University of Reading

Doctoral and Researcher College

DOCTORAL RESEARCH

Supporting research for 100 years

Highlights
Centenary Edition

WELCOME

PROFESSOR ADRIAN WILLIAMS
ASSOCIATE PRO-VICE-CHANCELLOR FOR POSTGRADUATE RESEARCH STUDIES AND RESEARCHER DEVELOPMENT

Welcome to the centenary edition of Research Highlights.

Our centenary offers the opportunity to celebrate some of the amazing work from our current doctoral researchers and to reflect on the work of our earlier doctoral researchers and the impact they continue to make on today's generation.

Much has changed in higher education over the last 100 years, but doctoral study remains both challenging and stimulating, driving forward research and innovation, and providing a strong foundation for students to develop into independent critical thinkers. The criteria that we use to award a doctorate today – the generation of new knowledge and understanding rooted in the context of prior work – are the same as those we used 100 years ago.

In 1929, **Phyllis Ramsden** was awarded her PhD in Modern History, making her one of the earliest women to achieve her doctorate at Reading. Her career later led her to be part of one of the most intriguing archival projects of the twentieth century; the transcription and study of Anne Lister's (1791 –1840) coded diaries. Working alongside Vivien Ingham, Ramsden helped to unlock the private world of Lister and her romantic relationships with women. This work strongly resonates with the ethos of the School of Humanities, where doctoral researchers continue to explore the complexities of human experiences.

In this issue we feature the work of **Henrietta Hammant**. Henrietta delivered the Fairbrother Lecture, The Making of a Hero – Memory and Myth in Antarctic Exploration, to a packed audience at the Reading Biscuit Factory. Reflecting our history, this public lecture series is a legacy of **Jack Fairbrother**, who earned his PhD in Physics in 1929 with research into the effects of X-rays on colloids (a mixture of microscopic particles that are suspended in another medium).

This edition highlights current research seeking to address urgent health, social and environmental issues of today, including global poverty and inequality, flood forecasts and cancer. We also feature work explaining why conserving unique birds is critical for biodiversity.

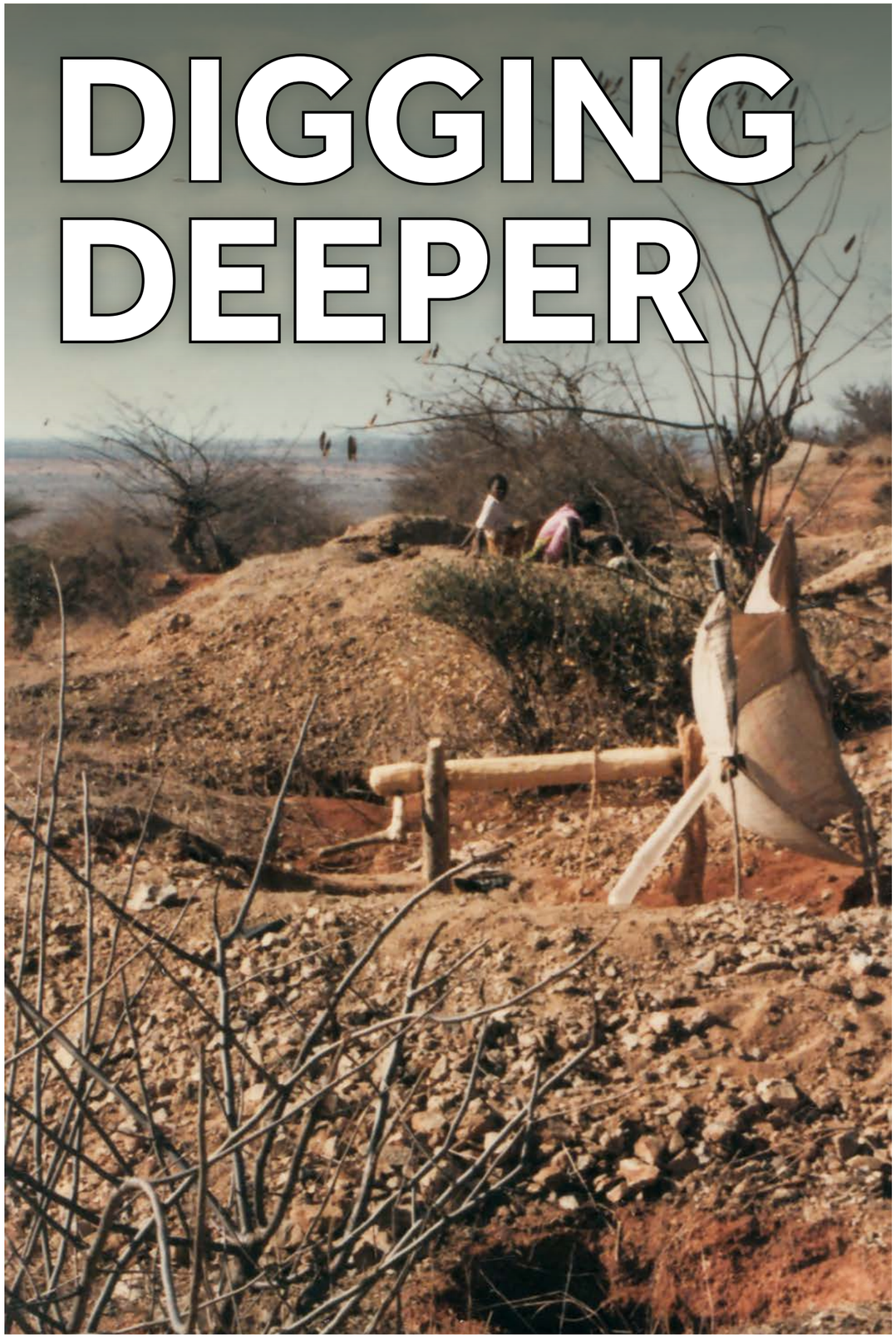
Biological research is not new at Reading. From our archives we see that **Eric Thomas Brazil Francis** undertook his doctoral research within the laboratory of Professor Francis Cole and was awarded his PhD in Zoology in 1933. The following year, he published his doctoral work in a book entitled *The Anatomy of the Salamander*. Francis played a role in enriching the University of Reading's Cole Museum of Zoology's collection founded in 1906; he prepared and donated numerous specimens and exhibits, contributing to a museum which today continues to offer a window into the diversity of animal life.

We celebrate the achievements of today's doctoral researchers, as well as the legacy of past scholars, who likewise made significant contributions to their field by generating new knowledge and understanding.

I hope you enjoy reading these highlights.

FRONT COVER IMAGE: 'Fungal Sun' by Andre Parise.
Doctoral research highlights from 2025. Published spring 2026

Old Whiteknights House, Doctoral and Researcher College.



Exploring why natural wealth still leaves so many countries in poverty

Natural resources like oil, gas and minerals are often seen as a shortcut to prosperity. Countries rich in these resources are expected to enjoy faster economic growth, better public services and higher living standards. Yet in many parts of the world this promise has not been fulfilled and some resource-rich nations remain among the poorest. This is a contradiction commonly described as the 'resource curse'.

This paradox raises an important question: why do countries with valuable natural endowments continue to struggle with poverty and under-development? 'Poor Tanzanians with rich possessions' is a phrase I use to describe the phenomena of communities sitting on vast natural wealth while living in poverty. This contradiction is the focus of my PhD research and drives me to challenge the state of affairs in resource-rich developing nations.

I investigate why countries blessed with abundant resources often struggle to achieve meaningful development, examining how governance can be the difference between a gold-fuelled prosperity and gold-laced poverty. The research focuses on mining communities in Geita and Kahama Districts within the Victoria Goldfields, a leading gold production zone in Tanzania, exploring the root causes of underdevelopment despite gold wealth in those areas. Geita hosts the largest gold mining company in the country while Kahama is home to Barrick Gold Corporation, a global gold mining company. Despite the substantial wealth generated from gold mining activities, living standards in these areas remain below the national average. For instance, Geita's regional GDP per capita is USD 1,119 and Kahama's is USD 1,151, both below the national average of USD 1,223.

From my analysis I am developing a practical framework which communities and policymakers can use to better harness resource revenues. These frameworks, I believe, could be replicated in other mineral rich countries across Africa and beyond. By drawing lessons from countries like Norway, Australia and United Arab Emirates that have successfully turned natural resources into long-term economic gains, my study highlights strategies to help break cycles of dependency and inequality and apply them to the context of gold mining in Tanzania, offering insights into how resource wealth could be managed more effectively to support sustainable development and improved social welfare.

I am no stranger to the world of economics, finance and rural transformation as I have over 15 years of experience in international development, including a decade with the United Nations Capital Development Fund (UNCDF). I have led investment initiatives across East and Southern Africa and advised projects as far afield as Southeast Asia. For me, this research isn't just about theory. It's about livelihoods and lost potential. I see my research as a tool for empowering rural communities which are often left behind in national development plans. Natural resources should be a blessing rather than a curse.

ABRAHAM BYAMUNGU IS A DOCTORAL RESEARCHER IN INTERNATIONAL DEVELOPMENT IN THE SCHOOL OF AGRICULTURE, POLICY AND DEVELOPMENT

1 Tanzania National Bureau of Statistics (NBS). (2024). National Accounts Statistics for Tanzania Mainland (2017-2023).6th Edition. Exchange rate TZS/US$ = 2,502

Auction of gold content stones at Nyamatagata, Mgusu Ward, Geita in Tanzania. Photo Abraham Byamungu.

MICROTUBULE MAYHEM:

How tumours stay in touch

Cancer is often portrayed as the moment when ordinary cells go rogue, multiplying uncontrollably and slipping past the body's built-in defences. However, cancer cells behave more like organised communities, able to sense one another, respond to their surroundings and act in unison, sharing information that helps them survive hostile conditions and, in some cases, break away to spread to new parts of the body. For decades, researchers have assumed that this conversation between cancer cells was predominantly chemical. In other words, cells release signalling molecules that diffuse through tissue and bind to receptors on neighbouring cells, setting off a chain of molecular events that promote malignancy. This system works, but it is slow and easily disrupted, which raises the question: do tumours use a faster, hidden language that we have yet to uncover?

It has been shown that cancer cells can generate and conduct electricity; like tiny batteries, they maintain a voltage across their membranes and subtle shifts in this electrical state carry instructions.[1] These electrical signals are driven by the movement of ions, especially calcium, which power processes such as muscle contraction and nerve activity, but also serve as a cell's universal messenger.

Calcium signals can take many forms; they can flash in irregular bursts or ripple in rhythmic waves. This biological Morse code gives each cancer type its own electrical signature. Inside a tumour, these patterns convey specific instructions such as rapidly switching genes on or off, directing when cells should grow or move, helping them resist damage or coordinating behaviour across groups of cells.

If calcium signals function as an electrical code, a fundamental question arises: how is such a code transmitted and interpreted within a tumour? The answer lies in the concept of mechano-electrical coupling (MEC). Put simply, MEC describes how a cell's mechanical properties (its shape, stiffness, internal scaffolding) can amplify or dampen calcium signals. By modulating these electrical signals, MEC may give tumours a highly adaptable and precise way to communicate.

To assess such a theory, I investigated calcium signalling in two extremely aggressive yet morphologically different cancers: triple-negative breast cancer and glioblastoma. My research showed that the cancers behaved strikingly differently. In breast cancer, calcium signals were slow, irregular and confined within an individual cell. In contrast, glioblastoma produced fast, rhythmic calcium waves that spread across the cell network. These waves travelled along microtubules, the cell's internal scaffolding, essentially acting like an electrical grid that routes signals between cells. Even when microtubules were disrupted, glioblastoma retained most of its signalling, whereas breast cancer microtubules were far more susceptible to mechanical disturbance.

This research highlights two core approaches by which these cancers behave malignantly. Breast cancer is highly adaptable and mobile, supporting spread to other parts of the body: around 30% of breast cancers spread beyond the primary site, compared with only 0.4–2% of glioblastomas.[2] However, the lack of networked microtubules within breast cancer cells, result in limited connectivity, making them more responsive to treatment. In contrast, glioblastoma forms strong intercellular networks that allow cells to share resources during mechanical disturbances. This cooperative structure makes them remarkably resilient but limits metastatic spread. Clinically, these differences are reflected in patient outcomes: breast cancer has a relatively favourable five-year survival rate of ~91% overall, whereas glioblastoma remains highly lethal with a five-year survival rate below 10%, even with maximal therapy.[3]

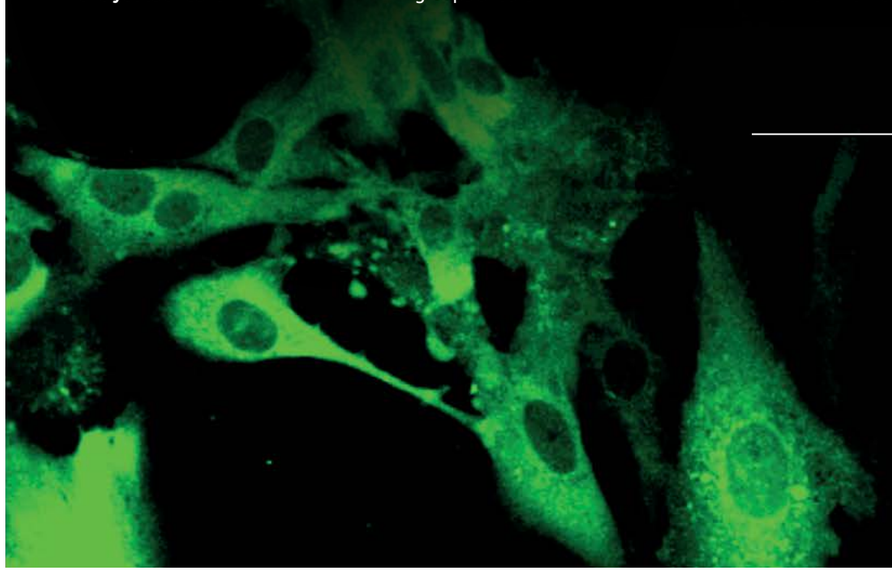
Further understanding of this mode of communication within cancer cells will enable researchers to develop more targeted therapies, offering more precise, effective treatments resulting in improved outcomes across a range of cancers.

JADE ROBERTS IS A PART-TIME DOCTORAL RESEARCHER IN THE SCHOOL OF BIOLOGICAL SCIENCES.

1) Quicke P., Sun Y., Arias-Garcia M., Beykou M., Acker C.D., Djamgoz M.B.A., et al. Voltage imaging reveals the dynamic electrical signatures of human breast cancer cells. Communications Biology. 2022;5(1). **https://doi.org/10.1038/s42003-022-04077-2.**

2) O'Shaughnessy, J. Extending survival with chemotherapy in metastatic breast cancer. The Oncologist. 2005;10(S3):20–9. **https://doi.org/10.1634/theoncologist.10-90003-20.**

3) Sipos, D., Raposa, B. L., Freihat, O., Simon, M., Mekis, N., Cornacchione, P., et al. Glioblastoma: Clinical presentation, multidisciplinary management, and long-term outcomes. Cancers. 2025;17(1):146. **https://doi.org/10.3390/cancers17010146.**



Cancer cells do more than multiply; they actively communicate by detecting mechanical forces from neighbouring cells and relaying their responses using electrical signals that travel across the tumour via the formation of microtubules.

Red image: A pair of glioblastoma cells interconnected via microtubules
Green image: Breast cancer cells exhibiting a lack of microtubules

MEMORY AND MYTH IN ANTARCTIC EXPLORATION

In the 2025 Fairbrother Lecture doctoral researcher Henrietta Hammant unpicked changing views of the heroic in Antarctic exploration.

> This era of Antarctic history often focused on individual heroic men, and while they were the ones in Antarctica, so many people helped to get them there, and ensured that they would be remembered to this day.

Image: Painting by John Charles Dollman, Public Domain, via Wikimedia Commons.

Heroic sacrifice

British army officer Captain Lawrence Oates was one of five men chosen to journey to the South Pole during Captain Robert Falcon Scott's British Antarctic Expedition of 1910–1913. After a gruelling journey, the men's dream of being the first to reach the Pole was crushed when they discovered that the Norwegian explorer Roald Amundsen and his team had reached it just five weeks earlier.

Utterly dejected, the men began their long journey back to camp. Oates' feet were badly frostbitten, he was malnourished and scurvy was causing his old war injury to re-open. He understood with painful clarity that he was holding the others back and, as a blizzard raged outside their tent, he made a quiet decision. Rising, he turned to his companions and said: "I am just going outside and may be some time."

He stepped into the storm, choosing death so that his friends might live, and was never seen again.

What makes a hero?

You would be forgiven for thinking that heroism is a fixed characteristic. The endurance of Scott and his men, their willingness to do the best they could in difficult circumstances and Oates' sacrifice in laying down his life for his companions, all certainly fit our current cultural understanding of the heroic.

But a closer look suggests that our definition of heroism can change over time. For example, Scott was initially held up as an archetypal hero: physically brave, leading 'from the front' and a martyr to patriotism. After his Antarctic expedition, at a time when men were being sent to fight in World War I, Scott became a model of leadership. But in the 1940s and 50s, in a post-war social context, shifting perceptions saw Scott increasingly criticised by people more interested in an egalitarian leadership style.

Is heroism then in the eye of the beholder?

The museum lens

As a museum anthropologist, I am interested in the people in museums – those who work in them, visit them and whose lives are on display. My research argues that heroism can be understood as a relationship between the 'hero' and the 'viewer' and that this relationship is mediated through the lens of the museum. How we understand heroic figures is therefore influenced by how we represent them in our museum practise. Through careful consideration of museum objects, we can uncover the networks of people whose interactions with Antarctic explorers shape the way they are remembered to this day.

One key object in my research is the sleeping bag that belonged to Captain Oates. To create it, reindeer fur was sourced from the Sami, an indigenous group who have practiced reindeer husbandry for thousands of years. The quality fur was then sewn into a sleeping bag by sailmakers in Cardiff. The associated costs were met through the fundraising efforts of the children at Trafalgar House School in Winchester. After Oates' sacrifice, other expedition members brought the bag all the way back to the UK, where Oates' family treasured it, before donating it to a museum. In this way, through one object, we can see an emerging network of people stretching across time, countries and communities. One issue to consider is how museums make this large cast of actors visible. I believe that one approach is to display objects in proximity with others telling related stories, as a physical illustration of these networks of relationships.

Heroism is a slippery term. It is not fixed but shifts across time. It is not only shaped by the actions and characteristics of the hero, but by a range of people, objects and institutions that influence and preserve their memory.

HENRIETTA HAMMANT IS A MUSEUM ANTHROPOLOGIST AND WAS A DOCTORAL RESEARCHER IN THE DEPARTMENT OF ARCHAEOLOGY.

Terra Nova icebound in the pack, Herbert George Ponting, via Wikipedia Commons.

Grotto in an iceberg with the Terra Nova in the background, Herbert George Ponting, via Wikipedia Commons.

Rajan Hatiskar (Great hornbill)

Why conserving unique birds IS CRITICAL FOR BIODIVERSITY

Currently one in eight bird species worldwide are threatened with extinction due to human activity.

From the gaping bill of the Tawny Frogmouth to the needle-like wings of the Great Frigatebird, the shape and size of birds affect how they interact with the world around them and the role they play within an ecosystem. This diversity of shape and size, called functional diversity, is necessary to ensure the wellbeing of the natural world and people. Birds contribute to ecosystem processes such as seed dispersal, nutrient transport and pollination, so extinctions have direct knock on effects for the functioning and resilience of natural ecosystems.

Currently one in eight bird species worldwide are at risk of extinction due to human threats such as habitat destruction, climate change, pollution and hunting. In the past, extinctions have been most common in flightless and island species, indicating that some birds are more vulnerable to extinction than others. The size and shape of an organism influence which threats pose the greatest risk. Large birds are more at risk due to hunting and climate change, whereas birds with broad wings, that fly in clustered airspaces like forests, suffer more from habitat loss.

Including information on birds' size and shape in conservation monitoring can help to identify which birds are most vulnerable to extinction. Until recently we did not have measurements of the legs, tails, wings and beaks of all birds, but recent efforts have massively improved the availability of this data, allowing us to measure bird functional diversity on a global scale.

During my PhD I found that more than 500 bird species could become extinct in the next century if human activity continues to threaten the natural world as it does today – this is more than three times the number of recorded bird extinctions since 1500 CE. Extinctions on this scale would fundamentally alter the diversity of birds worldwide; reducing functional diversity and affecting the valuable ecological roles and services that birds provide to support ecosystems.

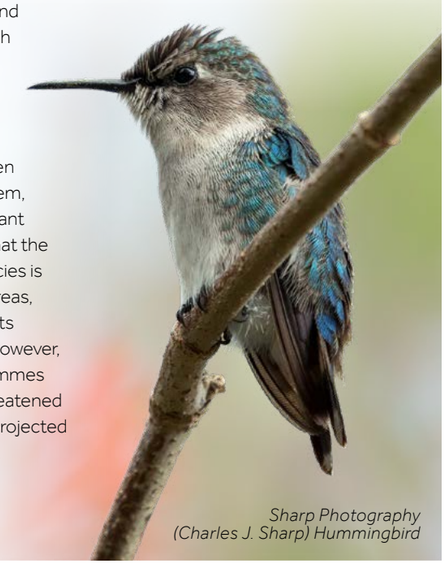
Testing alternative future scenarios, I found that if the impact of human activity could be halted immediately, some extinctions could be prevented. However, between 250 - 350 bird species are already so endangered by human activity that reducing threats to their natural population would not be enough to prevent imminent extinction. Therefore, additional conservation measures, such as breeding programmes and habitat restoration are required if they are to survive the next century.

Some threats, such as hunting and collection for the pet trade (which target the most distinct forms of life), cause a particularly high loss of functional diversity. Birds targeted are those with unusual features, which often play distinct roles in the ecosystem, making them particularly important for functional diversity. I found that the habitat of these unique bird species is less well covered by protected areas, leaving them vulnerable to threats which drive birds to extinction. However, prioritising conservation programmes for 100 of the most unusual, threatened birds could prevent 68% of the projected loss in global functional diversity.

Preventing habitat destruction would save the largest number of birds overall, but stopping hunting and accidental deaths would save a smaller number of birds but crucially, maintain functional diversity.

This research highlighted the need to consider functional diversity in conservation monitoring programmes. To ensure that birds of all shapes and sizes are protected for generations to come, action must be taken to reduce the impact of human activity on bird species, along with conservation programmes that boost threatened populations and protect habitat for unique species.

KERRY STEWART WAS A DOCTORAL RESEARCHER IN THE SCHOOL OF BIOLOGICAL SCIENCES AND WAS AWARDED HER DOCTORATE IN AUGUST 2025.



Sharp Photography (Charles J. Sharp) Hummingbird

Top image: Magnificent Frigatebird (Virtual-Pano)

WHERE THEORY MEETS SOIL

Building connections and impact beyond the university

Though creating an impact beyond the confines of the university can be challenging, PhD student, artist and curator Kerri-Anne Chisholm has found a way to intertwine art, community and research. Her research centres on a community arts space she spearheaded in the Cayman Islands that blurs the boundaries between academic inquiry and everyday life.

Kerri-Anne's research explores ways that exhibitions can be tools for care and social activism; helping marginalised communities shape and express their identities whilst supporting social mobility. Rather than keeping these questions to theory, her work tests them in practice.

The project space she founded, Gram Bella's, centres around Caribbean social practices of gathering within the yard space and sits on deeply personal ground. It occupies the site of her great-grandmother's former backyard which has now been reclaimed and carefully transformed into a space for exhibitions, film screenings and open community conversations. Drawing on her experience of curating projects at the National Gallery of the Cayman Islands, the University of Oxford and Tate Exchange, Kerri-Anne envisioned Gram Bella's as a place that prioritises connection:

"In times of intense division, a key aim is to create a space of safety where gathering is rooted in intuitive togetherness and knowledge sharing."

The development of Gram Bella's was shaped by extensive dialogue with other creative spaces that operate outside traditional institutional models. These included Beta-Local, a non-profit organisation in San Juan, Puerto Rico, and Ruby Cruel, an independent creative space in Hackney, London, among others. Through Gram Bella's, Kerri-Anne's research examines the museum-going experience through racial, social and political lenses. It considers how individuals who engage with the space – particularly those from diasporic, migrant and disenfranchised communities – might see gains in social mobility. Rather than relying on traditional metrics, impact will be understood by how cultural and social capital are built, and ways participants see themselves and their possibilities differently as a result.

For Kerri-Anne, the work relates to broader questions of Caribbean identity which she sees as shaped by duality, contradiction, and legacies of colonialism. For instance the Cayman Islands are home to over 160 cultures with a population of 90,000. The complexities of which are personally reflected in Kerri-Anne's ancestry which bridge Cayman, Jamaica, Cuba and Scotland together. Within these intricacies, she sees the yard as a powerful and familiar site:

"The yard is an intuitive place for mediating and negotiating identities. In the Caribbean it has long been a space of solace, grief, labour, celebration and connection."

Rooted firmly in the place and community it serves, Gram Bella's sits at the intersection of research, art and lived experience. As Kerri-Anne shares,

"Gram Bella's operates where theory meets soil."

What was once an abandoned yard has become a site of cultural possibility inviting collective reflection, healing and imagination, demonstrating how doctoral research can take root far beyond the walls of a university.

KERRI-ANNE CHISHOLM IS A PHD PRACTICE IN CURATION STUDENT IN THE SCHOOL OF ARTS AND COMMUNICATION DESIGN.

PROTECTING COMMUNITIES

Using AI to improve flash flood forecasts

Some high-impact disasters announce themselves. Hurricanes may appear on satellite imagery days before landfall, their paths may be predicted with remarkable precision. Flash floods offer no such courtesy. They account for approximately 85% of all flood events worldwide, claim over 5,000 lives annually, and inflict damages exceeding billions of dollars each year. Yet, communities often receive no warning at all, or at best mere hours in advance. This disparity prompted my doctoral research: can we extend flash flood warnings from hours to days, and can we do so globally?

The challenge is twofold. Traditional flash flood prediction relies on high-resolution hydrological models calibrated for individual river catchments. Whilst such approaches can yield skilful predictions at catchment scales at short-range lead times (up to one day ahead), they become computationally prohibitive when extended to continental or global domains and medium-range lead times (i.e., three to five days ahead). Furthermore, the observational infrastructure necessary to develop such models remains concentrated in wealthy nations, leaving billions of people in data-scarce regions without access to life-saving warnings.

The United Nation's "Early Warnings for All" initiative aims to protect every person on Earth with early warning systems by 2027. For flash floods, achieving this vision demands methodologies that transcend traditional constraints. My approach combines global rainfall forecasts for localised extreme rainfall with hydrological information (e.g., soil moisture, terrain steepness, and vegetation coverage), using machine learning to estimate the probability of flash flooding at any location. The model was trained on over 100,000 documented flash flood events spanning two decades and the continental United States' diverse climates, from arid deserts to humid subtropics. Results demonstrate that this approach can identify areas at heightened flash flood risk three to five days in advance, identifying on average ~20% more flash flood events whilst reducing false alarms (i.e. cases when an event is predicted but it did not happen) by 98% compared with rainfall-only flash flood predictions.

The most striking finding emerged when the model was applied outside its training domain. Tested retrospectively on the catastrophic floods in Valencia, Spain (October 2024) and Henan Province, China (July 2021), the model identified elevated risk in both regions despite never having encountered European or Asian observations during training. This cross-continental transferability suggests the model learned fundamental physical relationships between rainfall, landscape characteristics, and flash flood occurrence, rather than patterns specific to the US's geography and climate. Should these relationships prove robust under further validation, global-scale flash flood warnings become feasible. Crucially, the predicted probabilities, ranging from approximately 25% at day one to 5% at day five, remain actionable across this forecast horizon, enabling graduated response protocols: higher-confidence forecasts at shorter lead times could support evacuation decisions, whilst outlooks at three to five days could inform preparedness activities such as pre-positioning emergency supplies, issuing public advisories and activating monitoring networks.

Important caveats remain. Performance in regions with very complex terrain or exceptionally sparse observational coverage requires further validation. Moreover, performance varies with event type: for highly localised flash floods, useful predictions extend to approximately three days, whilst for large-scale events driven by tropical cyclones or extratropical storms, predictability is attained up to five days ahead.

Nonetheless, this work demonstrates that extending flash flood warnings to medium-range lead times across a global domain is not merely aspirational but achievable, contributing towards the UN's goal of universal early warning coverage by 2027 and offering a concrete pathway toward protecting vulnerable communities from one of nature's most sudden, deadly, and unpredictable hazards.

FATIMA PILLOSU IS A PHD RESEARCHER IN THE SCHOOL OF ARCHAEOLOGY, GEOGRAPHY AND ENVIRONMENTAL SCIENCE STUDYING IN COLLABORATION WITH THE EUROPEAN CENTRE FOR MEDIUM-RANGE WEATHER FORECASTS.

ECHOES OF EVERYDAY LIFE

Tracing Neolithic bioarchaeology in lifestyles through the Middle East

As human beings, our lived experiences are shaped by our interactions with the material world surrounding us. The activities we habitually perform structure our daily lives, contribute to the definition of our identities and can leave permanent traces on our physical bodies, from our skin to our muscles and bones. These traces capture parts of our life histories and can reveal something about who we are.

In human bioarchaeology, the study of human remains in their archaeological context, we can look at specific changes in bone to explore relationships between people and their environments. Although interpretations are not straightforward, integrating skeletal analysis with archaeological data and lines of evidence provided by other specialisms can shed light on past habitual activities and, across groups of individuals, broader social structures.

This work is especially compelling in prehistoric contexts lacking written records, as the direct study of skeletal remains allows access to aspects of past lives that would otherwise remain elusive.

My research focuses specifically on this phase of human history, and its protagonists are the people of Early Neolithic Bestansur, in Iraqi Kurdistan (c. 7700-7100 BCE). This site, located in the foothills of the Central Zagros and included in the UNESCO Tentative World Heritage List, is one of the very few to document the early emergence of village life in the region.

Bioarchaeological analyses of individuals from Bestansur revealed small bone growths in the ear canal known as auditory exostoses, often referred to as 'surfer's ear' due to their frequent occurrence in water sports participants. The clinical literature links these growths to prolonged and/or repeated exposure to (cold) water and wind chill, making them useful indicators of aquatic activity in archaeological settings.

At the site, auditory exostoses were found in individuals of different sexes and ages, including children, an age group in which such growths are rarely observed. This evidence indicates that participation in aquatic activities was not restricted to specific social groups. Rather, both adults and children in the community regularly spent time in freshwater environments, including the nearby spring and local river.

The archaeological record provides additional clues about the activities that the people of Bestansur carried out near water. These included food sourcing, with a focus on fish, crabs and molluscs, and collecting small shells to make decorative objects. Water bodies may have also supported recreational activities that leave no archaeological traces but were nonetheless important to daily life, with parallels in modern uses of the spring.

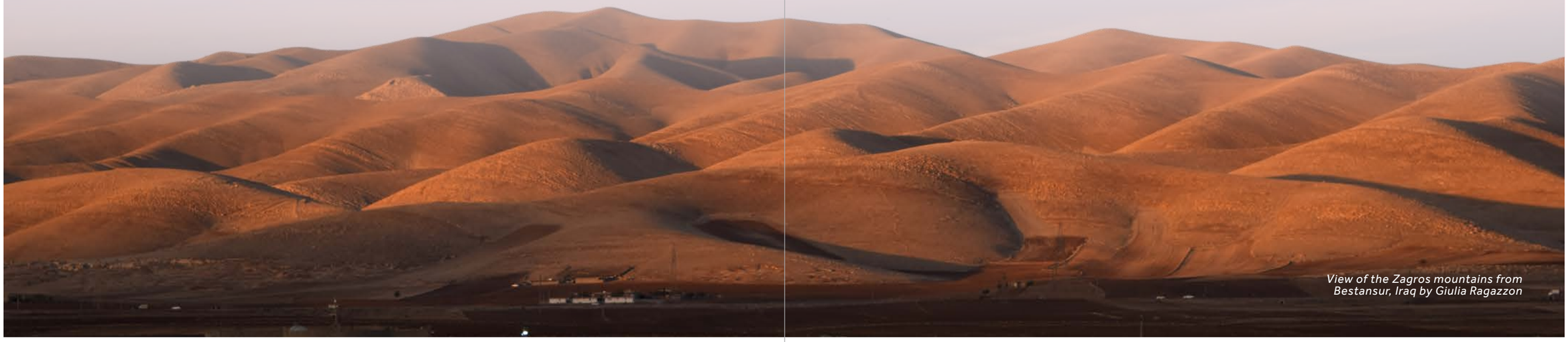
Evidence from Bestansur suggests that the importance of aquatic environments as settings of habitual activities may have been overlooked at inland sites in the Central Zagros. At a time when people were becoming increasingly sedentary but were not fully reliant on domesticated plants and animals, freshwater habitats would have provided a reservoir of precious resources.

As we picture the inhabitants of the site fishing, swimming and collecting shells for ornaments, we gain insights into human behaviours and the socio-cultural structures that sustained their community. By investigating clues preserved in the human skeleton, bioarchaeology thus offers a rare glimpse into the habitual actions that formed the fabric of everyday life.

Beyond revealing broad aspects of diet and health, this work provides a deeper understanding of simple human experiences, bringing us closer to the people of the past.

If you would like to know more, you can find my open-access publication on auditory exostoses at Bestansur at the following link: https://doi.org/10.1016/j.ijpp.2025.09.003.

GIULIA RAGAZZON IS A PHD RESEARCHER IN THE SCHOOL OF ARCHAEOLOGY, GEOGRAPHY AND ENVIRONMENTAL SCIENCES WITH FUNDING FROM THE AHRC SOUTH, WEST AND WALES DOCTORAL TRAINING PARTNERSHIP.



View of the Zagros mountains from Bestansur, Iraq by Giulia Ragazzon

TOKENISTIC, IMPACTFUL OR SOMEWHERE IN-BETWEEN

The prison system in the UK is in a state of crisis with an urgent need for reform due to chronic overcrowding, under-resourcing and rising levels of violence and self-harm.

Can rehabilitation in UK prisons be co-produced?

Over the past decade, co-production has increasingly been recognised across the criminal justice system as an approach to address these challenges. Co-production refers to a broad set of inclusive research approaches, such as peer-led collaborations and focus groups, that place people with lived and direct experience at the centre of the research process to develop meaningful, practical solutions for change.

Charitable organisations such as User Voice, Unlock and The Prison Reform Trust are implementing co-production practices in prisons. Indeed, before starting my PhD I led many co-produced research projects with User Voice including one which explored the experience of neurodivergent people in the criminal justice system, placing their insights at the centre of the work.

The intellectual foundations of co-production can be traced back to earlier critiques; most notably the work of Paulo Freire, the Brazilian scholar and critical pedagogue whose work emerged from adult literacy campaigns in Latin America and a lifelong commitment to social justice. Freire challenged traditional models of teaching with the concept of 'banking' education; in which learners are passive recipients of expert knowledge rather than active participants in the production of knowledge and meaning. Parallels can be drawn between Freire's concept of 'banking' in the education system and the traditional model of imprisonment, where prison regimes and rules are imposed on people in prison, structuring every aspect of their daily lives and shaping how both punishment and rehabilitation are experienced.

Today, co-production practices in prisons are beginning to challenge traditional models of punishment by shifting the responsibility of the day-to-day prisoner experience and rehabilitation into the hands of individuals within the criminal justice system. This approach emphasises practices that are 'done with' rather than 'done to' individuals. However, evidence of co-production's effectiveness remains largely anecdotal; with current co-production practices ranging from tokenistic approaches to genuinely impactful involvement, and their benefits and limitations yet to be examined.

My PhD seeks to critically investigate co-production practices in prisons and evaluate its potential as a methodology for creating change. My research will adopt an ethnographic approach; observing co-production in action within prisons, by examining how staff and people collaborate on shared projects. This will be alongside in-depth interviews with individuals with lived experience and other key stakeholders, to understand how co-production operates in practice.

My goal is to develop a co-production model, developed collaboratively with people with lived experience, to better address the diverse needs of those in prison. The findings will contribute to the expanding field of lived experience led research in the criminal justice system, such as the 'Nothing about us without us' and convict criminology movements. Ultimately, the aim is to improve outcomes for people in prison and improve rehabilitation, which in turn enhances public safety.

I hope that by evaluating co-production research in prisons and promoting best practice will, over time, generate a domino effect enabling co-production models to be adopted across other sectors, including healthcare and education. This work will ensure that people with lived and direct experience move from being objects of research to genuine partners in shaping knowledge and meaningful, practical change.

CHRISTOPHER PURNELL IS A DOCTORAL RESEARCHER IN THE SCHOOL OF LAW

Save the date: The 2026 conference will take place on Wednesday 17 June.

2025 Doctoral Research Conference

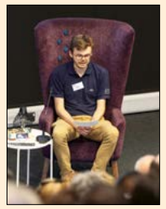
The 2025 Doctoral Research Conference (DRC) brought a real buzz to the Palmer Building on the afternoon of 18 June. Over 250 doctoral researchers gathered to celebrate the diverse and incredible research undertaken across the university. The atmosphere was fun and full of curiosity with eight different competitions taking place alongside a keynote, by Dr Mark Dallas on public engagement.

Research for a Better World Competition

Steve Gomersall (Institute of Education) won the global prize on his research exploring how technology can be integrated into classrooms in low-resource and crisis-affected settings. The national prize was awarded to Seada Kassie (School of Psychology and Clinical Language Sciences) for her development of a dementia care education framework within the United Arab Emirates.

Research in an Object Competition

Gaia Mortier (School of Archaeology, Geography and Environmental Science) won with a 3D-printed louse egg.



Your Research as a Bedtime Story Competition

Samuel Clark (School of Philosophy, Politics and Economics) charmed everyone with his story 'The village that laughed back.'

Research Image Competition

Andre Parise (School of Biological Sciences) won for his striking image entitled 'Fungal Sun.'

Three Minute Thesis Competition

Vic Pickup (School of Humanities) impressed judges with her talk 'Sorry not sorry: The invisible women behind Mills & Boon,' earning her the top prize. Her talk was selected to progress to the national VITAE final.

Research Poster Competition

Rebecca Matthews (School of Psychology and Clinical Language Sciences) won with her thought-provoking poster 'The 'Gold Standard' birth: How unmet birth expectations shape maternal mental health.'

Poetry, Rhyme and Rap Competition

The prize was awarded to Harry Simmonds (School of Agriculture, Policy and Development) with his poem 'Hear the wheat strands.'

Research Life in Pictures Competition

Hillary Chanda (School of Built Environment) captured the judges' attention with an image montage showing the contrast between fieldwork in rural Zambia and academic life in Reading.

WATCH THE 2025 DRC HIGHLIGHT FILM AT **HTTPS://RDG.AC/DRC25**

A PHD... BUT WHAT COMES NEXT?

An interview with Dr Oliver Hancox

In 2023, Oliver Hancox was awarded his doctorate in Pharmacy from the University of Reading. His PhD focused on the development of chemical tools to selectively tag and modify glycan carbohydrate based structures within biological processes to better understand their interactions within living systems.

He now works as the Chief Executive Officer (CEO) for Astratus Limited, a healthcare technology company spun-out from research conducted at the University of Reading. The company has developed a rapid antimicrobial susceptibly testing platform that analyses microorganisms (bacteria) in patient samples to identify the most effective antimicrobial treatment.

How did you transition from PhD student to CEO?

While writing up my thesis in 2022 I was able to contribute to a NIHR (National Institute for Health and Care Research) funded project developing rapid diagnostic technologies for healthcare. Upon submitting my thesis, I secured a Research Associate role within the research team full-time, and we began to consider the potential impact of our research on the £3.6 billion global antimicrobial susceptibility testing market.

Over the following months we secured additional funding to specifically look at how we could translate the platform technology into clinical settings and develop a route to market. This laid the foundation for the company - Astratus. Over the next year, my day-to-day role would alternate from research to business development to negotiation and eventually culminating in a combination of all three. This ultimately, led me to leave academia so that I could focus on setting up the company.

How has your research background helped you?

My research background provided far more than just subject specific expertise; it trained me in critical thinking, problem solving and decision making (especially in how to use the data that I had available to me at the time). It also taught me how to communicate complex ideas and articulate problems to a variety of different audiences. Ultimately, the most valuable trait that I learnt was resilience; the ability to adapt, refocus and overcome challenges when things did not work first time. This has been invaluable in my current CEO role.

What do you enjoy most about your role?

It is wonderful to see our research move beyond the theoretical towards the development of an antimicrobial susceptibly platform which will be able to deliver digitised results in under 6-hours. Deaths attributed to antibiotic resistance are forecast to reach a cumulative total of 39 million by 2050, which equates to three deaths every minute. This platform will ensure that people will receive the right treatment for their infection quickly, thereby reducing the number of deaths attributed to antibiotic resistance.

What has been the biggest challenge so far?

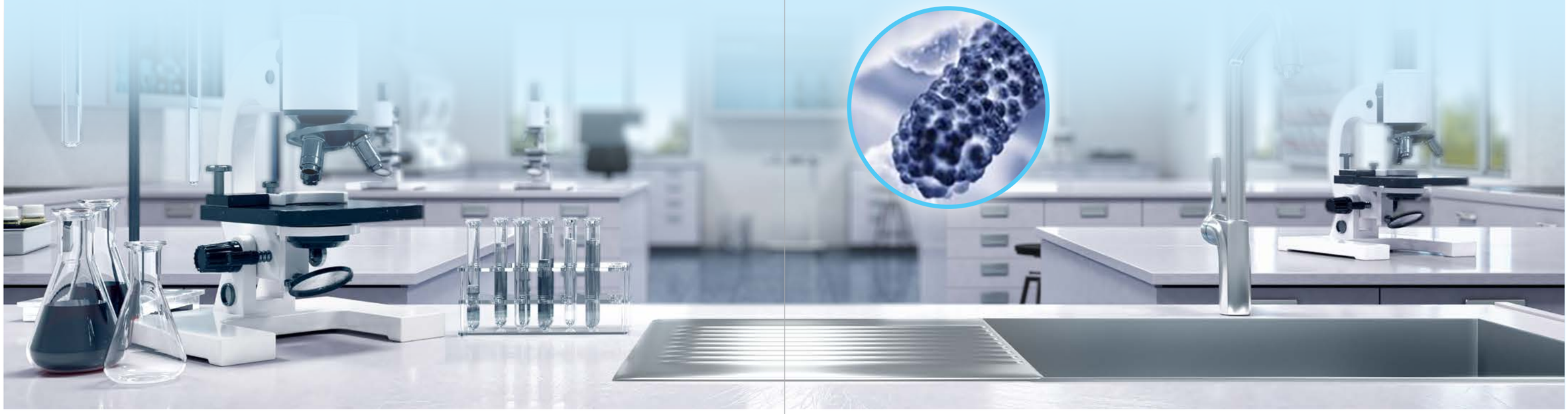
No two days are the same; I am involved in everything from technical platform development and investment processes to commercial strategy. Managing the day to day running of the company is simultaneously the most rewarding and challenging aspect of my role.

What do you think has been the key to your career progression?

Honestly, I do not think there has been a single defining factor for my career success but rather a combination of hard work and genuine passion. Critically, identifying my strengths and more importantly my weaknesses has allowed us to build a team that supports my personal development and drives the business forward.

What is next on the horizon for you?

My future is firmly fixed on growing Astratus through continued team and research development, so we can move closer to real world deployment and improve access to rapid antimicrobial testing.



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