

Script

THE MAGAZINE OF THE CARDIFF SCHOOL OF
PHARMACY AND PHARMACEUTICAL SCIENCES

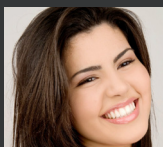
Issue 7
Summer 2015

SWEET SUCCESS

How bees on the
Redwood's roof are
helping in the fight
against hospital infections

COMBATING CANCER

Cardiff researchers play
key role in discovering
cutting-edge compound



OVERSEAS

2015 graduate
on how Cardiff
exceeded her
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CHARITY

Fundraising
students do
their bit for
Parkinson's UK



HISTORY

Cross-faculty
link helps
preserve
Pharmacy kit

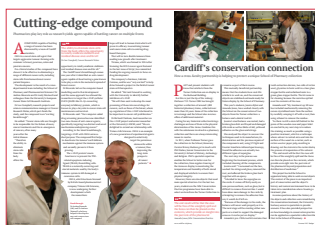
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Croeso/Welcome

from Head of School, Professor Gary Baxter

WITH the move to annual publication of *Script*, it is staggering to realise that a year has passed since I last wrote this column. Last year I wrote that academic year 2014/15 would be a significant year and it has been unusually busy and successful for the students and staff of the School.

In December and January we learned the outcome of the national Research Excellence Framework (see right). The overall quality of research undertaken in the University was rated in the top five of all UK universities. Many of the individual academic disciplines at Cardiff were also rated in the top five nationally and this includes Pharmacy, which was part of a very large unit of assessment (UoA3) which included dentistry, nursing and other allied health subjects.

93 universities submitted research to UoA3 and Cardiff's submission, of which Pharmacy made up the largest part, was ranked fourth in the UK. Of universities submitting to UoA3 with schools of Pharmacy, Nottingham and Cardiff were in joint first for quality of research. A new feature of this exercise was measurement of the "impact" of research – the wider societal benefit beyond the academic discipline. Cardiff University overall did very well, ranking second in the UK after Imperial College. In the case of Pharmacy, we submitted three impact cases for assessment: two were on the commercial development of antiviral drugs and one was on formulation of inhaled medicines. All three were commended as having outstanding world-class impact.

This external validation of the School's research excellence is important for many reasons. Core funding for research (at least in theory) is related to this assessment, but more important than money, research quality influences our reputational standing. In the spring of this year, the School's reputation for both teaching and research was recognised in two league tables.

The Complete University Guide 2016 ranks Cardiff second in the UK after Cambridge in Pharmacy and Pharmacology. Since Cambridge offers Pharmacology but not Pharmacy, this places Cardiff at the top of the growing list of Pharmacy schools in the UK. In the QS World University rankings by subject, Cardiff is one of the top 100 universities in the world for its Pharmacy and Pharmacology provision.

I write a lot about reputation and league tables – some might think too much – but they really are terrifically important as the level of competition among Pharmacy education providers intensifies.

There is no doubt that the absence of any effective controls on the opening of schools of Pharmacy – a barely credible fact when all other aspects of Pharmacy education and practice are regulated so heavily – brings us nearer to the point where there is an oversupply of graduates.

With the spectre of "market forces" now threatening the viability of some lower quality schools of Pharmacy, our strategy at the Cardiff School of Pharmacy and Pharmaceutical Sciences is very simple. We continue to recruit the very highest quality students, from all backgrounds and in moderate numbers and we provide them the highest quality education by the leading scholars in the discipline. The result is that this School's MPharm graduates are very well prepared for pre-registration training and professional practice.

They secure full employment,

succeed with a very high pass rate in the qualifying examination, are highly sought-after as pharmacists and a high proportion become the leaders of change and development in their generation. So there is a virtuous circle where success begets success: anything that threatens our ability to recruit the best staff and students is a threat to that sustained success. Our graduates, including the Class of 2015 graduating in July, can feel justifiably proud of their affiliation to one of the world's great universities and the UK's leading school of Pharmacy. On behalf of all the School's staff, I wish all the graduates of 2015 much success in the years ahead.

I told you last time that this year would bring General Pharmaceutical Society (GPhC) accreditation of our MPharm programme. The GPhC team of 11 visitors spent two days with us in April and interrogated almost every aspect of the School's activity. The visitors had a number of meetings with staff and students, heard presentations about the MPharm and our innovative teaching methods and reviewed a dossier of several hundred pages of evidence.

While official publication of the outcome will not come until later this year, the Cardiff MPharm has received the highest endorsement and full accreditation until 2021.

Finally, this academic year 2014/15 marks the 95th anniversary of the School's first student intake in 1919. Of course at the age of 95, our thoughts turn to reaching 100 in 1919/20. Plans are already taking shape to mark this occasion.

I hope the next few issues of *Script* will provide further information on ways in which friends and alumni of the School can contribute to this auspicious occasion. Please keep reading and give us your feedback.

Professor Gary Baxter,
Head of School

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





Students celebrate International Women's Day

FEMALE scientists sent out a positive message to up-and-coming graduates during the School of Pharmacy and Pharmaceutical Sciences' inaugural International Women's Day celebration in March.

Operating under the global event's "make it happen" slogan, the school's Student/Staff Panel (SSP) put together an inspirational afternoon of speakers who shared motivational stories about how women from all walks of life have successfully accomplished their goals and achieved their aspirations.

The day began with an introduction from Head of School Professor Gary Baxter and included talks from guests in influential positions, including:

- ✦ Elen Jones, Principal Policy Advisor at the Royal Pharmaceutical Society;
- ✦ Claire Blakeway, Vice President of the Heath Campus;
- ✦ Laura Carter, Women's Officer;
- ✦ Taslima Alam, Black and Ethnic Minorities Officer.

An engaged audience had the chance to hear from the

School of Pharmacy's Sarah Trenfield and Freya King, who shared their experiences of securing competitive pre-registration training posts in Industrial Pharmacy.

And Maryam Bham, who is studying for an MA in Islam in Contemporary Britain, shared her story of serving as a secondary school citizenship teacher, an early years foundation stage co-ordinator and a documentary consultant.

Sheatha Latif, a School of Pharmacy and Pharmaceutical Sciences graduate and former SSP member, told those present that Cardiff students were well-placed to draw inspiration from female role models.

She said: "We're experiencing exciting changes within the profession and I look forward to seeing what options open up to those of us who practice pharmacy in the near future.

"We are very lucky to have many inspirational female role models within the School of Pharmacy – make use of their experiences and expertise! Whether female or male, we all have the responsibility to raise the profile of our profession to ensure that other healthcare professionals and the wider public utilise us for our expertise."

Cardiff's research secures top-five ranking

University hits new heights thanks to hugely successful Research Excellence Framework performance

CARDIFF University's status as one of the UK's top centres for research has been confirmed after it was ranked fifth in the latest league table.

Under the 2014 Research Excellence Framework (REF), which sees the UK's four funding bodies assess academic research, Cardiff rose 17 places as it broke into the "golden triangle" of Oxford, Cambridge and London.

The performance makes

Cardiff the fastest-rising of the Russell Group's leading research universities and cements the institution's reputation as a world-leading centre of academic excellence.

Vice-Chancellor Professor Colin Riordan said: "This extraordinary achievement marks us out as a world leader and puts Cardiff on the map globally and nationally.

"We are an extremely ambitious and innovative university and we are not

afraid to set challenging goals.

"Achieving this outstanding result is a testimony to the excellence and hard work of all our staff. It is part of a very clear strategic vision for the University, one that will see our reputation rise globally to the benefit of Cardiff, Wales and the UK."

The results of the REF show the quality of higher education establishments' research and determine up to £2 billion of funding annually.

RECORD-BREAKING REF

- ✦ **5th** nationally on rankings based on quality
- ✦ **2nd** nationally based on impact, beaten only by Imperial College
- ✦ **5 out of 27** academic disciplines ranked first based on impact
- ✦ **6 out of 27** academic disciplines in the top five based on quality
- ✦ **15 out of 27** academic disciplines in the top ten based on quality
- ✦ **87 per cent** of research assessed as world-leading or internationally excellent

Dispensary

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



Science show's pollination station

THE importance of pollination was brought to life for thousands of visitors to last year's National Eisteddfod of Wales thanks to the efforts of students and staff from the School of Pharmacy and Pharmaceutical Sciences.

Working alongside the Universities of Aberystwyth, Bangor, Cardiff Metropolitan and Swansea, Arwyn Jones organised a large exhibition which was set up in the Science and Technology Pavilion at the Llanelli-based event.

The Cardiff contingent, which also included undergraduate scientists Lowri Jones, Naomi Elias and William Rees, played its part by running an exhibit focusing on the science of honey and

the detective work being undertaken by Prof Les Baillie, who is attempting to identify the antibacterial properties of honey collected from different parts of Wales (see *Redwood roof's queen bee*, right).

More than 18,000 people visited the stand during the eight days of the National Eisteddfod, allowing Arwyn and his team of undergraduates to engage the wider community with the world of science.

And as an added bonus, 25 samples of honey were handed in to the team to be taken back to the Redwood Building for analysis by Prof Baillie's laboratory.



Students continue charity crusade

PHARMACY students have once again done their bit for charity after raising £1,800 for Parkinson's UK.

Members of the Welsh Pharmaceutical Students Association (WPSA) collected the cash throughout the year by holding a series of fundraising events ranging from lab coat, toga and back-to-school socials to a

pharmacy speed networking evening, which allowed those in attendance to practise interview techniques and expand their professional contacts.

Bake sales and pub quizzes added to the total, while some chose to lace up their trainers and complete the Cardiff Half Marathon.

The fundraising

culminated with the WPSA Annual Ball (pictured left), which was held at the Angel Hotel and featured a speech from representatives of Parkinson's UK.

WPSA has previously been named Cardiff University's most charitable society and the group attempts to maintain this high standard every year as it strives to make a difference.



Close inspection:
Beekeepers can open each of the Redwood's hives to check on the health of the bees inside

Redwood roof's queen bee

Lecturer learns new lessons to play her part in bee-based research project

A **AS AN important member of faculty in the School of Pharmacy and Pharmaceutical Sciences, Dr Rebecca Price-Davies is a fixture in the Redwood.**

But while her expertise in the field of intravenous nutrition may make Dr Price-Davies a common sight inside the School's home, a recent addition to her duties has seen her swapping the building's lecture theatres for its roof.

The academic has taken on the lofty new office as part of a group of six volunteers responsible for looking after the bees required for the research of Prof Les Baillie, whose team is searching for new drugs capable of beating antibiotic-resistant bacteria in hospitals.

As a part-time beekeeper, Dr Price-Davies spends around

an hour a week tending to two hives on the Redwood's roof.

She told *Script*: "I'm a pharmacist and my work has nothing to do with bees or honey, but my husband and I had wanted to keep bees for a while and when Les Baillie was looking for people, me and five others volunteered."

Despite having an interest in bees, Dr Price-Davies had no practical experience in how to look after a hive and so called upon the expertise of the Cardiff, Vale and Valleys Beekeepers' Association.

Although in theory anyone is able to look after a hive, the sessions with the Association gave the Cardiff team a solid grounding in dealing with the nuances of caring for bees in more built-up areas.

Day-long sessions were combined with apiary visits and the group has benefited from ongoing advice.

Dr Price-Davies explained that the training has proved especially helpful in teaching the beekeepers how to manage swarms.

"Bees naturally want to swarm and it's a good thing as it means the colony is strong, wants to split and have a parent colony and a new colony," she continued.

"That is a positive thing for bees to do, but if you're an urban beekeeper that swarm has to go somewhere and that's when you see people with swarms on their cars and in their chimneys.

"By having the training we are in a much better position to spot when the bees are going to swarm and to do something about that."

With the key months for swarming of May and June having just passed, the Redwood beekeepers have had a good chance to put their new-found skills to the test.

In order to manage the size of the swarms on the roof, the team removed half of the population of one hive and placed it into another.

"Basically what we do is fool them into thinking they have swarmed," said Dr Price-Davies. "We end up with more bees which is great for us and

they are happy because they have reproduced their colony and nobody has had a pile of bees on their car."

With the demands of a full-time academic career speaking for the majority of Dr Price-Davies' working day, an added benefit is that her beekeeping duties only take around one hour each week.

Once on the roof, the team is able to open up either of the two hives and lift out the frames inside to inspect the bees and their brood, check for signs of disease and ensure there is enough honey to last through difficult periods.

The beekeepers also have to be wary of being stung, although Dr Price-Davies insists that a sting is nowhere near as bad as most people would believe.

But the risk of pain aside, the academic says the role is a pleasure – so much so that her, her husband and parents now look after no fewer than 10 hives between them.

"Weirdly, despite the fact there are 50,000 things in there that can sting you, it's actually quite calming and is a real break from my normal job," she explained. "We have a fabulous position with an amazing view over the city and into Bute Park.

"Working with bees is really interesting. I don't like honey, so I'm only interested in the bees. They are fascinating creatures and everyone knows not to get me started talking about them as I won't stop!

"The way that they organise their colony so you just have one queen who is in charge is amazing. The more I'm learning about them the more fascinated I am by them.

"Wild bee colonies aren't that common because of diseases and pesticides, so if people aren't keeping bees then it is really difficult for them to keep going. That's what interested me."

● **The bees are on Twitter!**
Visit @pharmabees to check out their latest tweets. +

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Despite the fact there are 50,000 things in there that can sting you, it's actually quite calming and is a real break from my normal job

Dr Rebecca Price-Davies, Redwood Beekeeper

Cutting-edge compound

Pharmacists play key role as research yields agent capable of battling cancer on multiple fronts

A COMPOUND capable of battling a range of cancers has been discovered by a team of Cardiff scientists.

OH14 is a novel stem cell agent that targets aggressive tumour-forming cells common to breast, pancreas, colon and prostate cancers.

Pre-clinical studies of the compound have shown it to be effective in eliminating a range of different cancer cells, including stem cells from human breast cancer patient biopsies.

The development is the result of a cross-departmental team including the School of Pharmacy and Pharmaceutical Sciences' Dr Andrea Brancale and Dr Andy Westwell and colleagues from the University's European Cancer Stem Cell Research Institute.

Dr Lee Campbell, research projects and science communications manager at Cancer Research Wales, which part-funds the study, said the compound is an "exciting breakthrough".

He added: "Cancer stem cells are thought to be responsible for the failure of many cancer treatments and the re-emergence of cancers, often many years after the initial disease.

"Therefore the ability to eliminate stem cells from the body offers the

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The ability to eliminate stem cells from the body offers the opportunity to totally eradicate stubborn and residual disease once and for all

Dr Lee Campbell, Cancer Research Wales

opportunity to totally eradicate stubborn and residual disease once and for all."

The Cardiff team's breakthrough comes one year after it identified an anti-cancer agent capable of deactivating a gene known to play a role in the metastatic spread of breast cancer.

Dr Brancale led on the computer-based modelling used in that development and the same approach has allowed the researchers to target the c-FLIP (cellular FLICE [FADD-like IL-1 β -converting enzyme]-inhibitory) protein, which is known to play a key role in cancer stem cell maintenance and survival.

Dr Brancale said: "Our computer-aided drug screening process has now identified two new classes of anti-cancer agents, specifically targeting two distinct and novel mechanisms underpinning cancer."

According to the latest breakthrough, targeting c-FLIP with OH14 serves a dual purpose. The compound first helps to deactivate the tumour's self-defence mechanism against the immune system and secondly prevents it from growing.

The c-FLIP protein's main function is to prevent the TNF-related apoptosis-inducing ligand (TRAIL) from killing cells. TRAIL is a naturally-occurring and crucial molecule used by the body's immune system to kill damaged or cancerous cells.

OH14, which has been licensed by British-based pharmaceutical company Tiziana Life Sciences, is now undergoing further development which the researchers

hope will lead to human trials that will prove its efficacy in sensitising tumour and cancer stem cells to existing drug-based therapies.

That will in turn disable tumours from seeding new growth after treatment.

Tiziana, which was formed in 2014 after licensing the BCL3 cancer agent featured in the last issue of *Script*, has committed funding for ongoing research to focus on drug development.

The company's chairman, Gabriele Cerrone, said he was "very excited" to help drive forward a project in the field of cancer stem cell therapeutics.

He added: "We look forward to working with the University to identify further inhibitors of c-FLIP.

"We will then seek to develop the most promising of these into novel drugs for cancers, such as those of the breast, where up-regulation of this c-FLIP is believed to be important in cancer cell proliferation."

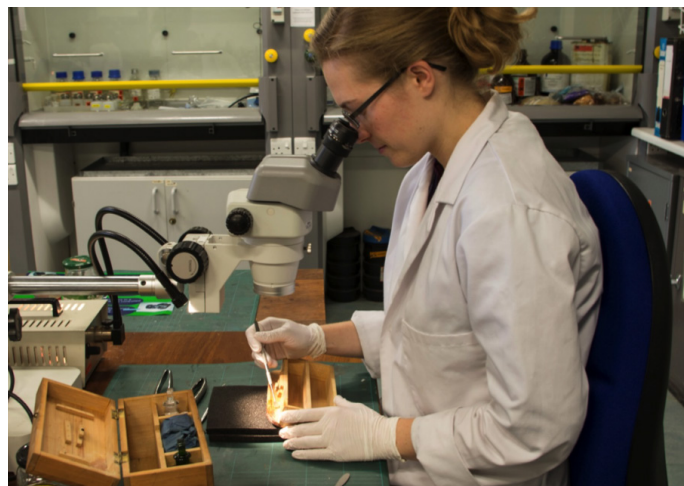
Dr Richard Clarkson, lead researcher on the c-FLIP project and senior researcher at the University's ESCRI, said: "We are delighted to extend our relationship with Tiziana Life Sciences. OH14 is an example of a new generation of experimental agents

designed to selectively target the pernicious stems cells within a tumour, thus improving the long-term prospects of cancer patients." +



Breakthrough:

Dr Andrea Brancale (left) and Dr Andrew Westwell, who have helped to develop the new anti-cancer stem cell compound



Cardiff's conservation connection

How a cross-faculty partnership is helping to protect a unique School of Pharmacy collection

PAST and present students will know that artefacts from the Turner Collection are on display in the Redwood Building.

But this is just the tip of the iceberg: Professor T.D. Turner OBE has brought together of around 1,000 historical pharmacy items, collected over more than 50 years. Some of the collection is in storage and the School also receives offers of additional material.

Caring for any historical artefacts brings challenges and one of them is the physical deterioration of the items. Combine this with the substances involved in a pharmacy collection and there are always interesting issues to resolve.

In 2011, when Professor Turner gave the collection to the School, Honorary Curator Briony Hudson got in touch with Phil Parkes, Senior Conservator in the University's School of History, Archaeology and Religion. Phil's specialist expertise enables the School to better care for the collection, from regular cleaning of the items on display to monitoring the temperature and humidity of both stored and displayed artefacts to ensure their physical integrity.

However, there are also objects that need more special attention. For the last two years, students on the MSc Conservation Practice programme have been able to select an item from the Turner Collection to

conserve as part of their course.

This mutually-beneficial partnership means that the students have real-life artefacts to work on, and the conserved objects are stabilised and made ready for future display by the School of Pharmacy.

This year's students, Jessica Byler and Amanda Jones, have worked closely with the School on the conservation of two objects from the Turner collection: a balance and a dental tool kit.

Jessica's steel balance was rusted, had a broken glass dish and frayed and damaged silk cords as well as blobs of old, yellowed adhesive on the glass and strings.

She analysed the object to uncover the techniques used in its manufacture, its deterioration and the previous repairs of the components and, using UV light and Fourier transform infrared spectroscopy, found the adhesive was actually two different types of superglue.

The next step was beginning the treatment process, which included cleaning all the components.

Jessica said: "I vacuumed out the box, washed the strings and glass, removed the rust, and adhered the broken glass back together with an epoxy.

"I decided to leave the superglue on the cords. It comes off fairly easily on non-porous surfaces, such as glass, but is difficult to remove from textiles. I would have done more damage to the cords by attempting to remove the adhesive than any it would do if left on.

"Because of the damage to the cords, the balance will never work properly as it is. The next stage will be creating either new parts or a stand to support the damaged areas so it can be put on display."

Amanda's pre-1950s tool kit contains four

tooth extraction devices, two rolls of cotton wool, glycerine in boric acid in a clear glass stopper bottle and carbolised resin in a green glass stopper bottle. The kit came in for cleaning because the resin has spilled over the contents of the case.

Amanda said: "My treatment up until now has included mechanically removing the excess crystallised resin from the surface by carefully scraping it off with a tool, then using ethanol to remove the residue.

"As there is still a stain left behind in the pores of the wooden case and paper label on one bottle, my next step is to reduce the staining as much as possible using a poultice treatment, which is a technique where solvent is carried onto and into the surface of the wood via a carrier, such as cotton wool or paper pulp, resulting in drawing out the stain into the carrier during the process of evaporation of the solvent.

"The end result will be that the case will be free of the unsightly spill and the focus can then be placed on the contents, which provide an insight into the past role of the pharmacist beyond preparation and distribution of medicines."

This project has led the School to appreciate being able to work on real objects. The context of the piece is an important part of conservation and the object's history and current environment have to be taken into consideration when choosing a treatment plan.

As some questions about the history of the objects and collection were raised during the conservation treatment, the University had easy access to specialists to provide answers. It has also provided perspective on how knowledge in conservation practice can be applied on a specialist collection like that in the School of Pharmacy. +



The end result will be that the case will be free of the unsightly spill and the focus can then be placed on the contents, which provide an insight into the past role of the pharmacist

Amanda Jones, MSc Conservation Practice

A breath of fresh air

Students take the lead as research reveals alarming absence of education among inhaler users

A LACK of knowledge about the proper use of inhalers may be affecting asthma sufferers in Wales, an undergraduate-led Cardiff research project has found.

Working under the guidance of Dr William Ford (pictured right), nine final-year MPharm students found evidence that patients do not know how to use their inhalers properly.

The study also discovered that practice nurses, rather than trained pharmacists, were often believed by patients to be the main source of information about inhaler use.

Dr Ford explained that a lack of knowledge about the differences between a metered dose inhaler, which squirts the drug into the patient's mouth, and a dry powder inhaler, which requires the user to generate the airflow, was behind the results.

"The technique is completely different, but patients tend

to treat them all as if they were dry powder inhalers," he told *Script*. "Because of that, metered-dose inhaler use is particularly poor in the patient population, but the dry powder one has some issues too."

As part of the project, the students spoke to patients about their use of inhalers as well as quizzing pharmacists about how they provide sufferers with advice.

And although the group went into the study expecting to find generally sub-standard usage, Dr Ford said the Cardiff contingent were surprised at just how poor the public's knowledge of inhalers is.

"We knew from the literature and from anecdotal evidence that patients' technique is very poor, so we pretty much knew we would find that," he said.

"What we didn't realise was quite how bad it was – it's really dreadful, so there's a clear, massive unmet need to improve patient compliance with



correct technique."

The importance of using an inhaler effectively is especially important when the device is being used as a prophylactic rather than a reliever.

While users of the relief form get instant feedback that the inhaler is working, those taking it as a prophylactic may be unaware that they are not getting any benefit.

Dr Ford said: "The prophylactic ones are really important because they will reduce the severity and progression of the disease.

"With the reliever, patients will feel that it's working and can manage the dose

themselves. When there is no physiological response to let you know you have taken the correct dosage, the chances are that you are not getting the dose to provide the prophylaxis and it is effectively rendering the medication useless."

Dr Ford is planning on building on the initial piece of research by tracking the correlation between factors such as whether patients are given different devices and how often they are receiving advice.

The next stage will be to identify where the advice is coming from so that the training can be optimised to ensure patients are receiving the correct guidance.

This could ultimately see students heading to surgeries or supermarkets to help train users with compliance.

Dr Ford said: "That sort of outreach service would give students exposure to patients and would ultimately benefit the patient population." +



We didn't realise quite how bad it was – there's a clear, massive unmet need to improve patient compliance with correct technique

Dr William Ford, Senior Lecturer in Pharmacology





Overseas focus: Jumana Nabulsi

2015 graduate Jumana tells *Script* why Cardiff was the perfect place to study Pharmacy...

Tell us a bit about your background.

I am Jordanian, but I grew up in the United Arab Emirates.

My family moved there when I was two years old and I studied at the International School of Choueifat in Sharjah before moving to Cardiff.

When did you decide that you wanted to study pharmacy?

It was in my last couple of years at school. I was always interested in the health care field and I loved sciences at school. I also enjoy working with people and helping others, which is why after carrying out my research, pharmacy seemed to be the perfect fit for my interests

and personality.

The fact that the profession in the UK was so different to what I had been exposed to in the Middle East and that it was moving forward was particularly enthralling for me.

What made you choose Cardiff University?

I wanted to attend a reputable school and Cardiff's School of Pharmacy is one of the top in the UK.

My brother studied Medicine at Cardiff and so I had heard so much about how lovely the city was from him.

After completing my UCAS applications, I decided to visit the UK and go to all the universities I had applied to to make up my mind.

At the end of my visit, my heart was set on Cardiff. I remember the process of applying being fairly easy and the School was so supportive all the way through.

I was fortunate enough to have had a special tour of Redwood organised for me when I came to visit, as I was unable to make it for the open days.

I thought that was so lovely and really appreciated it.

What parts of the course have you most enjoyed?

I really enjoyed the clinical and pharmacology aspects of the course. All the placements and patient contact we had was so enjoyable. Those were the experiences that made me think this is why I want to be a pharmacist.

My fourth year project was particularly memorable and enjoyable. I learned so much and absolutely loved it!

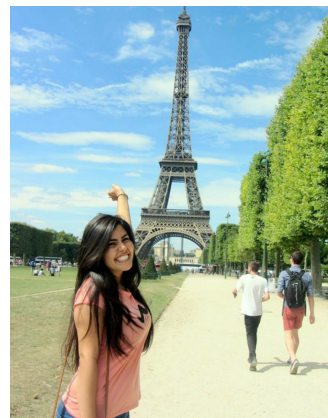
Being a member of the School's Undergraduate Student/Staff Partnership was one of the most rewarding experiences I've gone through. I will always be grateful to all those I worked with for making the experience so worthwhile.

Finally, getting the chance to go on my Erasmus placement in France was my favourite!

The most challenging part of the course was being so far away from my family.

How have you found life in Cardiff as an international student?

I really made a home out of Cardiff in the past four years.



I also consider myself part-Welsh at this point!

Cardiff will always have a special place in my heart. I was heartbroken when I moved out of my house in Cathays, which I had lived in for three years. I had no idea how attached I got until I started packing to move out.

Cardiff is such a beautiful and lovely city and I could not have gone anywhere better for my university experience.

It was so easy to fit in and get used to living here because it's so student-friendly and has got everything you need. It's just the perfect size as well and the people are so friendly and down-to-earth.

What are your plans for after you graduate?

I am moving to London after graduation to complete my pre-registration training at Barts Health NHS Trust.

I thought I would know what my career goal is at this point, but I am actually not entirely certain. I've really changed and grown so much over the past four years, and university has been so enlightening in so many different ways, so I've decided that I am just going to take it one step at a time.

I always thought I wanted to do clinical pharmacy and a huge part of me still really wants to, but I also want to do a PhD now and get into academia which is something that was always at the back of my mind.

I'll see how pre-registration goes and that should help me decide which route I would want to take. I could potentially end up doing both, because why not? Whatever I decide to do though, I would definitely come back and do it at Cardiff!

What advice would you give to other international students considering studying at Cardiff?

Do it! I cannot recommend it enough. I've had the best four years of my life at Cardiff. +

Students' success at Welsh workshops

STUDENTS from all four years of Cardiff's MPharm course have celebrated their participation in Welsh Medium Provision Communication skills workshops.

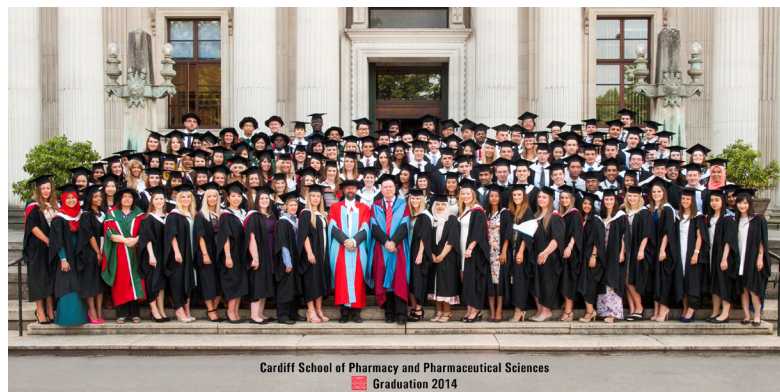
The sessions helped 31 students to enhance their consultation skills in Welsh and involved confidence-building activities in carrying out pharmacy consultations and using Welsh in the workplace.

The fourth-year workshop even gave students an opportunity to practise with real Welsh-speaking patients, discussing their ailments and medications and

learning to build a rapport with members of the public.

Following presentations by Dr Delyth James, Professor Arwyn Jones and Elliw Iwan from the Coleg Cymraeg Cenedlaethol, Professor Gary Baxter handed out certificates to the students during an event on May 6.

The workshops are an important part of the move to ground Welsh within the country's healthcare system. Practising pharmacists Elen Jones and Rhian Daniel worked with Dr James to deliver the sessions.



Worthy winners rewarded

THE School of Pharmacy and Pharmacological Sciences marked its 2014 graduation by recognising the efforts of outstanding students with a series of awards.

The winners of each category in both the undergraduate and postgraduate programmes can be found below.

UNDERGRADUATE PRIZE WINNERS 2014

Best Overall Performance in MPharm 1 (£100 School Prize)
Leah Stroud-Drinkwater

Best Overall Performance in MPharm 2 (£100 School Prize)
Darren Smith

Best Overall Performance in MPharm 3 (£100 School Prize)
Emily Powell

Royal Pharmaceutical Society Award for Best Overall Performance in the MPharm Programme (£200)
Bethan Jones

Richard Evans Prize for Best Overall Performance in Drug Delivery Throughout the MPharm Course (£150)
Nicola Hankey

Best Performing Graduated of the Taylor's/Cardiff Collaborative MPharm Programme
Abigail Shii Yi Ling

Certificate of Achievement for WPSA Chair
Grant Sugiura

Certificate of Achievement for SSP Chair
Sheatha Latif

POSTGRADUATE PRIZE WINNERS 2014

MSC CLINICAL RESEARCH Best Student
Hazel Harris

MSC CLINICAL PHARMACY Best Student
Leeanne Lewis

MSC PHARMACY CLINICAL PRACTICE (COMMUNITY AND PRIMARY CARE) Best Student (2012-14)
Caroline Lawrence

Developing Clinical Practice (2012-14)
Mark Griffiths

MSC INTERNATIONAL PHARMACOECONOMICS AND HEALTH ECONOMICS Janssen Cilag UK Highest Mark in the Residency Programme (£250)
Jaidev Anand

Cheplapharm Highest Mark in the Research Project (£250)
Gilbert Mwebaze

ALIUD/STADA Pharma Highest Overall Mark for the Two-Year Programme (£300)
Jaidev Anand



MPharm's valuable visits

A GROUP of year three MPharm students were treated to two site tours as part of the School of Pharmacy and Pharmaceutical Sciences' extra-curricular programme.

Under the leadership of Dr Charles Heard, the group visited St Mary's Pharmaceutical Unit, Cardiff and Simbec Research Ltd, Merthyr Tydfil.

Hosted by Catherine Talbot at St Mary's, the students viewed the manufacture under GMP conditions of a range of "specials" and extemporaneous formulations. They then headed to contract Phase 1 clinical trials specialist Simbec, where Dr Chris Jeans – a former BPharm and PhD student of the School – gave a tour of the volunteer recruitment, pathology labs, wards and biomedical analysis units.

Dr Head said: "It is useful for students to experience pharmaceuticals being prepared and used outside of the dispensary and for them to be made aware of career opportunities other than community and hospital pharmacy."

After the event, student Elan Ward commented: "This was an opportunity for us to see the roles for pharmacists within industry. For those of us unsure of which pharmacy career we would like to embark on in the future this allowed us to ask any questions and get a taste of the environment."

Alumni profile: Dr Oliver Castell

Script catches up with 2003 graduate Oliver, who has returned to Cardiff University – and the School of Pharmacy and Pharmaceutical Sciences – as part of the Serious Brain Power (SBP) Fellowship scheme...

What was the most enjoyable aspect of your undergraduate studies?

I particularly enjoyed my final-year research project where I spent time isolating toxic components from the plant species oleander. This contributed to a collective effort to produce an antidote to treat poisonings throughout the world caused by ingestion of the plant's leaves. This work fired my enthusiasm for the problem-solving and practical aspects of research. My education and work as a pharmacist has been useful in providing a wider context for how research can have a beneficial impact on society. Pharmacists are in a unique position among scientists to have practical experience and insight into all stages from the lab to the patient which can help ask the right research questions and recognise challenges, opportunities and bottlenecks along the way.

What has your career path been since graduating?

I worked in Hospital Pharmacy for a while with a particular focus on radiopharmaceutical and cytotoxic manufacturing, I also spent time as a clinical trials pharmacist before returning to academia for a PhD at Cardiff University. This was in microengineering, more specifically the field of microfluidics. I then went on to work on an industrially-focused project providing micro- and nano-technology solutions to challenges faced in the scientific industry, before moving to Oxford University for postdoctoral research in the development of high-throughput screening platforms for assessing membrane protein-drug

interactions. At Oxford I was also able to pursue my interest in more fundamental science and biophysics with single-molecule studies of membrane proteins in simplified artificial models of cells. I went on to work on a research project which saw me spend time in Stockholm on a collaboration led by Imperial College London, working in the field of molecular membrane engineering. In 2013, I was appointed a Cardiff University SBP Research Fellow and Lecturer in the School of Pharmacy and Pharmaceutical Sciences, where I am establishing my own lab.

What area have you specialised in?

I'm interested in researching the cell membrane and membrane proteins. The cell membrane is often viewed as a simple barrier which keeps the inside of the cell in and the outside out, but that's just the start and it is in fact responsible for many important roles in complex multicellular organisms like ourselves. Membrane proteins represent around a third of the proteins in living organisms and are the targets of around 60 per cent of currently approved pharmaceuticals. Almost all other drugs act

inside the cell, and will have to cross the membrane to reach their site of action, so the understanding of membranes and their constituent proteins is vital in our efforts to tackle disease. I am interested in working at the intersection of the biological and physical sciences to develop and apply new techniques to help improve our understanding of the membrane and how cells function.

What ambitions do you have for the future?

In addition to building experimental platforms to help us understand the fundamental biophysics of cellular processes, I am also interested in how we can use this knowledge to develop new materials and useful tools inspired by biology. This is the realm of synthetic biology. Biology very neatly exploits the chemical properties of lipids and proteins that make up the cell membrane to self-assemble complex architectures and structures, which respond dynamically to their environment. By understanding this chemical behaviour we can be inspired to build new synthetic materials with exciting properties. By shaping our ability to engineer right down at the molecular

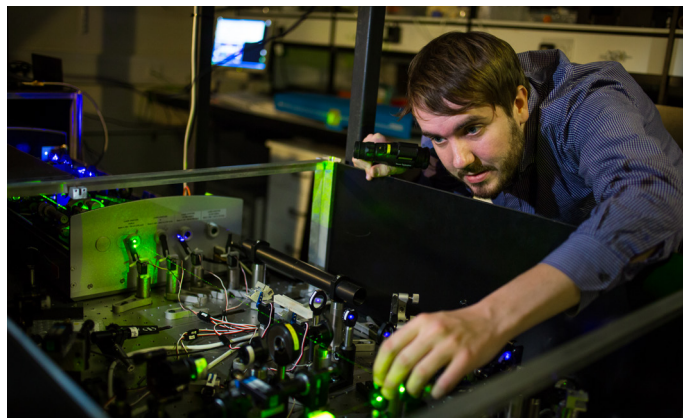
level, we hope to develop new, smart materials and also to design artificial cells, which will find applications in chemical manufacture, intelligent sensing and smart drug delivery.

Do you have any advice for current students or new graduates?

Don't be afraid to break the mould. Gain experience in relevant areas, pursue what you're interested in and focus on how your unique combination of skills and knowledge as a pharmacist can help you make a difference. There are many opportunities for pharmacists and many skills are transferable to new situations and problems. A strong scientific grounding, practical expertise, interpersonal skills and broad understanding from molecule to patient all make pharmacists well equipped to work in many areas both within and beyond the traditional pharmacy setting.

What hobbies do you have away from the lab?

I'm interested in music and music production and have managed to combine this with my scientific research, for example performing interactive science-themed music at Einstein's Garden at Green Man Festival. Similarly, I'm interested in photography and have had scientific photographs of my research featured in the National Museum of Wales' Research Images Exhibition. Since moving to Cardiff I've made the most of the beautiful scenery and have recently cycled the 140km Velothon Wales sportive and run the Cardiff Half Marathon. +





Studying at The Cardiff School of Pharmacy and Pharmaceutical Sciences

- **UG Pharmacy Honours Degree MPharm**

Email pharmacy-ug@cardiff.ac.uk or 02920 874080

- **PG Research**

Wendy Davies, davieswp@cardiff.ac.uk or 02920 876419

- **MSc in International Pharmacoeconomics and Health Economics**

Contact Helen Harron, harronh@cardiff.ac.uk

- **Postgraduate Certificate in Non-Medical Prescribing**

Dean Routledge, routledged1@cardiff.ac.uk

- **MSc/Diploma in Pharmacy Clinical Practice (Community & Primary Care)**

Leah Crowley, crowleys1@cardiff.ac.uk

- **MSc in Clinical Pharmacy**

Sukken Chan, chansk@cardiff.ac.uk

- **MSc/Diploma in Clinical Research**

Rhian John, johnrd@cardiff.ac.uk

For further information on these Postgraduate Taught Courses visit www.cardiff.ac.uk/phrmy/degreeprogrammes/postgraduate/index.html