BA2

THE MAGAZINE FOR ALUMNI AND FRIENDS OF THE UNIVERSITY OF BATH
ISSUE 32

BATH BREAKTHROUGHS

Biotech

THE INCREDIBLE TECH UNLOCKING A NEW ERA OF HEALTH AND WELLBEING

UNIVERSITY OF BATH

Welcome

Welcome to your alumni magazine! We're excited to bring you the latest from our incredible community. In this issue, you'll find stories of innovation, resilience and creativity – celebrating the achievements of alumni, students and staff. Whether it's breakthroughs, milestones or moments of inspiration, this magazine is your window to the past, present and future of Bath.

We hope you enjoy the issue. Let us know your thoughts by emailing advancement@bath.ac.uk

***BA2* Issue 32**
University of Bath
Advancement Office
Claverton Down
Bath BA2 7AY

Alumni enquiries
+44 (0)1225 386824
advancement@bath.ac.uk

facebook.com/bath.alumni.community
@uniofbathalumni
linkedin.com/groups/91204/

Editorial team
Jodie Tyley
Frances Coleman

Design
Steers McGillan Eves

Photography
© University of Bath, unless otherwise stated.

The opinions expressed in *BA2* are those of the contributors and not necessarily those of the University of Bath. All content correct at the time of going to print.

Contents

On Parade

Community

Highlights from the University of Bath

1974 UAU National Football Champions

A reunion of champions

1974 was particularly memorable for the University of Bath men's football team; it was the year they became UAU National Champions.

Eight of the original 1974 team, along with their partners and other alumni, returned to the University to mark the 50th anniversary and to see their teammates once again.

"Tom and Ivor had a remarkable impact on us. They had total conviction and told us from the start we were going to win the UAU Cup," said captain of the '74 squad, Andrew Hobden, speaking of former Director of Sport, Dr Tom Hudson, and football coach, Ivor Powell. "How I wish they could be here to share this day with us."

A chance encounter

"I graduated from the University of Bath in 1980, and my husband, Duncan Battman, followed me in 1982 – both mathematicians. We've been married since 1987, live in the North of England near sunny Manchester, and frequently visit Scotland for our holidays.

"Earlier this year, we went to visit an open garden in Rockcliffe, Dumfries and Galloway, and we were shown around an amazing garden which was designed, built and maintained by a lovely couple, Julian and Theodora Stanning. To our surprise, we discovered they were also Bath alumni, having graduated from horticulture in 1971.

"As mathematicians, we were amazed at the improbability of it all!"

Bernie Battman
(BSc Statistics 1980)

Connecting through our condition

"I met Richard in 1996 when we lived in the same accommodation at the University, and we married before graduating.

"I've suffered with arthritis since the age of ten and we were devastated when our daughter was also diagnosed with the condition. Richard went back to his roots in biology to find out why so little had advanced with Juvenile Idiopathic Arthritis (JIA) research. We also founded the Juvenile Arthritis Research charity.

"When a new volunteer, Suruthi Gnanenthiran, applied to join us, we were amazed to discover that she too had studied at Bath. We have a giggle about some of our memories – in particular the challenge of attending a university situated on the top of a big hill when you have arthritis! We've also discovered that the inspiring England and Team Bath netballer, Summer Artman, also has JIA.

"It's rewarding, and somewhat unbelievable, to connect with Bath alumni in this way."

Rebecca Beesley
(BSc Business Administration 2000)

Alumna peaks with pride

"My motivation always comes from within; that's the key to being a safe mountaineer."

It's been Adriana Brownlee's dream to climb Mount Everest since she was eight, having written a letter to herself in primary school detailing her lofty passions. She spent the next 12 years working to achieve this – and did just that at the age of 20.

But her ambition quickly reached new heights. "After summiting Everest I knew I couldn't end it there," she tells us. "My mind was racing thinking about the next climb."

On 9 October 2024, Adriana became the youngest woman to summit the world's 14 mountain peaks over 8,000m high – reaching this milestone at the top of Shishapangma, China. "I felt an overwhelming rush of pride and achievement," she recalls.

During her time at Bath, Adriana juggled preparation and studying – squeezing in workouts around her lectures. "The facilities were amazing for my training," she reminisces. "They definitely helped in my journey to summiting Everest!"

Share your stories with us!

University of Bath
Advancement Office
Claverton Down
Bath BA2 7AY

advancement@bath.ac.uk
bath.alumni.community
@uniofbathalumni

An on-campus proposal

For Bath alumnus and musician Keian Barton, known as Alto Key, it seemed only right he propose to his now fiancée Georgie Hunter-Cozens at the place where their love story began: Claverton Down campus.

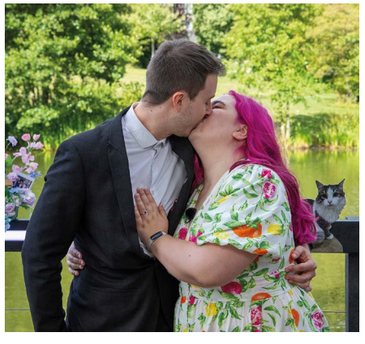
Having met while studying mathematics, they quickly began spending time together outside of the library. "We had a lot of mutual friends and interests including volunteering," Keian tells us. "Naturally, we gravitated towards each other."

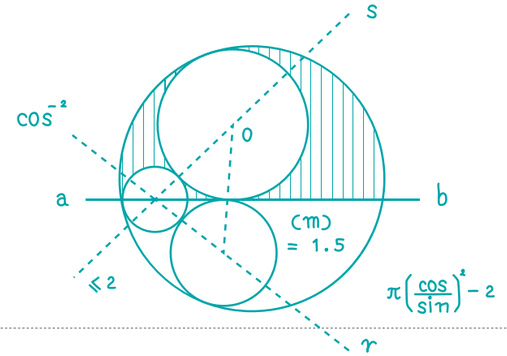
Knowing he wanted to do a slightly unusual proposal, it was an easy decision when the producers behind Channel 4's *Will You Marry Me?* got in touch.

The show helps lovestruck Brits create elaborate proposals and a plan was hatched that would see Georgie visit campus under the guise of reviewing an escape room for students.

"It was very exciting," recalls Keian. "Everyone put a lot of love into it, but it was hard to keep it a secret!"

The proposal, which took place next to the campus lake, was perfect. "The University will always be an important place to us," says Keian. "We wouldn't be 'us' without it!"





Research

Maths grant will lead to faster, more reliable medical scans

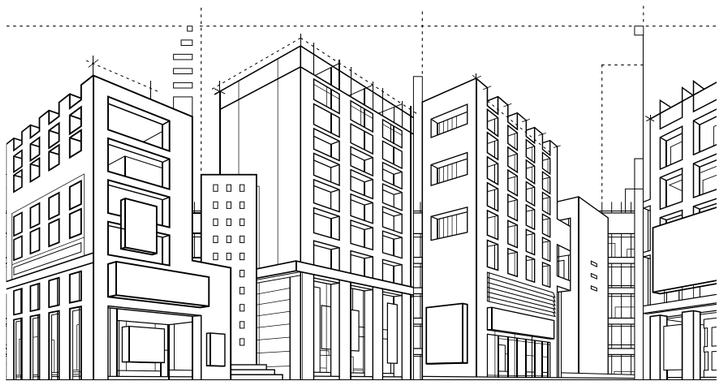
A resolution to a long-standing maths problem that limits modern technologies may finally be on the horizon with the help of new funding. The European Research Council Synergy Grant has awarded £7.2 million to three research institutions, including the University of Bath.

This funding will be used to tackle an issue in computational maths that hinders the precision, speed and reliability of high-frequency acoustic and electromagnetic waves. These waves underpin many communication and imaging technologies, including WiFi, mobile phones, radar, sonar and medical imaging.

The six-year project aims to design new algorithms to simulate high-frequency waves that would be made available in open-source software.

Community

Regeneration by the riverside



The University and Bath & North East Somerset (B&NES) Council have started exploring a collaborative vision for the future of Bath Quays North.

This 2.2-hectare brownfield site in the heart of the city is part of the Bath Riverside Innovation Quarter – an area developed with enterprise, research and innovation at its core. While still in its early stages, the regeneration project could create a new dimension to a range of university activities and aims to bring important economic activity to Bath.

"This agreement marks a significant milestone for the city and University," says Councillor Paul Roper. "These commitments set out the case for our city's anchor institutions to work in partnership with business, the public and third sectors to drive inclusive economic prosperity, create high value jobs and enhance public wellbeing."

As conversations develop about new possibilities, the University and B&NES Council will be keen to explore opportunities and engage with potential partners, residents and other stakeholders.

Community

New scholarship programme launched

Student satisfaction, belonging and employability are at the heart of our exciting new student-support initiative: the Claverton Scholarship Programme (CSP).

The Programme, open to first-year Bath Bursary recipients, has been developed to support and encourage students from under-resourced backgrounds to make the most of opportunities at the University.

As part of CSP, scholars will complete the Claverton Employability Passport, focusing on employability, inspiring and enriching experiences, and personal and professional development. The scholars receive additional funding on completion.

The first group of Claverton Scholars were announced at a celebratory launch event in March.

"I feel the CSP will better equip me with meaningful life skills through inspiring experiences, as I'll have the opportunity to engage in networking events and participate in training," says one scholar. "The Programme will make me feel part of a close-knit community and make Bath feel more like a second home."

TOP 150

Bath is in the top 10% of universities globally in the QS World University Rankings 2025.

Research

£11 million for new Mental Health Research Group

According to a survey by NHS England, 20% of children aged eight to 16 had a probable mental disorder in 2023 – a picture that is mirrored in Bath and North East Somerset.

To help address the needs of the region, the University has been awarded £11 million by the National Institute for Health and Care Research to establish a Mental Health Research Group (MHRG).

"This funding will have such a positive impact," says Deputy Director of the Bath MHRG, Professor Ailsa Russell. "It will help us discover better ways to support children and young people in improving their mental health and wellbeing."

Community

Alumni feature on Bath podcasts

Acclaimed science journalist and broadcaster Roland Pease recently welcomed Bath alumni onto three special episodes of the University's Research with Impact podcast.

He spoke with structural engineer, Claire Smith, founder of pharmaceuticals company Sigma, Dr Bharat Shah CBE, and experienced technology leader, Meri Williams, to examine what impact looks like in their industries. Listen online via **bit.ly/RWI-alumni**

Our School of Management has also played host to an impressive cohort of alumni on its podcast Management Meets. Recent guests include CEO of software development company Cirata, Stephen Kelly, and Chair of the Football Association, Debbie Hewitt MBE. Visit **bit.ly/management-meets** for more.

Research

In a nutshell

Tell me something completely bananas!

You've come to the right place.

Do you overlook the lone, single bananas at the supermarket? Do you find yourself reaching for a neat bunch instead?

Guilty! Individual bananas seem slightly less a-peel-ing. I can't explain why.

You're not alone. Single bananas have been shown to account for the highest amount of both climate impact and food wasted at retailers.

Separated from their bunch by shoppers or by transport, single bananas are part of the problem of picky consumer preferences that helps to account for 131 million tons wasted in the retail sector.

That's sad. I wonder how the bananas feel – I've heard they bruise easily.

Do not fret! The plight of the single bananas may soon be over.

A recent experiment by researchers from the University of Bath, RWTH Aachen University and Goethe University Frankfurt, has shown that, when faced with a pile of loose, unsold single bananas, retailers can motivate customers to buy overlooked fruit by giving it emotional appeal.

A simple sign showing a banana with a downturned mouth and the message, 'We are sad singles and want to be bought as well' encouraged compassion in customers who were moved by the idea of abandoned bananas longing for a home.

This 'sad singles' signage produced better results than that of 'happy singles', or messaging with no emotion.

Thanks a bunch for that information! So, what's next?

According to Dr Lisa Eckmann from the Bath Retail Lab at the University of Bath, "the findings have very practical applications for boosting sales and reducing food waste from our supermarkets."

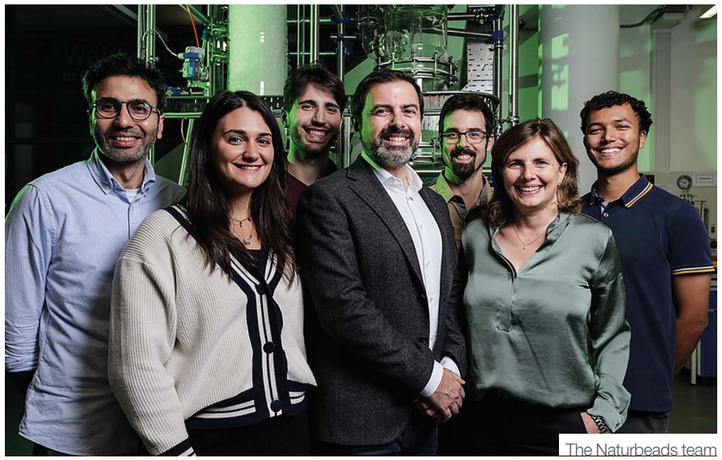
She continues: "Labelling bananas with sad facial expressions sounds cute, but there's very much a serious purpose. The study shows it's an easy, low cost, effective intervention for retailers and policymakers."

Well, it sounds like this research is ripe for the taking!

92%

of first-degree graduates are in high-skilled employment 15 months on, according to the HESA Graduate Outcomes Survey.

Research



The Naturbeads team

Bath is helping to drive fossil-free future

A new UK Alliance for Sustainable Chemicals and Materials (UK ASCM) has been launched to advance the country's sustainable chemicals and materials sector.

The new initiative – of which the University's Institute of Sustainability and Climate Change (ISCC) and the Innovation Centre for Applied Sustainable Technologies (iCAST) are a part – aims to create environmentally responsible and economically resilient supply chains.

"The UK ASCM underscores the essential role of universities and innovation hubs in driving sustainable chemical innovation," says Professor Matthew Davidson, Executive Director of the ISCC and iCAST. "It represents a pivotal opportunity to accelerate the UK's transition to a fossil-free future."

Bath researchers are already championing this mission, with spinout company Naturbeads developing biodegradable cellulose 'microspheres' to replace microplastics in a range of products.

Community

Centre for Development Studies marks 50 years of research

50

The Centre for Development Studies are inviting present and former staff, students and associates to join an alumni conference on 11–12 September 2025 on campus.

The event will mark 50 years of international development research in a world of crises as well as opportunities.

Registrations close 17 July. Visit **bit.ly/CDS-50-event** for more information.

Research

BUZZWORDS

What our researchers are talking about

Red Monster

An international team that includes Bath's Professor Stijn Wuyts has identified three galaxies of monster proportions, indicating that the formation of stars in the early Universe was far more efficient than previously thought.

Piezoelectric

Bath researchers have created a material for treating central nervous system injuries and neurodegenerative diseases. The 3D piezoelectric cellulose composite acts as a 'scaffold' into which neural stem cells can be delivered to injury sites.

Mental load

New research reveals that mothers bear the brunt of the 'mental load', managing seven in ten household mental load tasks, from meal-planning to arranging activities.

Vicarious pride

Personalised gifts create lasting emotional connections and enhance self-esteem, new research shows. It creates a feeling of 'vicarious pride' on the part of the recipient.

Missingness

According to a new study, patients with ADHD are 60–90% more likely to miss doctors' appointments, referred to as 'missingness', posing a significant concern for their care.

5 things about Nigel Owens MBE

The world-renowned rugby referee joins our alumni community of honorary graduates.

01

Referee turned Doctor of Health

"The last time I was in Bath refereeing I was booed not clapped so it's very much appreciated," Nigel told graduating students at a ceremony in Bath Abbey. Donning a gown himself, Nigel received an honorary degree of Doctor of Health for his incredible rugby career and tireless work to raise awareness of mental health issues. "Thanks for this great honour here at this wonderful venue and from the wonderful University that is Bath as well."

02

Breaking down defensive lines

Nigel was the first openly gay referee in rugby and has spoken openly about his struggles with mental health and addiction. "I don't like normalising mental health, I wish it wasn't normal, but it is," he said. "It will touch a lot of people at some stage in their lives and the more we talk about it and embrace those challenges, the more we help ourselves and others who find themselves in similar situations."

03

A career worth scrumming over

As one of the most respected referees in rugby history, Nigel officiated over 100 test matches, including the pinnacle: the 2015 World Cup final. He told us: "If it wasn't for the great sport that rugby is, but more important than that – the people in the sport – then I wouldn't be who I am today." Nigel retired from rugby in 2020, swapping lineouts for livestock on his cattle farm in his home village Mynyddcerrig, Wales.

04

Whistle and wisdom

Nigel began refereeing in 1987 after his sports teacher suggested he might make a better referee than a player when he missed a crucial conversion. He went on to convert hearts and minds in his 17-year career. "Sometimes opportunities come along when you least expect it and when they do, grasp them with both hands and give it your best," says Nigel. "That's what refereeing was for me – taking those opportunities, and I enjoyed it. It's important you do something you enjoy, where you're allowed to be yourself."

05

Advice to Bath grads

As well as seizing opportunities, his advice to new graduates was to remember those who had supported them along the way, and not be afraid to ask for help when needed. "Don't try to be perfect because if you do, the perfect will become the enemy of the good," Nigel added. "What is achievable is to become a good person. To create a loving and caring home, a workplace where people can be themselves, a university where people take their authentic selves to work, to study."

Biotech

BATH BREAKTHROUGHS

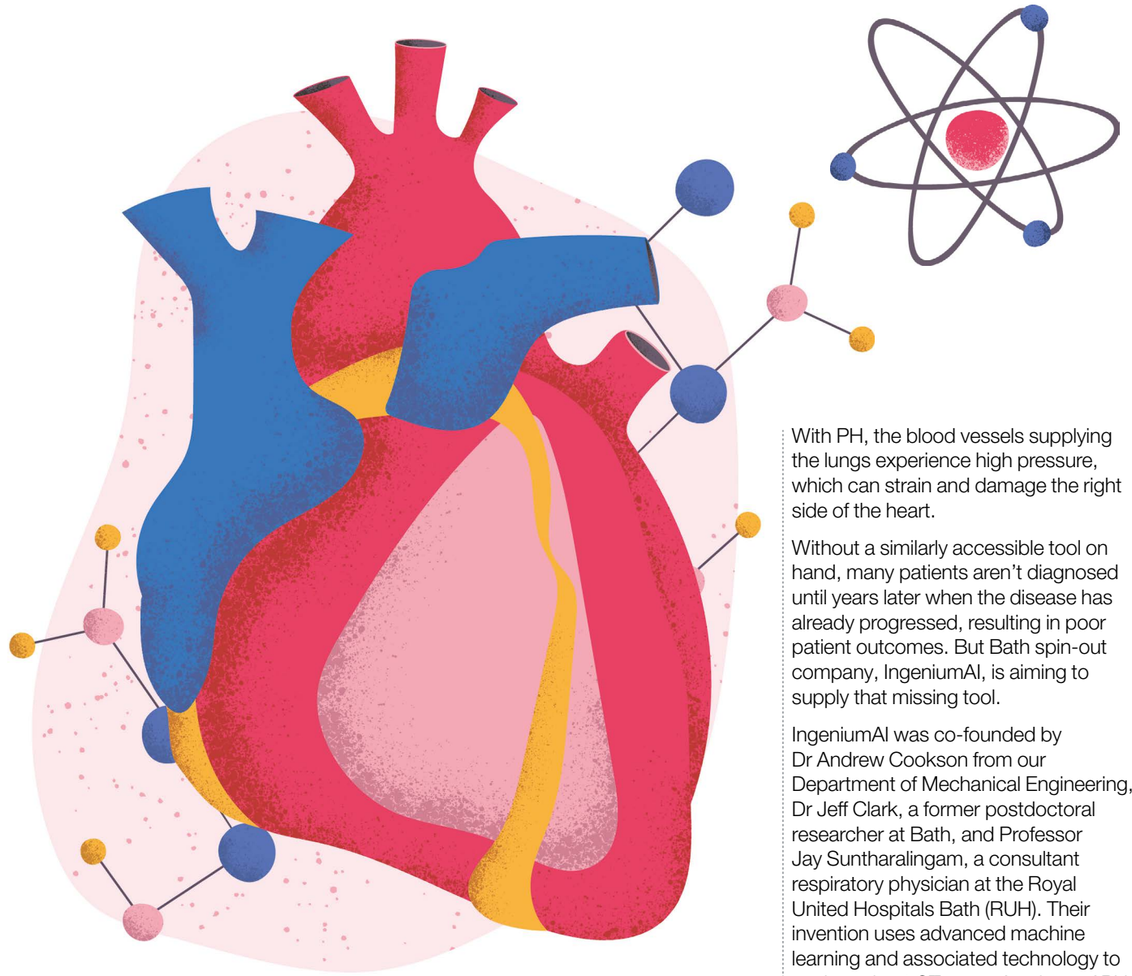
The incredible tech unlocking a new era of health and wellbeing.

Words by **Frances Coleman** and **Jodie Tyley**

For centuries, Bath has been a city synonymous with health and wellbeing. Its famous thermal waters drew ancient Romans seeking healing, and today it is a centre of modern medical innovation.

Researchers at the University of Bath are engineering technologies that will transform the future of human health. What if your clothes could help you recover from an injury? Could we control a computer just by thinking? What if doctors could measure your brain waves to detect dementia early?

These are some of the breakthroughs happening right now in Bath. Here, we explore seven incredible ways technology is augmenting the human body – blurring the line between biology and innovation to unlock a new era of wellbeing.



New AI software speeds up diagnosis

If you've ever been to see the GP, you likely know the familiar squeeze of a blood pressure cuff; the doctor keeping a beady eye on the numbers as you wonder if the cuff can get any tighter.

This routine test can help identify hypertension – or as it's more typically known, high blood pressure – a common condition which occurs when the pressure in the blood vessels is unusually high.

Pulmonary hypertension (PH), however, is a rarer and lesser-known disease that can be much more challenging to identify.

> "The software ensures patients are on the right path sooner"

With PH, the blood vessels supplying the lungs experience high pressure, which can strain and damage the right side of the heart.

Without a similarly accessible tool on hand, many patients aren't diagnosed until years later when the disease has already progressed, resulting in poor patient outcomes. But Bath spin-out company, IngeniumAI, is aiming to supply that missing tool.

IngeniumAI was co-founded by Dr Andrew Cookson from our Department of Mechanical Engineering, Dr Jeff Clark, a former postdoctoral researcher at Bath, and Professor Jay Suntharalingam, a consultant respiratory physician at the Royal United Hospitals Bath (RUH). Their invention uses advanced machine learning and associated technology to analyse chest CT scans for signs of PH. The software operates seamlessly in the background, analysing scans and integrating effortlessly into existing clinical workflows.

"The software doesn't replace the need for the definitive test," explains Andrew, "but it ensures patients are on the right path far sooner. In some cases, diagnosis could drop from two years to just a few weeks."

The company began a £300,000 Innovate UK-funded project in 2023, with plans to trial the software in real clinical settings. The long-term goal is to expand the technology to other conditions.

This latest project adds to the already thriving collaboration between the University and the RUH, with 12 joint projects currently in the works including the development of AI-assisted blood clot detection.

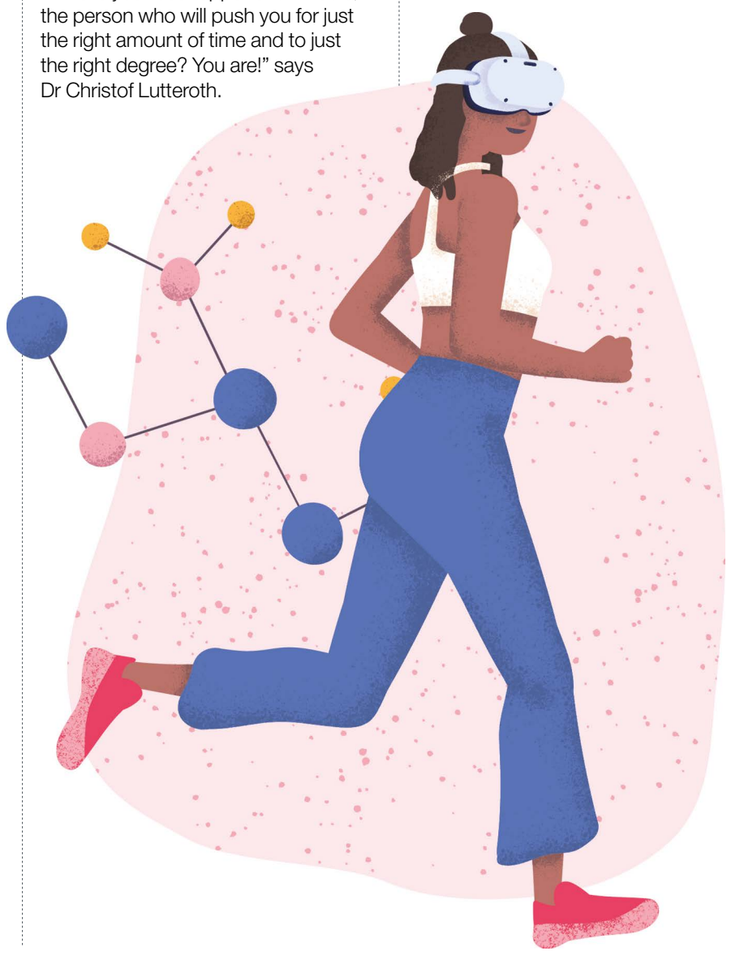
Exergaming: turning exercise pain into pleasure

Can playing video games improve your fitness? Bath research has shown that exergaming – where gameplay requires physical movement – offers real health benefits, from boosting cardiovascular fitness and mental wellbeing to managing Type 1 diabetes.

The challenge, however, is keeping players motivated long-term. Many start strong but drop out when the novelty wears off or the difficulty ramps up. So how can exergaming developers strike the right balance between fun and fitness, without players hitting pause?

"Who is your best opponent – that is, the person who will push you for just the right amount of time and to just the right degree? You are!" says Dr Christof Lutteroth.

> "The AI will figure out how a person is feeling"



He led the team that discovered static bike users get fit twice as fast when they race against versions of themselves rather than pedalling alone or against strangers.

They developed a game called Race Yourselves! Available on the Meta Quest Store, it works with any VR headset and static bike, and pits racers against 'ghost' versions of themselves. "When you race against versions of yourself from yesterday, last week, last month or last year, you have a realistic chance of winning," he continues, "which inspires you to try harder and helps you avoid the stigma of losing."

Race Yourselves! uses sensors in the VR headset and AI to gauge pedalling speed and allow players to avoid obstacles and collect rewards using their head movements. The team is now developing a game platform to enable racers to challenge others remotely and also plans to add a virtual coach.

"Through a wristband, the AI will figure out in real-time how a person is feeling – overwhelmed and frustrated or motivated and ready for more," Christof adds. "The coach will then adjust the game to keep the exercise session fun and motivating."

The rewards of exercise are well documented, but did you know it can also reduce cancer risk and support treatment? Dr John Campbell from our Department for Health says one of the largest studies to date showed physical activity reduced the risk of up to 13 different cancer types, including lung and breast cancer.

"Your immune system responds instantly to exercise. For example, running up the stairs, the immune cell count in your blood increases," he explains. "After exercise, these cells look for damaged tissues around the body to repair and we think that's involved in the anti-cancer response to exercise. Your muscles also release proteins and there's evidence that these can give us a younger-looking immune system to help us fight cancer better."

So, whether you're leveling up in a virtual world or breaking a sweat in a park run, the science is clear: exercise is a win for your health.

Dementia detection goes digital

"Dementia is currently diagnosed too late," explains Dr George Stothart, a cognitive neuroscientist based in the University's Department of Psychology, "typically up to 20 years after the disease has first begun."

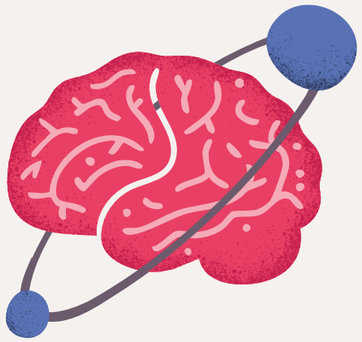
Dementia is one of the most heartbreaking illnesses to watch take hold of a loved one, with a late diagnosis having particularly devastating consequences as the disease has often damaged the brain beyond repair.

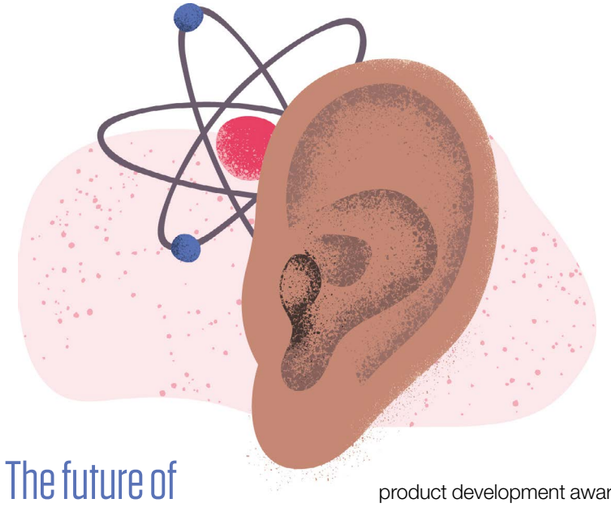
But the invention of an advanced new test, known as Fastball, can potentially reduce the time to diagnosis and improve patient prognosis as a result.

Developed by a team at Bath alongside researchers at the University of Bristol, Fastball is a non-invasive test which measures patients' brain waves while they watch a series of flashing images on a screen. The technology requires users to wear an electroencephalogram (EEG) headset, which is linked to a computer for analysis.

"Quicker, more accurate ways to diagnose dementia are greatly needed so that patients can get treatments earlier and families can plan better for the future," says George.

The project has been awarded £1.5 million from the National Institute for Health and Care Research to embed Fastball in an NHS memory clinic.





The future of communication

Imagine sending a message without saying or typing a single word, using a tiny movement inside your ear.

EarSwitch is an earbud-like device that detects the movements of a small muscle called the tensor tympani. By tensing this inner ear muscle, users can control a computer or assistive technology such as an on-screen keyboard. Commercially, this could enable people to change the music on their headphones or give them an edge when gaming. Medically, however, it could provide a lifeline of communication.

The creators believe that the tensor tympani is a muscle that drives your hearing, focusing your eardrums on the sound you're trying to listen to; literally 'straining to hear'. Some people can control this muscle voluntarily. Try it out: tense your inner ear and you may hear a dull rumbling sound. That's the muscle working. It's believed this ability is preserved until the later stages of degenerative conditions such as motor neuron disease, meaning EarSwitch could become a life-changing assistive device. What's more, it could also be a means of controlling an upper-limb exoskeleton or prosthesis.

It's the invention of Dr Nick Gompertz, a former GP who partnered with Bath experts from computer science, electronic engineering and health to develop the technology. "Nick approached us several years ago with this idea that no one had taken seriously, but we did," says Dr Benjamin Metcalfe, Head of the Department of Electronic and Electrical Engineering. "We're now coming towards the end of a £1.5-million product development award from the National Institute for Health and Care Research (NIHR).

"We're almost at market with a product that will, for the first time, enable and unlock communication for people with neurodegenerative diseases and locked-in syndrome," he continues. "We'll be enabling them to communicate with their family and caregivers at a stage of their life where they otherwise may not be able to."

Benjamin is also the co-founder of our Institute for the Augmented Human, where he lends his expertise in biomedical engineering to develop healthcare technologies and neural interfaces for human rehabilitation and augmentation. Alongside his work on EarSwitch, he's designed implantable devices for restoring bladder control after spinal cord injury, prosthetic limbs and vagus nerve interfaces for treating epilepsy.

He was the first in his family to go to university thanks to alumni-funded scholarships to support him through his undergraduate and postgraduate degrees. "Without those gifts, I simply would have been unable to come to university and study engineering. It's unlocked my career ever since and enabled me to do high-impact research. Developing technology like EarSwitch is truly transformative and rewarding."

Nick adds: "Without the University and the support from SETsquared, I'm not sure that EarSwitch would ever have taken off. They believed in it and helped us get the first three grants from NIHR. Ben has been instrumental and supported us throughout; always a trusted colleague, advisor and now friend."

Medical training in the virtual world

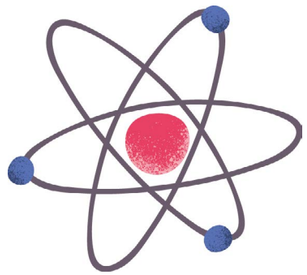
Slurred speech, confusion, fever... could you spot the signs of sepsis?

Responsible for around 48,000 deaths in the UK each year, sepsis occurs when the immune system attacks our organs and tissues instead of fighting an infection. But with symptoms often mimicking those of other illnesses, it can be a challenging condition to identify, even for medical professionals.

This is why the University is supporting Great Western Hospitals NHS Foundation Trust in assessing an innovative new approach to improving sepsis detection: virtual reality (VR).

As part of a pilot study, medical students on clinical placement participated in a VR sepsis simulation – software and hardware provided by Gogglemind Ltd – in which they were asked to interview a VR patient and manage the clinical scenario.

> “VR provides safe, realistic and hands-on training experience”



“The study showed the potential that VR has in providing a safe, realistic and hands-on training experience,” explains Dr Chris Jacobs, a GP and honorary research fellow in the Department of Psychology. “Participants found that the virtual scenario immersed them in a clinical setting and gave optimum cognitive load for learning.

“This tool has particular value when training to identify a condition such as sepsis because it can be challenging to diagnose,” he continues. “VR allows the trainee to explore all the investigations you would normally do when assessing a patient: use a thermometer, listen to the chest, order and view a chest X-ray and more.”

Chris and Professor Richard Joiner have also been assessing the use of conversational artificial intelligence (AI), developed by SimFlow.AI, to expand the potential of simulated training further.

“AI is allowing students to practice talking to a simulated patient with realistic conversation,” says Chris. “This is a game-changer for improving communication skills in difficult scenarios, such as diagnosing sepsis.”

Clever clothing for improved injury rehabilitation

The last decade has seen wearable technology, including smart watches, rings and straps, boom in both popularity and precision. With the ability to track our fitness and monitor our health with ease, these devices help users understand their bodies better and improve their lifestyles as a result. But while you may be among the many using these devices to track and share their latest 5K effort with the world, they have their limitations – particularly in medical settings where accuracy is paramount.

Introducing SeamSleeve: the new digital clothing concept able to capture and record body movements with greater detail than ever before. Developed by the universities of Bath and Bristol, SeamSleeve works by passing harmless, low-voltage currents through conductive threads which are stitched into garment seams to create electrical circuits. Their resistance changes with the movement of the wearer’s body, tracking measurements and using machine learning to process these intelligently.

This technology can also enhance exercise, physiotherapy and rehabilitation in ways beyond providing medical professionals with more accurate information: “Doing physiotherapy exercises correctly to recover from injuries is crucial, but it’s difficult to know if you’re doing them properly alone,” explains Dr Adwait Sharma from the Department of Computer Science. “SeamSleeve helps address this challenge by enabling physiotherapists to monitor your progress remotely.”

Mind control meets medicine

Until recently, the idea of controlling something with the power of your mind alone was a phenomenon reserved for fiction – the fantastical side of the superhero and children’s stories we love the most.

Now, researchers at Bath are bringing this idea into the mainstream, having developed a brain-computer interface (BCI) that enables people to interact with technology and, potentially, communicate without moving.

This has a wide range of applications with the potential to vastly improve quality of life for its users, including paralysed individuals and stroke survivors. It also provides clinicians with a better understanding of consciousness and awareness of patients who have suffered severe brain injuries.

“There’s a lot of evidence to suggest that people with brain injuries may be diagnosed as having unresponsive wakefulness syndrome, or what used to be known as vegetative state, even though they have levels of consciousness that are just not detectable by standard means,” explains Professor Damien Coyle, Director at the Bath Institute of the Augmented Human. “We ask users to imagine movements while wearing a headset, and we can then read the signals to detect the level of consciousness, which current clinical tests can’t do.”

This impressive technology also enabled spinal-injury athlete Owen Collumb, alongside winning team NeuroCONCISE, to claim victory at the 2024 global CYBATHLON Challenge: an international competition where cybathletes race against each other using their brainwaves.

“These competitions drive innovation in the field of assisted technology,” says Damien. “It’s one thing writing a paper or doing something in the lab, but when you have to compete in front of an audience of 2,000 people, the tech must be reliable. This ultimately translates to improved care for patients in the long run.”

New face on campus

SIX OBJECTS, ONE STORY: GET TO KNOW **VICE-CHANCELLOR PROFESSOR PHIL TAYLOR** THROUGH HIS PERSONAL TREASURES.

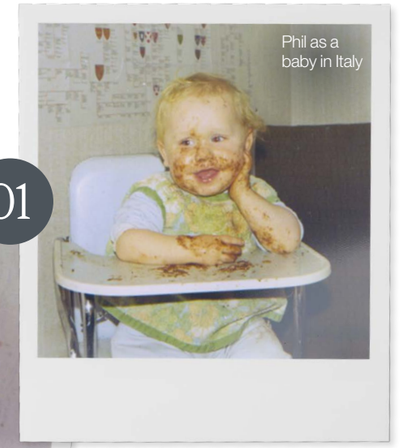
Professor Phil Taylor – an internationally leading academic researcher and industry expert in renewable energy systems – is Bath's new Vice-Chancellor and President.

Before joining us last summer, Phil had worked in industry and academia for more than 30 years. Among his many accomplishments, he designed the grid connection for the UK's first offshore wind farm and even oversaw a £250 million project to build the UK's most powerful AI supercomputer.

To get to know him better, we asked Phil to select six objects that meant something to him.

Nuclear family

01



I was born in Italy because my dad worked for the European Space Research Organisation. He was doing the thermal calculations for tiles on rockets, ensuring they didn't degrade when they came in and out of the atmosphere. We lived in a little village called Grottaferrata next to Frascati – you might know it for the nice white wine – where we stayed until I was two.

My parents are British and met in the 1960s while working on fusion research at Harwell Laboratories. My mum was one of the few female scientists there at the time. They taught me a lot about nature, and how to think like a scientist. They encouraged us to question everything – to look for evidence rather than make assumptions.

A formative moment was a family trip to the Centre for Alternative Technology in North Wales. It's an outdoor museum that demonstrates all sorts of sustainable technologies. You could pump water up a hill and see a wind turbine light up a bulb. I remember being surrounded by nature, looking at renewable energy technology, and thinking:

> "My parents taught me a lot about nature, and how to think like a scientist"

'Wow, these two things go together perfectly.' I never looked back after that.

Working in renewable energy as an engineer appealed to both my love of technology – designing things and solving problems – and my love of nature. It's all about protecting the environment and tackling climate change.

I'm proud of Bath's strong focus on sustainability – it's central to our teaching and research. We were the first UK university to offer carbon literacy training to new students and have introduced a master's in decarbonisation. We have ambitions to do even more, and partnerships and philanthropic support will be essential to creating a lasting impact.

Staying one move ahead

02

This is a replica 12th century Lewis chess piece. The real ones were made from walrus tusks and were found in 1821, buried on the Isle of Lewis in Scotland. Most of them are in the British Museum and they're amazing pieces.

I loved chess as a kid and played in a club in Middlesbrough, Teesside, where I was brought up. It taught me how to plan and strategise, to think several moves ahead, and consider different branches of opportunity. My dad taught me how to play and would never let me win so when I did eventually beat him, I knew I'd earned it. He's 86 now and we still play.

Chess also trained me to focus. As a child, I didn't like sitting still. I was too energetic and easily distracted, but chess was the one thing that would captivate me enough that I would stop and concentrate. I'm still a bit like that now; it's helpful in my job where I've got to multitask and do a million and one things every day.

The Merlion's meaning

> “ Bath alumni are incredibly accomplished people ”

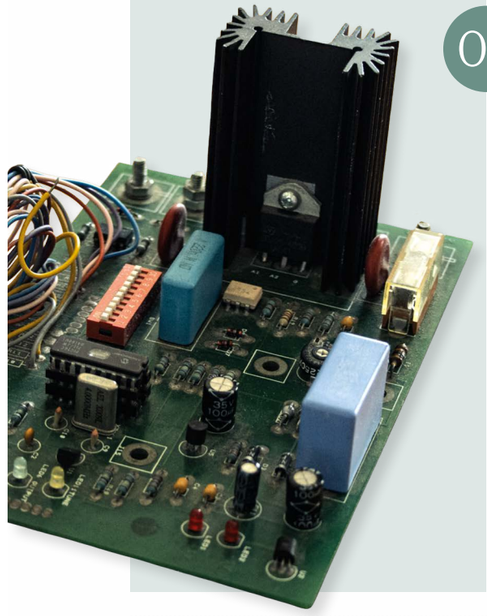
03

I have a miniature of the Merlion statue situated in Singapore's Marina Bay. I travelled there a lot, working for the Singapore government to help them make decisions about funding for energy research projects.

Then I became a visiting professor at Nanyang Technological University in their renewable energy group ERI@N. I worked with them for ten years on collaborative research and helped to grow their research programmes. They're currently ranked 15th in the QS World University Rankings. Recently I've been asked to work for the Singapore government on the Scientific Advisory Board for the National Research Foundation's CREATE Centre, which is an international research campus and innovation hub.

Since becoming Vice-Chancellor, I've enjoyed meeting members of our community, locally and internationally, and hearing their fond memories of the University. Bath alumni are incredibly accomplished people, shaped by shared experiences. I look forward to engaging with more alumni at every stage of their journey, as they continue to make an impact worldwide through their advocacy and support.

Sustainable AI



05

This is a prototype device that I designed for my PhD in Manchester. It was 1997 and, believe it or not, this is an artificial intelligence (AI) device for renewable energy systems.

The AI software is embedded in the chip and the rest is the electrical control system. It was sold worldwide by Econnect, the company that sponsored my PhD. It controls renewable energy systems in remote parts of the world, such as an AIDS and leprosy hospital in Uganda. The power would trip often and they would have to heat hot water bottles on a fire to keep the babies warm. I'm proud to say these devices distributed around the system reduced the power cuts from, say, 50 a month, to almost zero.

It allows you to run an energy system on 100% renewable energy by using an AI technique called fuzzy logic. If you think of Boolean logic as 'true' or 'false', fuzzy logic allows you to have an overlap. There's ambiguity and uncertainty.

You can embed that into the reasoning of the software, so it thinks like a human being. It's also self-learning, changing its settings in pursuit of better performance.

Renewable energy and AI have been a thread throughout my career. Before joining Bath, I oversaw the project to build the UK's fastest AI supercomputer, Isambard-AI, while I was Pro-Vice-Chancellor for Research at the University of Bristol. I also lead the Supergen Energy Networks Hub and I'm an independent adviser on the UK Government's Net Zero Innovation Board.

I'm impressed with the AI and augmented human research here at Bath, especially the push for ethical and sustainable AI. There are big things ahead.

04

Nota bene

Like most Bath students, I did a placement year in industry as part of my undergraduate engineering degree in Liverpool.

The company, GEC, instilled in us the importance of having an engineer's notebook or a design book. We carried them everywhere and recorded decisions, calculations and progress. When I was young, if I turned up for a meeting with my boss without a notebook, they would cancel it.

Since then, I've used a notebook for everything, whether I'm working in industry or academia. I've got hundreds of them, going back to when I was 20 years old.

Solid foundations

06

Occasionally, large parts of stone from Durham Cathedral are taken down as part of the repairs and maintenance. They held an auction for charity and I managed to get this piece from the central tower. It's enormous and I have it upside down in my hall.

Why is it important? The first academic job I ever had was at Durham University. I had resigned from my role as a research and development director to become a lecturer, having only one publication to my name.

I wanted to do more radical research than I could in industry and learn how to teach. Four years later, I became a professor. Durham is also special because opposite the Cathedral is Durham Castle, which is where I got married to my wife Susie.

This stone marks an important moment in my journey and reminds me of the value of long-term thinking. Cathedrals aren't built overnight; they need vision, patience and solid groundwork. That's how I see my work, too – not just about the quick wins but part of a bigger picture. With the University's 60th anniversary coming up, I'm focused on building strong foundations for lasting success.

SURVIVING THE EXTREMES

Facing climate change head-on not only means working to **prevent** it, but to better **prepare** for the extreme ways it's already reshaping our lives. Discover how Bath researchers are equipping us for what lies ahead.

Words by **Frances Coleman**

In 2003, Europe experienced a summer heatwave that caused an estimated 70,000 deaths. Crops failed, forest fires burned and people across the continent faced heat strokes, dehydration and air pollution. Heatwaves have increasingly become a frequent part of the news cycle – along with other extreme weather events including heavy flooding, droughts and storms.

As more communities are impacted and lives upturned, the urgency to better prepare for our rapidly changing climate is becoming clearer by the second. Armed with this awareness, researchers across the University are developing critical tools that will improve decision-making and help the world create the best protective strategies and infrastructure to withstand the extremes.

The 100-year event

"When engineers set out to design a flood defence, they must ask themselves 'how high is this wall going to be?'" says Dr Thomas Kjeldsen from our Department of Architecture & Civil Engineering. "What determines the height of the wall is that it should be able to withstand a 100-year event: a flood of such magnitude that is expected to occur only once every 100 years."

Establishing exactly what this fateful event will look like is Thomas' specialty. He does so by looking back at past floods and running advanced statistical analysis of the data to predict what might occur in the future. The goal is to provide decision-makers, such as environment agencies, with the information they need to plan and build effective infrastructure.

It sounds entirely logical, but it comes with challenges. "The issue is that no amount of information on the past can really tell you whether something is going to behave the same in the next 50 years," he tells us. "But this is particularly difficult today when the climate is changing so drastically."

Rising to the challenge, Thomas and a team of engineers and computer scientists at Bath and Turkey's Erzurum Technical University, are developing a new dynamic flooding model – but this time, using the power and potential of artificial intelligence (AI).

This advanced model will replace outdated calculations and will be trialled in Turkey due to the growing severity of floods in the country. "When in the past we never had enough global weather data, we now have so much that we're not always entirely sure what to do with it," says Thomas. "Machine learning is an exciting opportunity to develop new tools to take advantage of the deluge of data that's become available to us."

With the ability to process vast historical records of rainfall from around the country, the model can better determine the drivers of extremes. It uses information such as where the rainfall events came from, as opposed to simply how much rainfall was seen.

"The hope is that we can tell what kind of changes we might expect to the 100-year flood under climate change," he explains. "Ultimately, the end users of our research are people like the environment agency. They have to make tough decisions; they are accountable for communities who could be flooded if they get it wrong."

Thomas is also using AI to train CCTV systems to spot blockages in urban waterways and reduce flooding. This allows councils to make better use of resources and act in a preventative, rather than reactive, manner. It's already attracting attention from flood prevention organisations in countries including South Africa. He adds: "This study is a first step toward a sustainable solution to flood forecasting."

By providing critical information to decision-makers, these innovative projects are setting us on the right path to ensuring we're better prepared for the extremes to come.

Feeling the heat

Joining Thomas in the fight to create a more prepared and adapted world is David Coley, professor of low-carbon design. He focusses on developing buildings that keep people safe and comfortable as the climate warms.

“They’re not taking it seriously at all,” he says, when asked about the willingness of policymakers to prepare for extreme temperatures. “Not enough people are making noises considering the scale of the likely events we will suffer.”

"NOT ENOUGH PEOPLE ARE MAKING NOISES CONSIDERING THE SCALE OF THE LIKELY EVENTS WE WILL SUFFER"

To shine a light on the severity of these events, David and a team of researchers developed a website: ‘The creation of localised current and future weather for the built environment’ (COLBE). Users can search from 11,000 UK postcodes to find out what an extreme hot spell will feel like in the 2070s.

“People will be surprised,” David tells us. “This is because normally climate change is discussed in terms of changes in average temperature, which is predicted to be around 2°C. Whereas the increase during heatwaves will be much, much larger.”

The site hosts a terabyte of future weather data which, with years of mathematics and coding, predicts future weather on a localised scale.

“We hope the COLBE project is the start of a discussion between the public and policymakers, with professionals using the weather files to test drive their buildings into the future,” he explains.

“We need to be very concerned about events such as the 2003 heatwave. 14,000 (mainly elderly) people died in France, and almost all inside buildings that could not maintain survivable temperatures. The UK will have a similar heatwave soon,” he warns.

Since its development, COLBE has expanded to India via the ZED-i project, becoming the largest database of free weather data for the country. “The mortality and morbidity risks from climate change are of a different scale in India than Europe,” explains Professor Sukumār Natarājan, who’s leading this expansion. “The tropical climate, lower GDP and unprepared construction sector make our work even more paramount here, and other developing countries, as the risk of extreme weather increases.”

Professors Sukumār Natarājan (left) and David Coley (right) are experts in low-carbon design

Changing mindsets

While there is a strong acknowledgement for the need to slow the progression of climate change, can the same be said about the need to prepare for the rapidly changing world we’re facing? Do policymakers and the public have the same sense of urgency?

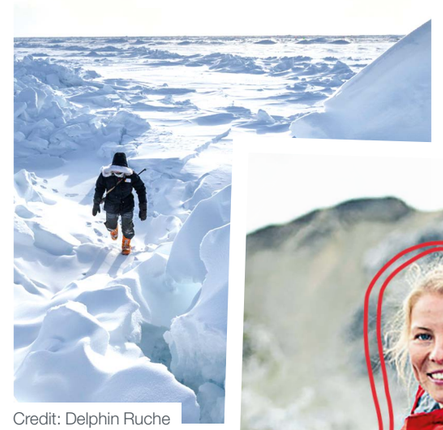
As an environmental psychologist and deputy director of the Centre for Climate Change and Social Transformations, Dr Christina Demski explores the public’s perception and experiences of the risks and impacts. Her recent work, as part of the Flex-Cool-Store project, investigated public behaviour in the face of extreme heat events in the UK – specifically the 2022 summer heatwave in Europe.

“Research shows that our perception of heat here is generally positive,” she tells us. “If you look at visuals used in the media, they tend to be of people enjoying the sun and eating ice creams.

“What we’ve found is that people are underprepared as they don’t think of extreme heat as a risk to them – or at least believe it’s only for a short time so we don’t have to worry about it. We call this psychological distance: the general sense that other people elsewhere are going to be more impacted than us.”

However, if recent events are anything to go by, the UK is set for more extremes like this. According to Christina, there are signs that those in power are working to prepare communities for what’s to come; just this last year the Met Office issued the first red warning for exceptional heat. But she’s also wary that there are still significant gaps.

“We need a more joined-up approach to adaptation that also connects to mitigation,” she concludes. “There’s a lot of focus on retrofitting homes from a climate mitigation and health perspective, such as improving energy efficiency. But if that’s done in a way without thinking about future overheating risks, you have all these homes that won’t protect communities in the long-term.”



Credit: Delphin Ruche

“WE NEED TO UNDERSTAND HOW THE ARCTIC IS HEATING UP”

Credit: Ornella Cacace

Snow queen

Bath alumna Amy Macfarlane is no stranger to a cold climate. “It comes with the job description,” she tells us. “But I find it really exciting.”

Spending months at a time in the polar regions, her mission is to understand the complex factors that influence our warming planet.

Her research focus? Snow, specifically on sea ice.

“We get a lot of energy transfer from the ocean to the atmosphere and the snow layer on sea ice is influencing this,” she explains. “We need to improve our understanding of snow microstructure, in particular how the snow conducts heat and reflects sunlight, to really understand how our world, and the Arctic, is heating up.”

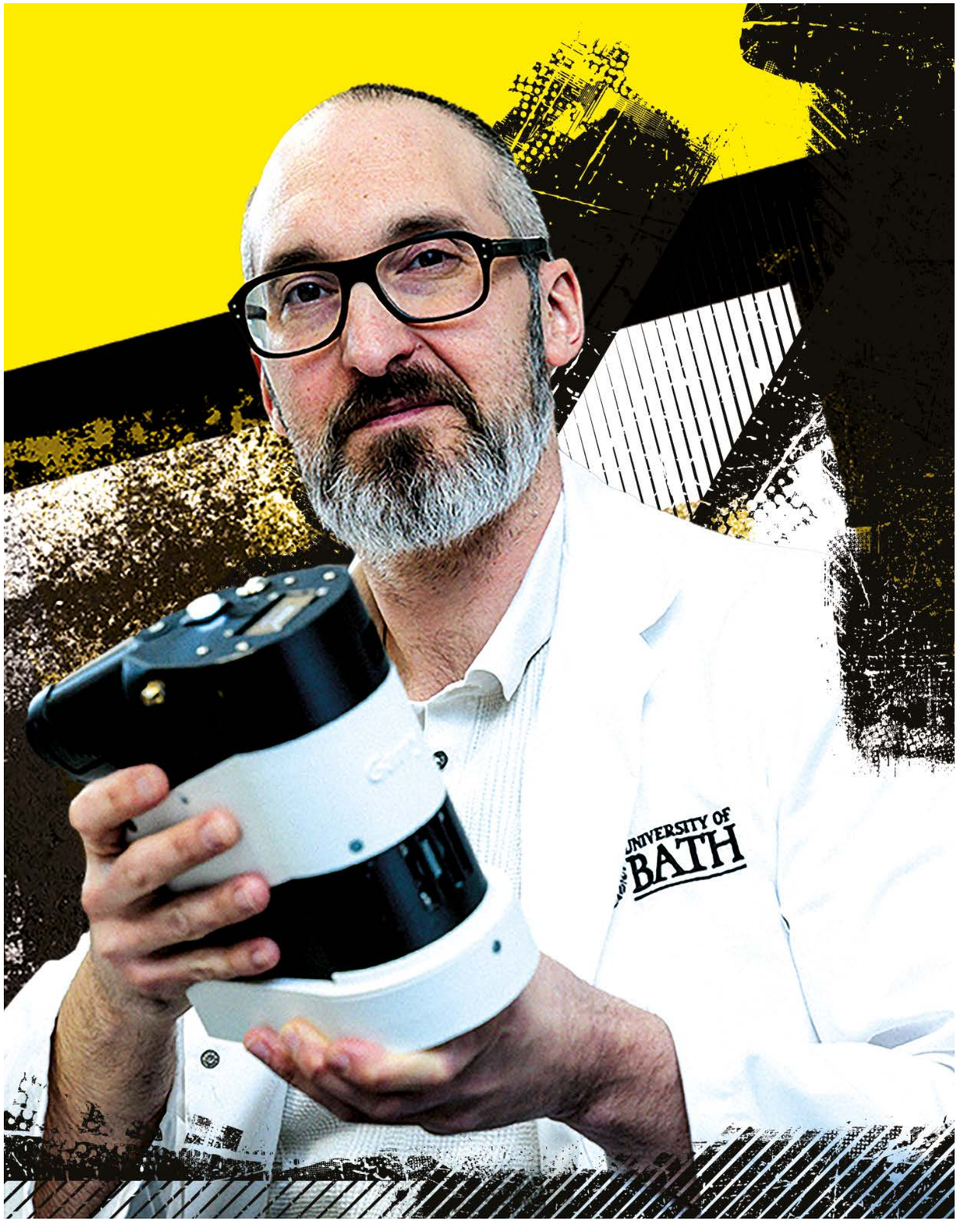
Having studied physics at Bath, Amy went on to explore her interests further. Her PhD, which investigated the microstructure of snow in the Arctic for an entire year, won the 2024 Prix de Quervain award – honouring students and early-career scientists for outstanding research.

Among other discoveries, Amy showed that the current large-scale climate models may overestimate the thermal conductivity of snow, helping to increase the accuracy of future climate change predictions.

Today, not only is Amy working to develop the Responsible Science Initiative (RISE), which aims to reduce the environmental impact of scientific activities, but she’s also conducting postdoctoral research investigating how microwave satellite signals interact with snow.

“We have satellites passing overhead that monitor how thick the snow and sea ice is, but sometimes the snow interferes and complicates the detection of the snow-ice interface,” she tells us. “I’m trying to understand how the variations in snow structure impacts how the signal is altered.

“The bigger picture is that once we understand how the snow is influencing the signal, we can properly determine how thick the sea ice is underneath and how rapidly the climate is warming.”



THE DRUG DETECTIVE

Professor Chris Pudney developed the world's first on-the-spot test for spice – a drug that's overrun prisons, the streets and now schools. Find out how this life-saving technology is transforming drug detection and protecting vulnerable communities.

Words by **Jodie Tyley**

Potent and unpredictable, spice is one of the most dangerous drugs on the streets. Effects range from zombie-like paralysis to violent outbursts and life-threatening seizures, and in prisons, the spice outbreak has become an epidemic. Associated with nearly half of the non-natural deaths behind bars, the drug is soaked onto paper or clothing and smuggled into cells where officers have described people collapsing, convulsing and even self-harming under its influence.

Stopping the spread of this drug is critical but so far has proven nearly impossible. Now, schools are on high alert after a University of Bath study revealed one in six confiscated vapes were spiked with the synthetic drug. The researcher who uncovered this shocking statistic is Professor Chris Pudney, who's developed the world's first on-the-spot test for spice. Pass any material over the portable, battery-powered device, and a red light will alert its presence.

The technology was designed to stem the flow of drugs into prisons, where it's proven to be highly effective. However, when stories surfaced of schoolchildren collapsing and ending up in intensive care, Chris set out to investigate.

"We took the technology we developed for prisons and adapted it," he says, showing us a small black box that contains pumps and heavy-duty air filtration to extract vapour for examination.

> "One out of six vapes in schools contained spice"

"The police invited us to test confiscated vapes from a school and we found that 25% had spice in them. A prison drug. No one thought that would be what we would find. It was shocking."

From there, the investigation expanded until 596 vapes from 38 schools were tested. "One out of six samples seized in schools contained spice," says Chris. "So now there's a small number of places where you find this really risky synthetic drug in society: prisons, among homeless communities and secondary schools. Isn't that crazy?"

Playground pushers

So how does spice get from prisons to playgrounds? The link is vulnerable people and the allure of cheap, easily accessible drugs. "School children almost certainly think they're buying vapes containing THC, which is the active component of cannabis," he explains. "They're easy to buy online for

£30-£60, but young people can't afford that, and spice is cheap compared to THC. They don't realise what they're getting is an incredibly addictive, high-risk drug."

Since uncovering this wider issue, Chris and the team have given spice detectors to police so they can monitor usage in their regions. If a school is concerned, they can submit a sample and find out what's really going on. He adds: "None of the schools or police forces are criminalising these young people – it's all about supporting them and directing them to services that can help."

Headteachers and police have emphasised the importance of educating young people about the risks and long-term consequences. Chris, a father to three young girls, agrees that having open conversations is crucial: "If you say to most kids that if someone's offering you a cannabis vape, it's going to be a prison drug that's very addictive, then they have the chance to make a different choice."

> "They don't realise what they're getting is a high-risk drug"

The University is now working with Bath's local MP, the Home Office and the Department for Health and Social Care to raise the issue up the agenda for government ministers. "The Tobacco and Vapes Bill is going to ban disposable vapes," he adds, "but it's vanishingly rare that spice is found in disposable vapes in schools. So, if everyone switches to refillables, that matrix for drug consumption is in the hands of way more children. We need to be alive to the risk."

Understanding spice

For those living in greater social deprivation, such as people in prison or homeless communities, cheap drugs can be a means to cope with their harsh realities. Chris has seen it first-hand. While developing the spice detector, he visited prisons and interviewed officers to understand the challenges.

"Prison is terrifying," he recalls. "Residents can be locked up for 23 hours a day with somebody that might have a lot of problems in their life. A human being will do anything in those situations." He continues: "When you talk to people in prison about why they use drugs like spice – which they don't like using and don't have the money to pay for – it's because nothing's going on in their life. It's not surprising that they turn to a drug that makes you feel like you're not in your body anymore and time is just passing."

Spice comprises a range of lab-made chemicals that are constantly changing. As soon as legislation makes one molecule illegal, more are being developed to get around the law. Knowing this, Chris ensured the device tested for a class of molecule, rather than specifics. "We listened to what people on the frontline needed," he explains. "They didn't need to name the molecule – they wanted a straightforward output of what's going on. We focused on detecting what comes into prisons and causes harm, so synthetic cannabinoids and synthetic opioids, like fentanyl."

Seven prisons throughout the UK have benefitted from this device, which has enabled hundreds of thousands of pounds worth of drugs to be pulled out of prison and save lives. The team is also helping to bolster police forces' forensic capability by testing samples for intelligence purposes. "At the moment, it'll take three months for police to get a result of what a drug is," he says, "but if someone's died from an overdose, they need to know what it was because there may be a general risk to the community if, for example, the heroin is stronger at the moment. On the same day, we can tell them what it is and how strong it is."

Bath is working to expand this initiative to other institutions. "Universities have access to the best technology, so why don't we use it?" he reasons. Several other universities have since agreed to support their local force and the data is now feeding into a national drug early warning system.

Making waves

It's only taken five years from having the initial idea to creating real-world impact. It was thanks to a conversation with his wife, a psychiatrist in a hospital, about the difficulty of diagnosing, testing and therefore treating patients who had taken spice. As a biochemist, Chris realised the structure of spice was similar to chemical structures in protein biochemistry. As soon as he got back into the lab, he set to work.

"We were quickly able to develop the science that would let us test for synthetic drugs through to making prototype devices, collaborating with colleagues across the University, from engineering and computer science to psychology and social science," he says. "Now we have developed different technologies that serve different needs, all built in my lab, and distributed them around the world. It's a lifetime's worth of work in a very short space of time."

Buoyed by the impact so far, Chris has ambitions to go even further. His goal is to provide a daily drug-checking service where anyone can submit a small sample and find out its strength.

> "We listened to what people on the frontline needed"

At the same time, they could be matched with support services to help lift them out of addiction and homelessness. He adds: "It's never been done before, at least in the UK, where every day, anyone can have their drugs tested, and we can give them information about the strength because the technology we've developed hasn't existed until now. It could be a game-changer."

It's early days but like the spice and vape detection devices, Chris says it's all about serving the most vulnerable people. As he points out, there's drug use in every level of society, but the harm is much worse for disadvantaged and deprived communities who lack support networks and access to medical care.

"Dependent users of drugs like heroin or spice have such severe withdrawal that they'll do anything to make it stop," he says. "That puts them at a great deal of risk because they'll take anything they've got in front of them. But if we can test it and say, well, this is five times stronger than average, then they've got a chance to take less or in a safer way and avoid an overdose."

He continues: "It's going to be a journey, but we've already come so far in such a small amount of time I feel confident that we can do it. Being able to take a basic idea and see it changing people's lives feels great knowing we're doing the right thing."

OLYMPIANS IN CONVERSATION

Fresh from competing on the world's biggest stage, student-athletes Leah Crisp and Charlie Brown discuss the sacrifice, success and steely determination that fuels their ambitions.

Interview **Jodie Tyley**

In the heart of the University's Sports Training Village, the clatter and clang of weights and shouts of encouragement echo off the walls as athletes, students, staff and the public push their physical limits. It's here, in a rare pause between rigorous training sessions, that marathon swimmer Leah Crisp (BSc Economics and Mathematics 2024) and modern pentathlete Charlie Brown (BSc Sports Management and Coaching 2026) reflect on their Olympic debut and open up about the challenges of being a student-athlete.

What were your standout moments from the Paris 2024 Games?

Leah Crisp: I'll never forget the walk to the starting pontoon for the marathon swim – it was in the river Seine, with the Eiffel Tower in the background. I've never done an open-water event with an atmosphere like that before.

Charlie Brown: Our venue [for modern pentathlon] was incredible. We competed in the Palace of Versailles and swam in a pool built in the gardens. During the laser run, the crowd cheered every shot, which is normally frowned upon. My standout moment was being cheered for every green light I got.

How do you cope with the highs and lows of sport?

LC: It's tough – sport is quite up and down. I had a bad injury and struggled to get back into training. I almost wrote myself off for making the Olympics, mentally, but my coach believed I had more to give and it changed my perspective.

CB: Yeah, everyone experiences highs and lows. I was in reserve for Team GB initially but despite the result not going my way, I went straight back into training the next day, preparing as if I was going to compete. That really paid off when it happened.

Tell us about your journey to Bath.

LC: I've always swam and, for me, Bath was the right combination of academia and swimming. The Aquatics GB Performance Centre is here, which is the perfect place to train among champions, but it's also a university that will challenge and push you academically.

CB: Similarly, I had the Pentathlon GB National Training Centre here, and the fact that the University is great academically and the city is beautiful, too – it was a no-brainer.

Growing up on a farm, I rode horses from an early age. I was a natural runner and swimmer, so I got a place on the English talent programme with Pentathlon GB and worked my way up. I now train with [Olympic gold medallists and alumni] Joe Choong and Kate French. Almost all the GB modern pentathletes have studied here.

What are the challenges of being a student-athlete?

CB: It can be quite chaotic at times but the Team Bath support staff, the UKSI [UK Sports Institute] and my course lecturers are really helpful. There are challenges outside of balancing studies and sports, too. It's about choosing what sacrifices you want to make.

LC: Yeah, it can be challenging living a different life to your friends. You need to find the right circle that understands and respects that you can't make every social event or go out on a weekend.

In terms of workload, I found the University was so understanding and helped me split my final year in two so I could maximise both my pool and academic performance.

How does the Santander Sports Scholarship help you?

LC: I was so grateful for the scholarship. Having someone believe you've got potential and not having to worry about buying a new racing costume and equipment makes a big difference.

CB: I think it's great that, as Leah said, someone's willing to support us. It means a lot, especially when the athlete lifestyle doesn't allow for great financial freedom. I feel incredibly fortunate to have the scholarship.

Talk us through a typical day of training at Bath.

CB: A typical day for me is five training sessions: running and swimming in the morning, then physio or fencing after lunch, finishing with shooting and gym. We have weekly blood tests that measure our immunity, and they adjust our training around that.

LC: We have an app that monitors heart rate variability and gives you a score on whether you should limit intensity. I don't think the coaches are willing to do that, though [laughs].

Like Charlie, I train all day, starting with mobility then in the pool 8–10.30am where I normally swim 8km. Some days we'll go to the gym after, for maintenance and injury prevention.

Then a pre-pool circuit of shoulders, hips and core and another 2.5-hour session where I'll swim 7.5km. Now I've graduated, I'm training full-time.

What's next for you?

CB: I have one more year left at university and then it will be the start of the 2026/27 season, which is when the Olympic qualification starts.

LC: I would love to go to LA 2028, but I'm taking it as it comes. This year we've got the World Championships in Singapore.

CB: We plan quite far down the line in pentathlon because it's a sport where generally you're more successful the older you are.

It sounds a bit crazy, but we train *for* the Olympics. As much as we still crave medals at the World Cup, World and European Championships, the Olympics is the pinnacle and we're already talking about LA.

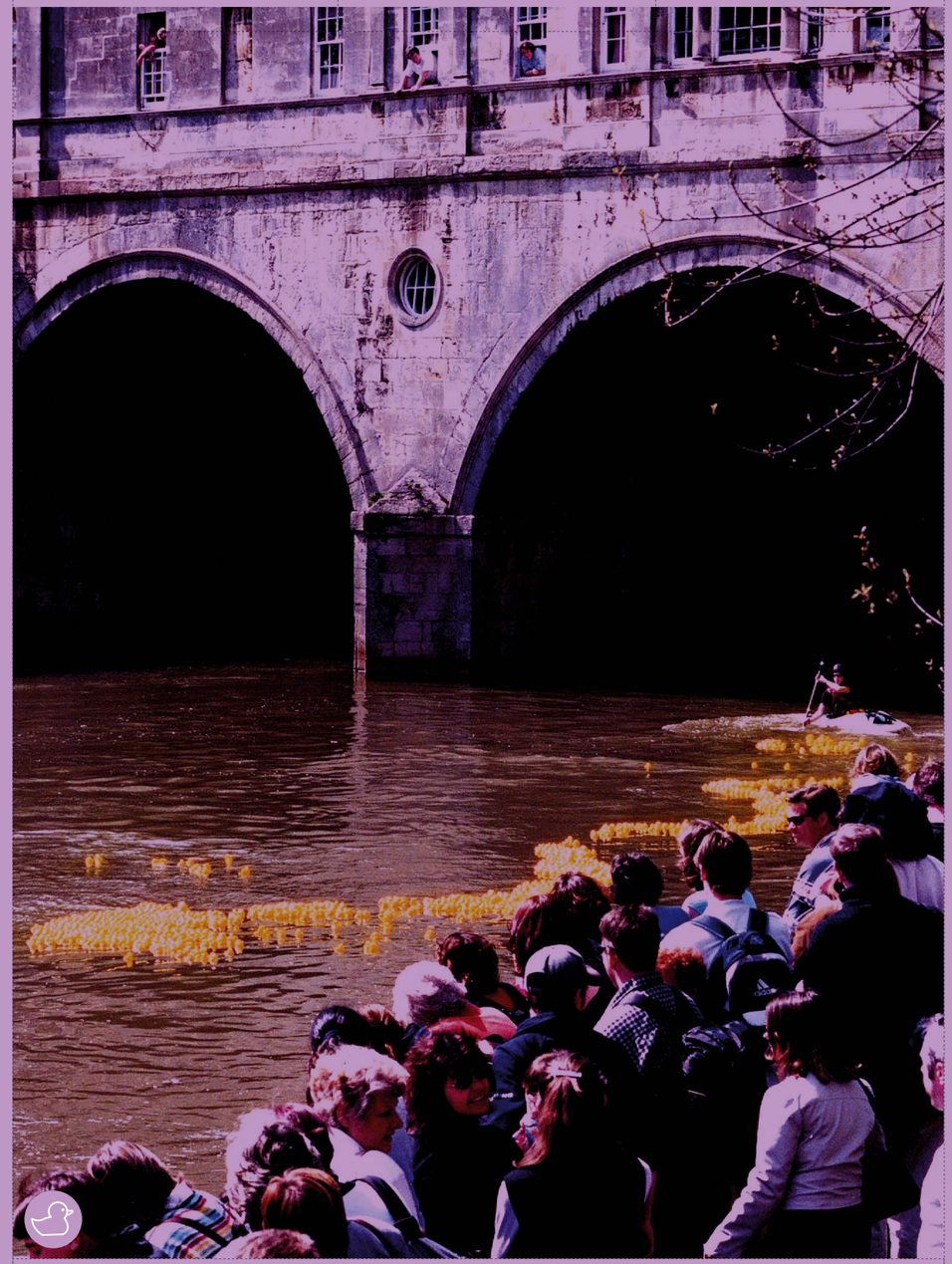
Bath-designed SwordSeat™ fencing chair launched by British Fencing

University of Bath engineers have created an affordable wooden seat to make wheelchair fencing more accessible. The SwordSeat™, in collaboration with British Fencing, is a simple slot-together design which can be built for £150 of plywood.

Wheelchair fencing Paralympic gold medallists Dimitri Coutya and Piers Gilliver, who train here at the University, hail the design as a game-changer for their sport. "Wheelchair fencing frames are quite hard to source and can cost up to £15,000," says Piers. "Something like this, which can be produced so cheaply, means more clubs can be welcoming to wheelchair fencers."

Dimitri adds: "The SwordSeat is a fantastic way to remove some of the barriers to the sport. Equipment becomes much less of a problem, and everyone now has the option to try wheelchair fencing."

The University of Bath has been the training base for Britain's high-performance wheelchair fencers since 2015. In that time Dimitri, Piers and Oliver Lam-Watson brought home 20 medals between them – three of them gold – from three Paralympic Games.



Bath Duck Race, 1990: Hundreds of rubber ducks were released into the River Avon at the Pulteney Weir to paddle their way to victory. Crowds flocked to watch the local charity fundraiser, organised with the help of the Students' Union (SU). But at the University of Bath, ducks are more than racers – they rule the roost. The icons of the campus lake have sparked a range of merchandise, a Bath Duck Society in the SU, and are proudly represented by our official mascot, Duck Norris, at sports events, proving our love for ducks is anything but quackers.

Share your memories with us by emailing advancement@bath.ac.uk

BA2 Extra

THE ARTS AT BATH: YOUR STORIES

Travel through time with the passionate students, staff and alumni who helped bring creativity to campus.

Words **Frances Coleman**

1970s

It began with a barn

"When I arrived at the University in 1972, there was already quite a lot of arts activity taking place, despite it being a very science-based community," recalls Richard Hall (BSc Economics & Government 1977).

Arts Barn under construction in May 1974

"We hosted live bands each weekend – everyone from Status Quo to jazz violinist Stéphane Grappelli – and had a strong student theatre society, as well as a film society with over 700 members during the time I was chair."

With a life-long love for live performance, Richard became a key player in championing the arts at Bath as Students' Union (SU) president in 1974–75.

Despite the pockets of creativity popping up around campus, Richard, alongside a group of passionate students, knew there was potential for more.

Arts Barn in use for a dance class, 1978

"We formed an arts society to try to promote greater awareness and interest in the arts across campus," he explains. "We also encouraged the University to build a strong connection with the city, and for students to be aware of what was going on in the Bath and Bristol events and arts scene." But the students felt there was another element missing if creativity was to truly flourish at Bath: a venue.

"There was an old, disused barn on the site," explains Richard. "For the first time, the University developed an arts strategy which included this space becoming more of an arts centre."

"Up to now we have had nowhere up here where people can paint or do pottery," then lecturer Frank Brown told the Bath and Wilts Evening Chronicle in 1973. "The Norwood barn should give us a couple of rooms for printing, pottery, construction of stage scenery and so on."

Architects Alison and Peter Smithson later developed the Arts Lecture Theatre, which is still used today.

Original arts barn sign

1980s

Students lead the way

Life drawing class in progress, Arts Barn, 1984.

SU societies have played a starring role in building the arts scene on campus.

By the 1980s, the student media community was flourishing. "When I came to Freshers' Week in autumn 1986, there was one guy with a very old U-matic tape recorder and a camera promoting a society called Channel 4A," recalls alumnus Hugh Mason (BSc Physics with Physical Electronics 1989). "He was in his final year, so was very busy, and desperate to hand it over to somebody so it didn't end."

Hugh took on up the mantle and, after a quick name change to CampusTV (or CTV), was determined to broadcast the news of the refreshed, 24-hour student station around Bath.

CampusTV hit the headlines in 1989

MP launches TV channel

BATH MP Chris Patten set the cameras rolling last week when Bath University's CTV was launched.

news for the students, features and arts material for in and around Bath.

The channel took 18 months to set

"We teased the local media with the idea that we were going to make these shocking programmes," remembers Hugh. It worked. BBC Points West covered the launch, with the Bath MP in attendance.

Over 35 years later, CampusTV is still going strong, regularly broadcasting major events such as Freshers' Week, the Summer Ball and Varsity. "We still make the same sort of content – some serious, some funny – but it's always for the students," says last year's station manager, Peter Irvine. "We haven't really changed from that mission since the 1980s."

Peter and his fellow CampusTV crew are also proud winners of several National Student Television Association awards – including a recent gold for their documentary on the history of the student station.

Today, the SU hosts 17 arts-related societies with over 3,000 members. This new generation of creative societies range from crochet and ceramics to illustration and animation.

The Bath Crochet and Knit Society at work

BA2 Extra

1990s

Curtain up

One of the oldest arts societies at the University, Bath Student Theatre Society (BUST), originally known as Bath University Drama Society, has been injecting fun and creative expression into campus for 57 years.

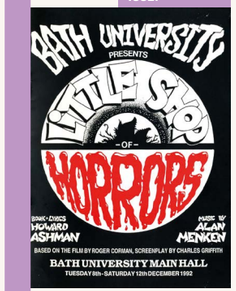
Shows include Jack and the Giant Beanstalk, Wonderland (an adaptation of Lewis Caroll's famous work) and Little Shop of Horrors.

Bath University Student Musicals Society (BUSMS) launched in 1996 for those students with the musical bug.

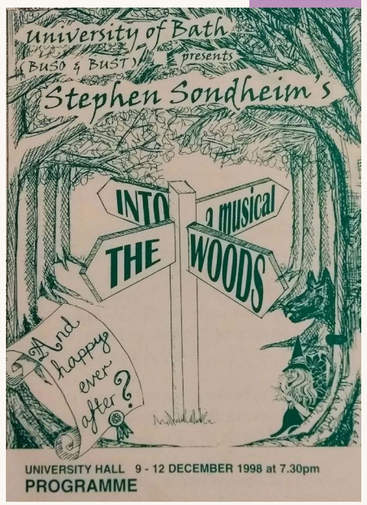
Emily Peckham (BSc Chemistry 1995) became a member of BUST in the early '90s. "As I recall, BUST put on one show a year," she says. "There were always more members in the society than there were parts to go around, and along with people who performed in the show, there were many behind-the-scenes opportunities such as lighting and sound."

Today, BUST put on five main shows a year – one of which is performed at the city's Mission Theatre – and three short shows for Bath Fringe Festival.

BUST programme cover, December 1992.



'Into the Woods', December 1998.



2000s

The dawn of a new era

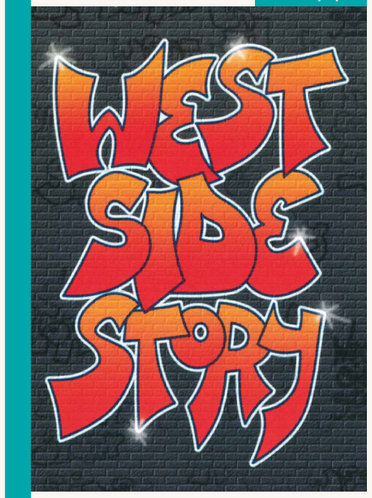
"I joined the University in 1999 as music coordinator," says Jo Sercombe. "I was brought in to shake things up a bit."

During her time here, Jo helped develop the Institute of Contemporary Interdisciplinary Arts (ICIA): a public programme to showcase and nurture artistic talent among students, staff and the local community. She also launched a gospel choir, songwriting workshops, a big band and jazz concert programme, and in 2004 became the head of music.

Emily Peckham on the BUST tour of Belgium, 1992

Jo Sercombe leads a gospel workshop, 2005

2002's West Side Story flyer



"A fond memory I have is working on a hip-hop version of West Side Story in 2002 with the student musical society, BUSMS," Jo recalls. "We worked with a capoeira choreographer on the big fight scene and, as part of our multimedia production, we filmed this outside a block of flats in Bristol. The residents were very surprised to see this happening outside their windows!"

Alongside music and theatre, the visual arts also expanded during this time, with exhibition spaces across campus hosting various artists' work from sculpture to found art.

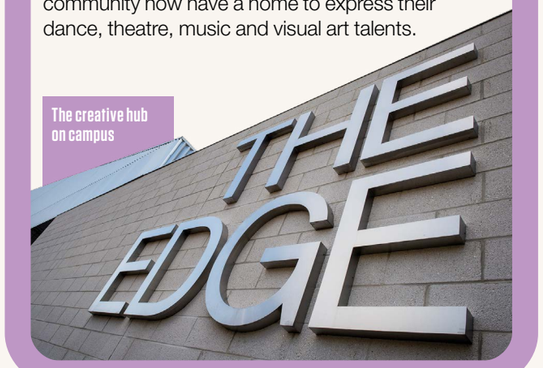
2010s

A new home for the arts

After many years of hard work, planning and fundraising, the University's new arts venue, the Edge, opened in 2015.

Today, it's run by the SU and is the creative heart of campus. With multiple rehearsal, performance and exhibition spaces, students and the wider community now have a home to express their dance, theatre, music and visual art talents.

The creative hub on campus



In 2024, Bath student societies put on 56 performances in the Edge, with over 6,000 tickets sold, and 22,500 hours spent at the venue on rehearsals, performances and workshops.

To nourish artistic talent further, the University launched its arts scholarships programme which, with the help of generous donors, has since supported over 100 students to pursue their artistic endeavours.

"Becoming an Elly Williams Arts Scholar this year has transformed my university experience," says Elizabeth Ainley (BSc Social Sciences 2024). "It has been amazing to focus and develop my art form [dance] alongside my studies and be given support, resources and guidance to achieve more."

An arts scholarship provides financial support to help a creative student pursue their passions and develop their artistic skills alongside their studies, as well as personal development through workshops and mentoring.

BUSMS put on an electrifying performance of Grease, 2015

Students shine on stage at the Edge

CAMERA team

2020s

Looking to the future

Alongside the growth of extra-curricular arts activity, the University has also been a driving force for innovation in the creative industries.

The Centre for the Analysis of Motion, Entertainment Research and Applications (CAMERA) is at the heart of this, working with intelligent visual and interactive technology to help solve problems facing a range of industries, including in the creative and entertainment space.

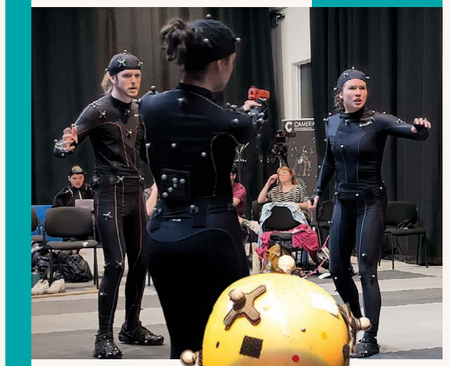
"Through our latest project with the Royal Shakespeare Company (RSC), we've been working with theatre professionals to take motion capture technology into 'chaotic' environments such as live performance," explains Rebekah Hole, CAMERA Facility Lead. "We're modifying traditional motion capture techniques and creating artist-led and driven tools; making a more immersive theatre experience for audiences."

The future is bright for CAMERA, with the centre having undergone a significant refurbishment. The final piece – a new virtual production set – was installed at the Edge this spring.

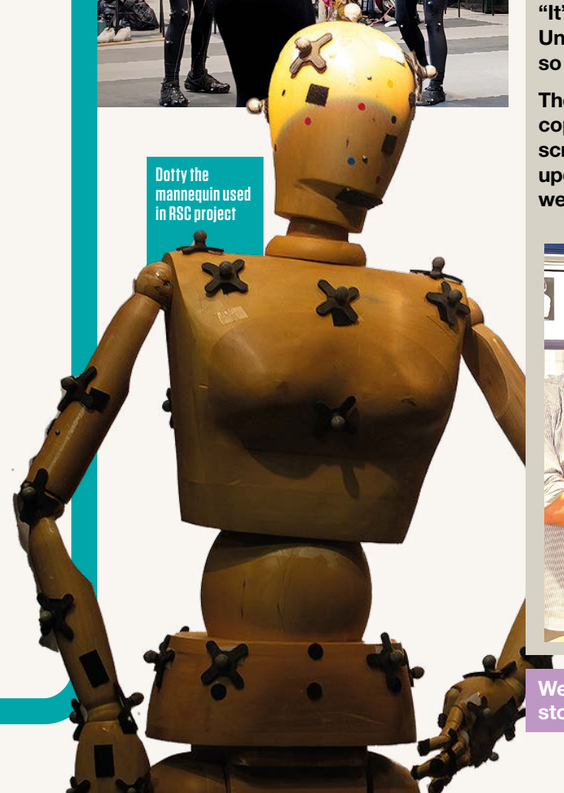
"The set will be a facility that researchers from Bath and beyond can access for skills and training, research and development, and commercial work," says Rebekah. "We'll use the set to tackle problems around lighting within virtual production, including investigating how the clever use of filters on the screen can create more realistic lighting to a film set."

To celebrate the new space, and the centre's establishment as a core research facility within the University, CAMERA will be hosting a series of launch events open to Bath alumni. Contact **camera@bath.ac.uk** for more details.

Students in motion capture suits rehearsing



Dotty the mannequin used in RSC project



Steve Ainger makes some last minute adjustments

A radio reunion

We welcomed two University Radio Bath (URB) legends to campus last year – former station manager and founder Jonathan White, and co-founder Stephen Ainger – for a sneak peak of their documentary about life as a URB member in the '70s.

The film gives an insight into life as a Bath student over 40 years ago – including the long hair, bell bottoms and skinny rib jumpers – and captures the incredible work by dedicated students to broadcast music and conversation onto campus.

"It's so rare to see footage like this," says the University's archivist Lizzie Richmond, "and for it to be so professionally shot and directed is just golden."

The film is now complete, with plans to make DVD copies, stream online and show at a private cinema screening in Bath in due course. Information and updates on progress can be found on the film's website www.urbfilm.co.uk.

Were you involved in the arts at Bath? Share your stories by emailing advancement@bath.ac.uk

Alumni spotlight

Mechanical engineering graduate and climate innovation trailblazer, Lauren Eatwell, on developing a business with climate action at its core.

Interview by **Frances Coleman**

Lauren Eatwell presenting at the University's Climate Action Awards in July 2024

Lauren Eatwell (MEng Mechanical Engineering with German 2007) features in the Time100 Climate list as one of the most innovative leaders driving business climate action for her work to decarbonize the maritime sector.

Can you share your journey from graduation to becoming Head of WindWings® at BAR Technologies?
To combine my love of sailing and engineering, I chose to pursue a career in the marine industry, specialising in the composite engineering of yachts and sailing masts. I worked for various companies, from large consultancies to niche racing yacht mast builders, and eventually joined BAR Technologies as a contract structural engineer to work on their first-ever project developing a next-generation day boat. As the team grew, I became head of engineering and lead on the WindWings® project, helping take it from a sketch concept to sea trials last year, and now scaling for mass manufacture.

What does WindWings® set out to achieve?
WindWings® are providing the shipping industry with a tangible way to reduce their emissions by up to 30% by fitting large-scale industrial sails to ships. We had two vessels launch last year and have ten planned for the next. The next step is to deploy into the hundreds across the world in the next three years.

There are plenty of innovative technologies in development which will help the maritime sector meet its goals, but they are not market ready. Wind-assisted propulsion is ready and free to use once installed, allowing ship owners to make an impact on their emissions immediately. Other innovations, such as alternative fuels, will then complement these technologies when they are ready.

What does a typical day look like for you?
We are working with many customers and manufacturing partners in China, so there is always something waiting in my inbox by the time I wake up. My day is weighted towards the morning, with urgency to get responses out and meetings held before that side of the world clock off.

There are always new challenges including dealing with prospective customers and shipowners with projects in build. We are also always navigating the rules authorities set for approving this new technology for installation on vessels. In the afternoons I get a bit more time to work with the design team in-house, scheming the next innovations.

How did your time at Bath help prepare you for taking on the highs and lows of launching your innovative business?
The engineering courses at Bath offer diverse subjects, flexibility to select modules based on interests and, most importantly, teach the skills in an applied way.

The strong emphasis on individual and group projects is such a solid grounding for entering a real workplace.

We've hired graduates from Bath at BAR Technologies who all demonstrate an ability to apply skills across a diverse range of novel challenges and find ways of using engineering to understand and solve problems from first principles.

What are your fondest memories from your time at Bath?
I loved the group project in my third year – getting to work with a team and apply the theory to, in our case, a sustainability-related project

But really, I have to mention the University of Bath Sailing Club as many of the fondest memories are from the competitions, as well as Wednesday nights at the Students' Union bar!

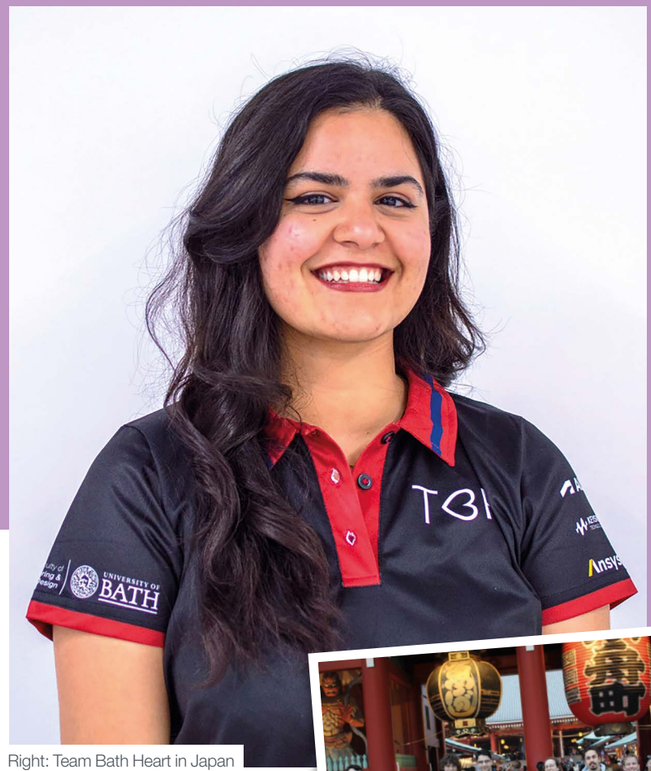
What do you think are the most vital skills required when launching a new business with climate action in mind?
The field of climate action is constantly evolving, with new technology providing solutions in hugely immature fields. This means policies and regulations are being forced to develop at pace in organisations which are historically slow to embrace change, so having the determination to take on these external hurdles is as important as having a great idea.

Focus on building relationships with innovative industry partners to break the doors down, cut through the red tape and find a path through to implementing the solutions you need for the future.

Share your story with us by emailing **advancement@bath.ac.uk**

BATH'S BEST KARAOKE

Mansi Ahuja
(MEng Electrical & Electrical Engineering 2025)



Right: Team Bath Heart in Japan

Located in the heart of Bath, The Cork is the city's longest-running private karaoke pod venue and the ultimate destination for students to belt out their favourite tunes – especially in times of stress. But for Team Bath Heart, a multidisciplinary competition team from the University (of which I am team lead), The Cork has become much more than just a nightlife hotspot – it's a crucial part of our preparation strategy.

Team Bath Heart is currently developing a novel Total Artificial Heart (TAH) – a project that demands precision, innovation and countless hours of dedication. Leading up to the International Heart Hackathon competition in Japan in 2024, where teams from all over the world compete in their novel design of a TAH, we were determined to make our mark – not only in the competition but also as the best karaoke singers around. After all, karaoke is huge in Japan, practically a national pastime. From neon-lit city centres to cosy local bars, it's woven into the social fabric, providing both a release and a means of bonding.

So, we took full advantage of Bath's very own karaoke haven to prepare. The final weeks before the competition saw us buried in finalising our CAD (computer-aided design) renders, endless team meetings, and rehearsals with supervisors and external advisors. But once the laptops closed, it was time for some much-needed downtime at The Cork.

Our ritual was simple. After long days refining our presentation and fine-tuning our designs, we'd wrap up in the lab and reconvene at The Cork for a well-deserved break. Here, in a low-lit room, we tackled everything from Queen anthems to Spice Girls classics. We found that singing our hearts out not only helped us unwind but also strengthened our team spirit, making us even more formidable competitors.

When we got to Japan in November 2024, we had the bright idea of booking a karaoke booth to practice our presentation. These light-hearted final practices and team bonding moments are truly what set us apart. When it came to the competition, we didn't just bring a groundbreaking wirelessly powered TAH – we brought the confidence of a harmonious group.

Not taking ourselves too seriously has been part of team building and a lovely experience, and The Cork played an integral role in this. As team lead, I couldn't be prouder of the hours poured into our project.

It was this balance of hard work and talent that fuelled our journey to Japan, where we were named the best in the world for the second year running.

The 2024 team has now handed over the mission to the next generation, who are gearing up for another big challenge in Vienna, Austria, in December 2025. Follow us on Instagram and LinkedIn **@team_bath_heart** to track our progress and visit **www.teambathheart.co.uk** to find out more about our project. If you're ever in Bath, don't miss out on a night at The Cork. It's more than just a karaoke bar, it's a place where teams are built, and memories are made.

Do you agree? Let us know!
advancement@bath.ac.uk
@uniofbathalumni
@bath.alumni.community

BA2 Extra

UNIVERSITY OF BATH

BATH CONNECTION

CONNECT. NETWORK. INSPIRE.

THE ONLINE COMMUNITY FOR ALUMNI, STAFF AND STUDENTS TO CONNECT AND NETWORK.

- Access alumni benefits
- Opportunities to volunteer as an eMentor or find your own
- Reconnect with former classmates and like-minded people
- Seek career support and guidance
- Access to the University Library and journals
- Available wherever you are in the world

Join now via go.bath.ac.uk/bath-connection or scan the QR code.