UNSUNG HEROES OF SCIENCE

A place for breaking down barriers
Uncovering Unsung Heroes of Science

By Dr Kathryn Boast, STEM Outreach Officer

Who has history forgotten? Whose story has been left out of the textbooks? Whose work gets overlooked? Now, more than ever, these questions feel relevant. From climate activism to the Black Lives Matter movement and calls to decolonise the curriculum, young people are taking matters they care about into their own hands. In its second year, our ‘Unsung Heroes of Science’ competition received a record 56 submissions, testament to the motivation of our competitors to share and celebrate those people who have hitherto been excluded from conversations and history books.

The video competition – unique among Oxford colleges – challenges teenagers to uncover the story of a scientist who deserves to be better known by creating a two-minute video about them. With lockdowns and school closures creating an unprecedented environment, for the first time this year we opened up the competition to young people from around the world, to create a video on their own or in teams of up to three. The entries flooded in, with videos created by students living as locally as Oxford and as far away as New Zealand!

Selecting this year’s winners was once again the unenviable job of Prof. Alison Woollard, a Fellow in Biochemistry here at Hertford and Oxford University’s Academic Champion for Public Engagement with Research. The top prize for 2020 is to spend time behind-the-scenes at the BBC with Hertford College alum Fiona Bruce, although this will of course have to wait until some of the current pandemic restrictions are lifted!

First place was awarded to an incisive exploration of the work of Howard Florey and Ernst Chain, who turned Alexander Fleming’s discovery of penicillin into a drug that could be mass produced, saving millions of lives during the Second World War. Second and third prize went respectively to videos on fashion designer-turned-researcher and sustainability champion Suzanne Lee and pharmacologist and Nobel Prize winner Gertrude Elion. The International Award was won by a student from Bangalore who created a brilliantly witty video about Brahmagupta, an Indian mathematician who in the 6th century invented the concept of zero. One team who created a highly commended video on Dr Narinder Singh Kapany, the “father of fibre optics”, reached out to their Unsung Hero and were delighted to receive a reply congratulating them on their achievement.
A place for warm welcomes
Hertford’s New Lodge

By Dave Haxell, Head Porter

People often ask you where you were when significant events happened in history. I remember the assassination of JFK: I was playing with a friend in the house when my mother told me, and I remember her being upset. Elvis seemed less important (I was in Melbourne at the time). I remember when the Berlin Wall took a tumble – I was off the coast of Spitzbergen at the time (don’t ask) – and I thought we would embark on a new safer and happier world; that was a good one.

Now the question will be where you were when the new Lodge was constructed, refitted, updated and recycled. Our old wonky, split level Lodge with the wonderful hidden step designed to trip up the unwary was replaced by the Collegiate equivalent of the Star Ship Enterprise. Our one screen CCTV from which we ruled the world has now been upgraded into a vast reality wall, and a whole empire that was once hidden to our eyes has now opened up as surely and as brightly as a sunrise over the Serengeti.

Mind you, I have yet to see any Wildebeest in Holywell Quad – and that statement should not be taken as a challenge for any returning alumni, si vous plait.

Up to date computers – 3 in total (yes I know!) – now mean that we can keep abreast electronically with all aspects of college life and, of course, we can still ignore the emails just as well as we could on the old steam driven ‘puters. The office upstairs in what was rather quaintly described as the mezzanine level has been replaced by high ceilings, meaning that we can gaze heavenwards in wonderment and excitement just like the cathedral at Amiens.

However, the Buttery, which for those of you without a college map in your head lies approximately due north of the Lodge, has been commandeered and has now become my office. On more restful days I can gaze across Catte Street and into the windows of the Bod. It is here that we feed our psychopathic cat Simkin when he is not attacking students or tourists (two legs good, four legs better, cheers George) and make our sustaining brews of builders’ tea and coffee.

My grandmother once had a little barometer apparatus which looked like a Bavarian log cabin. It came with two doors in which little figurines, appropriately dressed in traditional alpine costumes, popped out of either the left or right doors to forecast rain or sun. Well, hold onto your lederhosen folks because we now have two doors into the Lodge! I can’t say it’s much of a weather barometer; more of a temper gauge: if one Porter emerges from a door it may mean a minor misdemeanour has occurred within the quad, but if two porters emerge from both doors at the same time then my word, look out! Someone has committed a felony of great magnitude!

So, here we are in a space age Lodge, lost in a very strange chapter of life with no students, staff or Fellows needing our services or comments (requested or otherwise) but rest assured your alma mater is in good hands.
A place for vital research
COVID-19 Rapid Testing Research

By Professor Zhanfeng Cui, Professorial Fellow in Engineering

Professor Zhanfeng Cui and Professor Wei Huang (synthetic biology), their students and researchers from OSCAR created a team with a strong engineering and design background to help combat the pandemic. They volunteered their time on top of routine work commitments and focused their efforts on fast, accurate and portable test kits. Lab work began in late January, and a working prototype was created less than 3 months. When the UK entered lockdown in March, the group received special dispensation to continue research in the now empty labs.

The gold standard PCR (polymerase chain reaction) test requires specialist training, equipment and materials. Tests are therefore limited to designated testing facilities and can only be performed by trained personnel. Global demand for reagents has led to unprecedented shortages. Together, these factors contribute to the relatively slow and low levels of testing that have been reported. Instead, the Oxford test uses specific primers and RT-LAMP (reverse transcription loop-mediated amplification) technology to amplify tiny amounts of viral RNA and RNA fragments – as few as 10-20 copies – to confirm presence of the COVID-19 virus from patient samples. RT-LAMP only requires a single heat treatment step, in place of the multiple cycles required for PCR, enabling much quicker results. This ‘one pot’ test can give results just 30-45 minutes after adding the sample, making it over three times faster than current methods.

The results are easy to read: a simple colour change from pink to yellow indicates presence of the virus. This type of test detects whether a person is currently infected and infectious. Importantly, it is also capable of detecting asymptomatic carriers and so is a useful tool as the UK and other countries continue to relax lockdown.

During the early stages of the outbreak, the prototype tests were validated using patient samples from Shenzhen Luohu People’s Hospital in China. As patient numbers rose in the UK, the refined test kit was rigorously validated with clinical trials at hospitals including the John Radcliffe in Oxford. Speed has been crucial in the response to the pandemic – for testing, lockdown and initiating a response. Having the team located in China and the UK allowed a coordinated, rapid response to begin research before the threat of COVID-19 hit the UK. As a result, the team was able to develop the test kit in only three months. In June, Prof. Cui and Prof. Huang’s group, with colleagues from Oxford University Innovations (OUI) celebrated two further milestones: CE mark certification and launch of a social enterprise spinout, Oxsed Ltd. The CE mark enables the test to launch commercially. Priced at around £20 per kit, it is hoped the tests (Oxsed RaVid Direct) will become widely available and will be a useful tool for informing safe quarantine procedures.

Read more about the COVID response online
A place for students to flourish
If I ask myself honestly what I appreciated most from my bursaries, the answer is maybe much more unromantic, and a lot more pragmatic – Oxford has too many problems to still be let off the hook as just charming. Having free money in my bank account made my life easier as a Hertford student, and it helped me to enjoy the late-night essay drives of studying English, often with the help of the corner-shop on Holywell Street, run by a very kind woman, who often let me have stuff for free when I forgot my bank card (equally, much money was spent there). Support made studying at Hertford better, and it changed my life to get to come here.

It was a big surprise to discover just how good education and life could actually be, and to have a new sense of my own abilities spring up around me when I arrived at Oxford (quite miserable, and looking for something new). Probably unlike most Oxford colleges that you might wander around or visit on the sunny Oxford open days, Hertford is truly unique and so lovely (arguably the best college you can find in the city) – it places empathy at its core, and is beautifully committed to its own gentle mythology and quiet history of activism, justice, and immigration – from Alain Locke to Neil Tanner.

It is a place we all get to call home, and which values the differences that we share: a giving, reciprocal, and codependent community of equally cared for hard-workers. Bursaries are a crucial part of achieving that, because they help the students to function at their best. More than anything, it was just a convenient gift to have all of that much-needed money be effortlessly deposited into my already mostly fine bank account for me by staff-members, and to be hoisted out of my overdraft each term (especially since I never even actually remembered to pay my bills on time, and was always hassling the Bursary, each Michaelmas, forgetting whether you’re supposed to pay online, or with the card machine...). It’s safe to say that you’re looked after at Hertford, and that it at least pays the students well as a college.

So, Hertford has it all, and gives everything it has. The best bits of Oxford, without the stuffy parts. I’ve always felt that Hertford highlights the best of the University, and makes those aspects brighter, and stand up in bold. Hertford is a honey pot: we all give to it; it funds what deserves; and it equally apportions itself to what it values – everyone, and every department. And, if Oxford’s reputation has suffered in terms of how it treats and pays its students, staff and academics, at least Hertford can know it’s high on the league tables that matter: access and outreach, in all of its forms. And also one of the only colleges that lets you sit on the grass in the front quad during Trinity.
A place for

perfecting your stroke
When the 2019/20 HCBC committee first met to discuss the upcoming year, no one could have predicted the period of turmoil that would ensue.

Our first challenge came with profuse rainfall throughout Michaelmas and Hilary terms which resulted in significantly reduced water time for all crews. Outings became few and far between but the challenges of teaching new members how to row alongside keeping crews competitive remained. Regrettably, this disruption resulted in the cancellation of Christchurch Regatta, Torpids and other regattas we had planned to compete in. Furthermore, government restrictions due to Covid-19 resulted in the remote delivery of Trinity Term and put a halt on club-based activities. Summer Eights was abandoned as the whole country went into lockdown.

Nevertheless, the passion and enthusiasm of members of the club has allowed us to continue to foster the growth of strong squads. We took measures to adapt and optimise our training in these unusual circumstances, many of which would not have been available without generous alumni support. We found that coaching of all squads at the OUBC tank in Iffley proved the next best alternative to outings, allowing us to continue to train novices and maintain the inclusivity of the club. Utilising this vital training resource would not have been possible without donations to the club. We have also used this period to review our equipment with the Men’s blades being refurbished thanks to the support from HCBC alumni.

With all club-based training suspended in Trinity term, we embarked on the challenge of maintaining the health and wellbeing of our rowers remotely in preparation for the return of conventional training and competing. The women’s side successfully participated in coached Zoom circuit training bi-weekly and are continuing training via video call in the vacation. Our ongoing Strava competition for current members and alumni has seen athletes rack up impressive hours of cycling, running and more and looks to set us in good stead for when term resumes.

The challenges faced last year have highlighted the huge impact that alumni donations have on improving the quality of training and inclusivity in the club, such as running tank sessions for beginners in lieu of outings. We are proud that we can uphold the inclusionary ethos of college across the club, with subscriptions free for freshers and affordable for other members. We have seen unparalleled commitment from members this year, especially from beginners who can count the number of outings they did this year on one hand! Despite last year being rather anomalous, I am confident that the club will advance into next season with a competitive campaign for future regattas having learnt much from the obstacles encountered this year.
A place for

lasting memories
Leaving a legacy

By Barry Ryan (Global Business, 2016)

The importance of higher education has never been more evident than in this time of pandemic, global economic disruption, political instability, and a general diminishment of trust in many core societal institutions. The research capacity of colleges and universities, the reliability of studies and information released by them, the continuity represented by such institutions in a time of crisis, all demonstrate how much we depend on the excellence – and integrity – of higher education. Beyond the immediate context, the future of this and successive generations will be built upon the education they receive from the finest colleges and universities. The fellows and alumni of such institutions have, and will continue to, powerfully impact the future of society.

Clearly, Hertford College is a perfect example of such a critically-important institution. Its long and distinguished history is impressive. Yet the future is never guaranteed – as the world and many corporations, governments, and even universities – have lately discovered.

A key means of fostering the longevity of outstanding educational institutions, however, is to plan and provide for long-term financial support. And one of the best ways to do this is through legacy giving by individuals who recognize the importance of the continuity of institutions such as Hertford College.

My own legacy commitment to Hertford arose from a long association with several remarkable individuals from the college, starting five hundred years ago (!) with William Tyndale. Tyndale’s affiliation with the Hertford and Oxford of old led, ultimately, to the formation of the William Tyndale Society, which I serve as vice chair. In turn, that society has held a number of conferences and other events hosted by Hertford, since the 1990s. Thus, I came to know the college and its people.

Those relationships grew and I ended up leading a number of summer programs, housed at Hertford, from American universities where I have served. The relationship, and the appreciation I held for Hertford, only grew and grew.

If you are like me, you have been approached by numerous worthy institutions for financial support of various kinds. For me, the conviction that Hertford was a compelling recipient of a legacy gift was irresistible. The accomplishments of Hertford’s fellows and alumni are made apparent every year and well-chronicled in college publications. Seeing what a difference Hertford College makes through each of them, continually renews my conviction that supporting the continuance of the college is a priority.

Being invited to become a member of Hertford College’s Warnock Society, populated by similarly-minded people, has been a real highlight of my association with the college.
A place for academic curiosity
I joined the Hertford graduate community in 2018, when I commenced my DPhil at the Oxford’s Smith School of Enterprise and the Environment. In my doctoral studies, I focus on the energy sector, exploring how companies, including electric utilities, adapt to the global low-carbon transition, and apply quantitative research methods, in particular, machine learning-based techniques to address my research questions. One of my keen research interests lies in studying the decarbonisation of African economies, stemming from my time when I worked as an economic adviser to the Minister and Permanent Secretary of Industrialisation and Trade in Namibia, and led a work stream on greening resource-rich countries’ extractive sectors at the Organisation for Economic Co-operation and Development (OECD) in Paris. Although I had already built a successful career prior to my DPhil, I was keen to pursue my academic ambitions, contributing to the literature on the energy transition. I have therefore greatly appreciated the opportunity to study at Oxford and Hertford. So far, my time here has been a joy. I got acceptance of my first paper at a top journal in my field, and am working on a number of forthcoming exciting projects that I believe can bring significant value to both the academic and practitioner communities.

Hertford has been an integral part of my positive experience at Oxford. I greatly value the funding I received from the UK Government and the University of Oxford to support my DPhil journey that has given me a privilege of research independence and freedom. This includes the 73 Scholarship from Mark Teversham and Peter Newman, two Hertford alumni, that has contributed to my college fees. Besides the financial support, it has offered an invaluable opportunity to connect to the donors who had studied at my department in the ‘70s and hear about their experience at the School of Geography, Hertford and Oxford in general. This personal touch to my funding has significantly enriched my experience at Oxford.

Moreover, I have cherished Hertford’s open-minded community striving for equality and diversity. Oxford can seem at times a daunting and overpowering place, and therefore having a support network in a form of college is all-important. In my second year, I served as an academic officer of the MCR, being responsible for managing the liaison between the graduate community and the college. In this capacity, I learned about Hertford’s ceaseless efforts to improve the academic experience for its existing students as well as to enable new deserving candidates to pursue their studies at Oxford. I also organised termly academic soirees, where graduate students from very different disciplines had a chance to present their research to their college friends in a safe and often non-expert, yet intellectually stimulating, environment. I have enjoyed immensely those pleasant engaging evenings at Hertford and received a lot of positive feedback from the MCR members. Such warm and welcoming events are at the heart of Hertford’s life.
Facts and figures

Donors by Matriculation Year
Where do donations go?

**TOTAL**

£1,347,529.34

**Student Support**
Bursaries and scholarships, outreach and the Hardship Fund.
£187,803.06

**Unrestricted**
Wherever the need is greatest. This year being bursaries and scholarships, teaching and research and buildings.
£453,631.20

**Teaching & Research**
Junior Research Fellowships, the library, teaching fund and research grants.
£264,180.46

**College Life**
Buildings and heritage, sports, music and the JCR and MCR.
£441,914.62

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