trainers to run the Cardiff Half Marathon and put their thinking caps on for a pub quiz as they continued the society's proud tradition of helping good causes.

The bulk of the WPSA's fundraising revenue was generated through a series of socials, with old favourites such as the photo pub crawl and lab coat social joined by new additions including "when I grow up" and Pharmasi Mexican events.

The year culminated with an "American in Paris"-themed ball held at Cardiff Bay's Portland House.

Away from the socials, WPSA's sporting students played out a successful season, with victory over OpSoc securing a second Boots Cup victory in the last three years.

The netball and football teams went on a joint tour to compete against Nottingham's School of Pharmacy, with the girls emerging victorious and the boys narrowly losing to a strong side. The WPSA's badminton squad also went from strength-to-strength.

A new committee is now in place and is already working hard to plan its fundraising campaign, which will benefit Wales Air Ambulance.

Express delivery

“Receptor crosslinking” as a common method for targeting diseases

Scientists from the Cardiff School of Pharmacy and Pharmaceutical Sciences have discovered a universal method for improving the delivery of therapeutic molecules into cells – including those that cause cancer.

Many treatments do not work in patients because of their poor ability to reach their intended targets that lie inside cells. To address this, the Pharmacy researchers joined forces with colleagues from the School of Biosciences to attempt to improve the cellular delivery of a relatively new class of drugs called biotherapeutics.

These drugs include antibodies, such as Herceptin, that target breast and stomach cancer cells. Cancer cells often contain a unique protein on their surface that acts as a barcode, identifying these cells as cancerous against their healthy counterparts. Published in *Molecular Therapy*, the EPSRC-funded research describes experimenting with new ways

““““

It looks like this could be a universal strategy to increase the uptake of drugs into different kinds of cells involved in many types of diseases

Professor Arwyn Jones, lead author

of targeting breast cancer cells with Herceptin that interacts specifically with a barcode protein called “Her2”. This protein is known to be a major driver of cancer cell growth and division.

The researchers describe being able to manipulate how Herceptin interacts with Her2, which sits on the surface of breast cancer cells.

By modifying the interaction, they show that Herceptin and Her2 were rapidly engulfed by the cancer cells that then proceeded to destroy the protein barcode.

Lead author Professor Arwyn T. Jones, from the School of Pharmacy and

Pharmaceutical Sciences, believes

this new approach for drug delivery – called “receptor

crosslinking” – could be used to

target a wide range of diseases, from different types of cancers and inherited genetic diseases to infectious diseases such as tuberculosis.

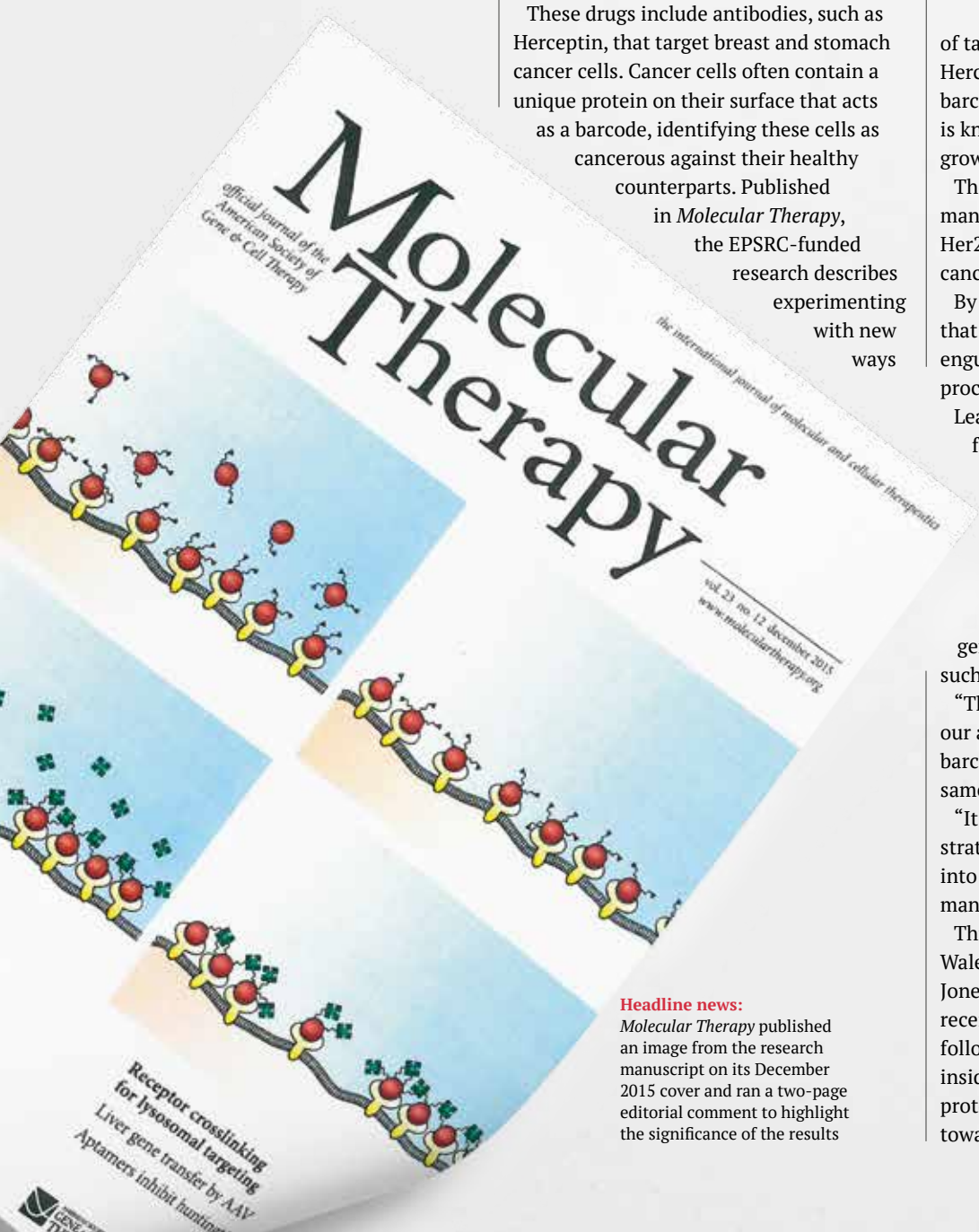
“The striking thing is that we have tested our approach on both Her2, as well as other barcode proteins, and each one gave the same result,” said Professor Jones.

“It looks like this could be a universal strategy to increase the uptake of drugs into different kinds of cells involved in many types of diseases.”

Through funding by Cancer Research Wales, this work is now continuing in the Jones laboratory to identify how messages received at the surface of breast cancer cells following crosslinking are transferred to the inside to regulate destruction of barcode proteins and delivery of chemotherapeutics towards their intended targets. +

Headline news:

Molecular Therapy published an image from the research manuscript on its December 2015 cover and ran a two-page editorial comment to highlight the significance of the results



AMONG the many conditions threatening the health of humans the world over, few pose quite as potent a problem as sepsis.

The complaint, which arises when the body's response to infection injures its own tissues and organs, can strike swiftly, ferociously and fatally.

A look at the facts surrounding the condition makes for grim reading; 20-30 million people in developed and developing countries contract sepsis each year, mortality rates sit at up to 70 per cent, one person dies from it every few seconds and approximately one in three of all deaths is down to the disease.

The emergence of antibiotic-resistant bacteria and an increasing use of high-risk clinical interventions has contributed to the number of sepsis cases growing at around 10 per cent every year and, despite the damage being done by the disease, there are currently no clinically-useful tests to provide a definitive diagnosis.

But while the statistics may make for grim reading, there is hope on the horizon thanks to pioneering research being carried out at Cardiff University's School of Pharmacy and Pharmaceutical Sciences.

Already an expert in the field after completing a PhD looking into systems capable of detecting the bacterial toxins associated with sepsis, Dr Jenna Bowen (*pictured below right*) is now leading a research group aiming to develop diagnostic platforms targeting the rapid and sensitive detection of markers associated with sepsis.

"Although detection of markers associated with the micro-organism responsible for the infection is important so that we can start appropriate treatment, it is actually the exaggerated response launched by the person's immune system that causes the extensive organ damage that ultimately leads to death," Dr Bowen told *Script*.

"My research group is focused on developing novel sensing technology platforms that are capable of detecting markers from both the micro-organism and the immune system so that we can not only inform treatment strategies but also monitor how well the patient is doing during the course of sepsis."

The value of Dr Bowen's work is apparent in human and resource terms. Aside from its potential in saving some of the estimated 37,000 lives lost to sepsis in the UK each year, the new sensing platforms could also alleviate the strain on the healthcare system created by the doubling of hospitalisations from the disease over the past decade.

Given the alarming speed with which sepsis can claim

BUSINESS BRAIN

Dr Bowen's expertise in sensing platforms has already resulted in the launch of a thriving commercial company.

She said: "We'd been working on the transformation of a unique magneto-optical technology, developed originally for the in-field diagnosis of malaria, into a generic platform that could be applied to the diagnosis of a range of healthcare conditions."

"In 2014, we recognised a chance to exploit and develop our work commercially through the Innovate UK Medical Technologies Launchpad Wales and so Cotton Mouton Diagnostics (CMD) was formed."

"We moved into the GE Healthcare Innovation Village in August 2015 and have received two pots of funding to help us develop the technology to pre-commercial prototype stage over the next 12 months."

"Within the first year CMD has received around £1 million of investment and we have assembled a 10-person team tasked with delivering this exciting technology to market."

its victims, the research is of paramount importance and could eventually lead to similar advances to tackle additional health problems.

"Sepsis is a good target in terms of being one of the very few diseases where time really is important," explained Dr Bowen. "For every hour you don't diagnose somebody, their risk of dying increases by about seven per cent, so sepsis is an obvious condition where you would benefit from having those technologies at the point of care."

"Although sepsis is our primary focus, these technologies can readily be applied to the diagnosis of other conditions. The concept of personalised medicine was introduced many years ago, but we're yet to see it being applied broadly in the field."

"This is likely a consequence of a lack of technologies that can detect markers that enable identification of patients most likely to respond to a particular treatment. The technologies we develop could help address this unmet need."

"It may be that the technologies find use outside of healthcare – there are applications for a system capable of rapidly and accurately detecting specific markers, for example in the agri-food or biodefence industries."

Dr Bowen's work draws on the strengths of her pharmaceutical background as well as the expertise of colleagues specialising in other scientific areas and she told *Script* that deploying a multi-disciplinary mindset is key to her group's approach.

"Working collaboratively allows us to make a system that's more fit for purpose," she explained. "Rather than trying to tackle little bits of the problem in isolation, we're working together to tackle the bigger picture." +

Rapid response

Innovative sensing technology provides added ammunition in the swift spotting of sepsis



Expanding horizons

MPharm students share their experiences of taking part in the Erasmus+ scheme

WHILE for many students the summer break signifies the start of some well-earned downtime, for others it marks the beginning of an enriching European adventure.

Through the Erasmus+ programme, undergraduates

in the second or third year of their MPharm studies are able to sign up for a two-month placement at one of a number of partner universities across the continent.

Those taking part in the scheme are able to undertake a research project or, if their language skills are good

enough, work in a hospital pharmacy in countries including Germany, the Czech Republic, Greece, Italy, Spain, Portugal, Turkey and Sweden.

The current Erasmus+ programme has given 15 Cardiff students the chance to expand their horizons since it began in January 2014,

while the School of Pharmacy and Pharmaceutical Sciences has welcomed incoming visitors from as far afield as Athens, Gothenburg, Milan and Padua.

But what is life like as an Erasmus+ participant? *Script* caught up with two recent beneficiaries to find out...

My Erasmus adventure began when Heledd, from the Global Opportunities Centre, came in to give a talk. Despite not being something I'd ever considered, I decided to go along.

I initially picked a placement in Munich, but they were unable to accommodate me. Through perseverance – and a lot of help from the Erasmus coordinator – I secured a placement at the University of Regensburg's Pharmacology and Toxicology department.

The placement had to be at least 60 days and I organised mine from June to August to allow for resits. On paper, 60 days didn't seem so long, but it soon dawned on me what I'd signed up for – I was to be alone in a new country, not knowing anyone and with an incredibly basic grasp of the language. Suffice to say I was more than nervous!

My room was an upgrade from uni halls. I was in a flat with six German students who were very friendly and spoke English.



Mark Sweeney

As the German exams finish in late July, my flatmates spent most of their time studying so I had to occupy myself.

This gave me a great opportunity to travel – over the eight weeks I was able to

visit Germany, Austria, Slovakia, the Czech Republic and Hungary and thoroughly explore Regensburg too.

Academically, my Erasmus placement allowed me to see first-hand the research that goes on in the pharmacy department of a university and work alongside some of the most recognised professors in their field. It has given me a useful insight into both working in a research environment and working abroad.

For anyone considering the scheme, I'd strongly recommend it. There is no denying it is a long time to be away from family and friends, but it has made me more appreciative of them. The experiences it provided were priceless.

I was able to explore Europe, make friends and discover a new side to my degree. If you're unsure about doing a placement like this, just go for it!

During my Erasmus traineeship, I stayed in the city of Hradec Králové, where Charles University has its Pharmacy faculty, and worked in the department of Biological and Medical Sciences with scientists researching endothelial dysfunction.

The main aim of this research was to establish whether the up-regulation of certain proteins in endothelial dysfunction are causative factors or whether they are simply markers of endothelial dysfunction. If the proteins are proven to be causative, there is a possibility of new drug development to prevent endothelial dysfunction from occurring.

I had the chance to try various techniques, but mostly focused on Western Blotting.

This is a method used to distinguish protein expression with the possibility of being able to quantify changes in protein expression too.

It was very interesting for me to see and try Western Blotting, along with other techniques, as we learned about them in our



Fiona Smith

lectures and many of us wondered when we might possibly ever use them!

My time on the Erasmus+ scheme taught me that science doesn't always go to plan, even when you follow instructions to the letter. The experience has given me a

realistic insight into laboratory work, when things don't always go right first time.

Gaining some experience in a laboratory environment has been valuable as it's not something I've seen much of before. Not only has it allowed to consider whether this might be a career I would like to pursue in the future, but it has also given me an understanding of the wider context of pharmacy and allowed me to relate what we have learned in lectures to reality.

As for Hradec Králové itself, it's a lovely student city only a two-hour train journey away from Prague.

About 30km away from Hradec Králové is Kuks Hospital, which houses the Czech Museum of Pharmacy which houses a breathtaking collection of articles laid out to mimic an historic shop front, including jars, pestle and mortars, pharmaceutical preparations and even a till.

I could have easily spent much longer looking at everything on display than was allowed for in the tour.

Pharm to farm

Cardiff student William Northwood explains why he plans to carve out a career in the world of veterinary pharmacy...



On the farm: William tends to his newly-purchased Highland cattle

WHILE a degree in pharmacy serves as perfect preparation for anyone wanting to help humans, mastering medicines can stand students in equally good stead to care for members of the animal kingdom.

Away from traditional roles in community pharmacies, hospitals and industry, the field of veterinary pharmacy provides an exciting alternative career path where patients often have four legs rather than two.

For Cardiff University MPharm student William Northwood, tailoring his studies towards veterinary pharmacy was an obvious decision.

Having spent his childhood in and around dairy farming through his mother's side of the family and being exposed to pharmacy through his father, he cultivated a desire to carve out a career combining the two specialisms.

And thanks to the intervention of School of Pharmacy and Pharmaceutical Sciences honorary lecturer Dr Sarah Cockbill, William was given the perfect opportunity to make the most of both family trades.

Dr Cockbill enhanced William's interest in the field and it was further strengthened by a work placement at veterinary pharmacist RM Jones.

Convinced that the area was one he wanted to focus on, he soon began work on his final-year project, *Is there a role for veterinary pharmacy in the management of dairy mastitis?*

"My idea was to bring the two interests of the family together," William told *Script*.

"I have always had an interest in the



Animal expert: William advocates the role of the veterinary pharmacist

family farm, where 150 cows are milked."

RELEVANT RESEARCH

Caused by bacterial infection, mastitis is the largest dairy health problem in the UK.

Infected cows produce inferior yield and quality of milk, directly impacting a farmer's bottom line as buyers are not willing to pay a premium for tainted milk.

The condition can also prove fatal to cows.

William set out to explore the extent to which veterinary pharmacists could mitigate dairy mastitis' prevalence by educating farmers about its causes and encouraging correct antibiotic usage.

Following a pilot study, William carried out structured interviews with 19 dairy farmers in Wales and his home county of Staffordshire.

His study sought to ascertain everything from monthly mastitis case figures to the causative factors, treatments used and advice received by the farmers.

And rather than conduct his research remotely, William travelled between each farm in person during a hectic fortnight.

He said: "The two weeks for data collection

flew by. My plan was to go to a farm in the morning, observe the milking process, do the structured interview and then have an hour for lunch and an hour to get to the next farm.

"But because I was so passionate, I ended up not having lunch because

I was getting so much information.

"I really enjoyed it. It gave me the opportunity to carry out a project in an

area I live and love."

BRIGHT FUTURE

The results of William's study suggested that the prevalence of mastitis depends on factors ranging from housing and staff quality to milking frequency.

The student also discovered that some farmers were unclear about the impact of antibiotic resistance on their operations.

And with farmers adopting a "trial and error" approach to reducing mastitis due to a lack of readily-available professional advice, William concluded that there is "clear scope" for veterinary pharmacists to work alongside veterinarians to support and educate farmers in the future.

He said: "I found that only 16 per cent

of the farmers I spoke to even knew what a veterinary pharmacist was. That's too low and I want to educate farmers in what we can do, not only for dairy mastitis, but for problems such as foot lameness, infertility and even beef, sheep and arable farming.

"The way I'd like to see it is having the farmer, veterinary pharmacist and the vet having a similar relationship to the patient, community pharmacist and GP."

With his project winning him the British Pharmaceutical Students Association research poster award and earning him the chance to present his research at the UK Clinical Pharmacy Association Autumn Symposium in Manchester, William is looking forward to an exciting future in his chosen specialism.

He already has plans to further his knowledge by embarking on a postgraduate course in the subject at Harper Adams University College, where he hopes to further his dairy mastitis research into diagnostic techniques and non-pharmacological mastitis management before ultimately opening up shop with his own veterinary pharmacy. +



Good experience: William behind the counter during his placement at RM Jones



Dairy delivery: William presents his award-winning project poster

Wizard of Oz

CARDIFF graduate Charles Cox is on the up Down Under after receiving a top Australian academic award.

Charles, a former Cardiff University Endowment Student who completed his undergraduate and PhD studies in Wales, had his

excellence acknowledged by the Australian Society for Biophysics, which awarded him the 2015 Young Biophysicist of the Year prize.

The accolade came with a \$500 prize and was presented by Society president Pierre Moens (pictured with Charles).



Group powers Parkinson's research

POTENTIAL beneficiaries of research into Parkinson's disease are taking the initiative and helping to drive research forward.

Under the Research Interest Group, those affected by Parkinson's and their family members meet with researchers to provide mutual support and help shape the direction and impact of academic work into the condition.

The Cardiff group, pictured below at May's meeting during

which Prof Monica Busse talked about her work on exercise in Parkinson's disease, gathers three-to-four times a year.

One of its main aims is identifying opportunities like BRAINinvolve (<http://brain.wales/get-involved/brain-involve>) which allow the public and patients to be at the forefront of designing research, not just as participants.

Parkinson's disease is a complex condition resulting

in symptoms ranging from the physical, such as reduced mobility, to psychological ones such as anxiety.

Diagnosis can be difficult as there is no conclusive test. There is no cure, but a variety of treatments can help, including drugs, physiotherapy and exercise and psychological therapies.

Cardiff University is playing an important role in conducting cutting-edge research into Parkinson's disease, including

exploring better drug treatments and how stem cells may help us treat and understand the condition better.

● For more information about Cardiff's Research Interest Group, please contact Senior Lecturer Emma Lane (LaneEL@cardiff.ac.uk) or Rachel Williams, Parkinson's UK Campaigns, Policy and Communications Officer Wales (rwilliams@parkinsons.org.uk or 0344 225 3715).



Hitting the right notes

Cardiff graduate and singing sensation Wyn Davies tells Script why his new role is setting the tone for Welsh language provision at the School of Pharmacy and Pharmaceutical Sciences...

What is your background with pharmacy as a discipline and within the School of Pharmacy and Pharmaceutical Sciences?

Having studied at the Cardiff School of Pharmacy and Pharmaceutical Sciences, I qualified as a pharmacist and have worked across community and hospital sectors, alongside singing with Only Men Aloud. I returned in a teaching capacity in September 2015 to develop the School's Welsh language provision.

What is your role in developing Welsh language provision?

It will be concentrating on patient-facing clinical and communication skills. During the developmental period we have been working closely with the Welsh language lecturers at the Schools of Nursing and Medicine.

How important is the role and what benefits does it bring for Welsh-speaking students?

I believe the role to be very important, not only for the potential employability of the student within Wales once qualified – as there are now roles being advertised where being a Welsh speaker is a necessity – but also to the 20 per cent of the Welsh population who are fluent Welsh speakers. Many of these individuals can only express themselves effectively through Welsh when discussing issues concerning their health; therefore being able to communicate using their first language with healthcare professionals can be very beneficial.

What impact might your role have on graduates who go on to work in Welsh-speaking communities?

The impact upon graduates has not been assessed as yet, but the hope is that by developing Welsh medium communication



and patient-facing clinical skills as an undergraduate, the students will be confident using the Welsh language in a professional capacity once qualified. This is important as the indications are that many fluent Welsh-speaking pharmacists who didn't use the language as an undergraduate don't always feel comfortable using Welsh professionally.

How has the number of Welsh-speaking students developed over time? Do you get many people wanting to learn Welsh from scratch?

The number has remained relatively steady over the past decade, but as part of the role we aim to increase it over the coming years. The University is very proactive in promoting the opportunities to develop Welsh language skills through its "Welsh for All" strategy. There is also a growing realisation amongst students that, as a healthcare professional working in Wales, even the most basic of Welsh can be beneficial to practice. In fact, one of our current students began to learn Welsh during his first year and is now at the point where he can communicate effectively in both social and professional situations.

Is this provision mirrored elsewhere in the country?

Alongside Cardiff University, the Coleg Cymraeg Cenedlaethol funds the role within the School. The Coleg funds numerous Welsh-language lecturers across Cardiff University and all of Wales' higher education institutions. There are now around 150

lecturers providing Welsh language provision within Wales' universities to students who want to study all or part of their under- or postgraduate degrees in Welsh.

How did you become involved with Only Men Aloud (OMA)?

I actually loosely have the School of Pharmacy to thank for my involvement with OMA. I only became aware of the group after coming to study for my undergraduate degree and met Tim Rhys Evans, OMA's musical director. After becoming my singing teacher, he asked me to join the then-amateur group in 2004. Twelve years later, we have released five studio albums, won a classical Brit award and have toured the UK, Europe and America.

What have been the highlights of being part of the group?

There have been many, but a few that stand out are performing at the opening ceremony of the 2012 Olympics, watched by around 900 million viewers; winning a classical Brit back in 2010; and receiving a Gold disc for our first studio album. A huge benefit of being part of OMA has been the opportunity to visit numerous countries around the world, taking a little bit of Welsh culture with us.

How important is singing – and music in general – to you?

Music and singing have always been a big part of my life and they continue to play an important role within Welsh culture. I hope to carry on performing for many years to come. +

MSc Cancer Biology and Therapeutics

A new one-year, full time postgraduate course starting September 2016

Programme Overview

Although cancer represents a significant global health issue in today's society, advancements in our understanding of the cellular and molecular processes underlying cancer have led to significant improvements in the way we treat this disease. This MSc is designed to provide graduates with advanced knowledge, understanding and skills in this rapidly advancing field. The programme will provide advanced teaching in the cellular aspects of cancer together with the molecular mechanisms underlying cancer development and progression. In-depth training will be provided in the area of cancer therapeutics, encompassing biomarkers and diagnosis, therapeutic targets, drug discovery and clinical trials and chemo/radio therapy, in addition to developing the student's theoretical and practical research skills. This course is aimed at graduates in life sciences and biomedical disciplines but will also be of interest to practitioners in relevant healthcare disciplines. It offers students a balanced combination of theory and research application that would serve as preparation for doctoral research or as a self-contained advanced qualification in its own right. Graduates from this course will have a breadth and depth of cancer-focused training, making them highly attractive candidates to start or continue a career within the healthcare sector and research establishments.

Programme Highlights

- A broad ranging course spanning basic molecular cancer cell biology through to translational research and therapeutics
- A course developed in collaboration with researchers, academics and clinicians and delivered by leading academic cancer researchers at Cardiff University
- An opportunity to undertake a research project in one of the internationally recognized cancer research groups at Cardiff
- An opportunity to study at Cardiff University, one of the UK's major teaching and research universities
- An opportunity to join a vibrant and friendly postgraduate community at Cardiff

For more information and to register an interest, please contact:

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