

### Images Of Research 2020 Winners:

#### **Martha Papadopolou – ‘Melting The Secrets Of Rocks’ - Judges’ Prize Winner and People’s Choice Runner-up**

Collecting rocks is a common passion among geologists, and also an integral part of their job. But have you ever wondered what happens to these rocks collected on different expeditions, and how geologists know so much about them? Rock samples undergo a variety of analyses and processes in order to give insights about their origin, composition and age. Melting part of a rock to produce a glass sample for analysis can provide invaluable information about its origin, the conditions during its formation and the geological cycle, that bring us a step closer towards understanding the wonderfully complex and active planet Earth, we all live on.

#### **Pedro Rodriguez Veiga – ‘Art Meets Radar’ - Judges’ Prize Runners-up**

Satellite radars are active sensors independent of solar illumination, being able to obtain day and night observations of Earth. They can ‘see’ through haze, clouds and smoke. Radar images are ideal for studying the land cover dynamics of tropical areas such as the Congo Basin, where there are few days a year without cloud cover. Radars are also sensitive to soil moisture. This RGB image is composed of three scenes acquired at different dates. Stable landscape features appear black and greyish, while changes derived from vegetation dynamics, river flow changes, and soil moisture differences appear very colourful.

#### **Damian Roland – ‘COVID19 And Children: The True Cost Of The Pandemic’ - Katherine May People’s Choice Winner and Leicester Institute of Advanced Studies Interdisciplinary Prize**

During lockdown it was feared children would be brought late to Emergency Departments due to parental fear of them catching COVID. Research led by Leicester Hospitals and University demonstrated this didn’t occur as expected. Furthermore accidental burns (due to more time spent at home) and breathing difficulty (driven by COVID infection) didn’t increase as predicted. However a generation of children are potentially now affected by a huge mental health and educational burden. It’s vital the media narrative around COVID changes from black and white debate (especially around opening schools) to a more inclusive public facing dialogue about the challenges ahead.

#### **Victoria Szafara - ‘Feeding The Machine’ - Leicester Institute of Advanced Studies Interdisciplinary Prize**

Ancient archaeology meets modern technology. Using artificial intelligence algorithms similar to facial recognition software, the AHRC-funded Arch-I-Scan project, led by Professor Penelope Allison (School of Archaeology and Ancient History) and Professor Ivan Tyukin (Department of Mathematics), is developing image-recognition and machine-learning software to identify and record Roman pottery remains. Hundreds of thousands of images are being taken using handheld devices (mobile phones) and fed into the AI system as part of its ‘training’ (the more the system ‘sees’, the more it learns), as can be seen in this photo-within-a-photo of a Samian ware plate from the Museum of London archive. Image by: Victoria Szafara. Submitted by the Arch-I-Scan project research team:

Professor Penelope Allison (School of Archaeology and Ancient History), Professor Ivan Tyukin (Department of Mathematics), Dr. Alexander Gorban (Department of Mathematics), Dr. Evgeny Mirkes (Department of Mathematics), Dr. Daniel van Helden (School of Archaeology and Ancient History), Dr. Santos Nuñez (Department of Mathematics), Victoria Szafara (School of Archaeology and Ancient History)

#### Images Of Research 2020 submissions:

##### **Barry Hawthorne – ‘Transport to death or transport to safety?’**

This photo depicts a memorial to the thousands of disabled individuals, who were deemed ‘unworthy to live’. They were murdered by the Nazi regime between 1940-1941 as part of the “Aktion T4” programme. But the grey bus can also be seen as a visual metaphor of the processes of inclusion/integration and exclusion/segregation – a bus used to transport disabled citizens to their death, or a bus that expedites the transport of asylum seekers to a safe country. The bus is an agent in the process of inclusion/integration of non-citizens into German society. In this way, the bus represents my research into how inclusion/exclusion and integration/segregation are constructed and perpetuated within discourses surrounding disability and migration in Germany.

##### **Chiara Marabelli – ‘The ‘aura’ of the original?’**

I took this picture in October 2019, during a placement at the Vatican Museums. Every day, thousands of visitors from all over the world crowded the Octagonal Court to meet one of the most iconic sculptures of antiquity, the group of Laocoön, a Roman marble version of a Greek model, made of bronze, that did not survive. The experience is definitely overwhelming. While making my way through the mass, I wondered whether people were aware of the actual nature of copy of the object. Indeed, originality is in the eyes of the beholder.

##### **Christian Harrison – ‘The Beauty in the Small Things’**

As a molecular microbiologist, I’m often making up dyes and stains for various applications in my research. It is an everyday process that many never think twice about. But the patterns and colours that arise during the preparation these dyes have a beauty that is often overlooked. Here, I present a series of photos of a variety of dyes and stains commonly used in biology. How many can you recognise?

##### **Denise Corsel – ‘With Fish Under their Feet, How Could You Ever Go Hungry?’**

During my fieldwork in Takeo province, Cambodia, this house spoke to me. For some people around the world, flooding is becoming an increasing concern, and can even be called a disaster. While for others, flooding is considered essential for their livelihoods (e.g. fishing and farming). The people who live in this house have built it in this location on stilts so that they are closer to their food source. Although this draws many other challenges, the benefits are outweighed, especially in a country where so many people go hungry.

### **Emily Richardson – ‘Beautiful, But Deadly.’**

Cancer cells can manipulate their shape in order to move around the body more in the process of metastasis. This lung cancer cell is producing more filopodia - the beautiful, tentacle-like structures protruding out from the cell. Filopodia sense the environment around the cell, allowing it to feel its way around towards positive stimuli. These cells move extremely fast by hijacking normal mechanisms which control production of these structures. Image details: nucleus (red), actin cytoskeleton (cyan), associated protein cortactin (orange). Image taken on Visitech HAWK confocal microscope in the Advanced Imaging Facility.

### **Freya Tyrer – ‘Let’s Talk about Health!’**

This collage of photographs was taken at my visit to Leicester’s “Talk & Listen” group in February 2020. The group is for adults with learning disabilities who meet regularly to socialise and talk about health-related issues. They helped me with my PhD project by telling me about their experiences when visiting the GP and going into hospital. On the bottom left of the image, you can see the cards used by the group to facilitate their discussions.

### **Helen Elliott-Mainwaring – ‘Kitchen Table Research in a Pandemic’**

Our kitchen table was my research space, working from home and word mapping my way around ideas for researching the VM tools that we use for promoting and measuring Safety in Maternity Services. No one comes into healthcare to deliberately give poor care, so what are our staff saying? The current Parliamentary Inquiry into Maternity Services Safety is proving that poor care happens, and I would like to investigate our healthcare culture through the tools that are used.

### **Jack O'Doherty – ‘Aegis’**

This photograph is of the USS Donald Cook (DDG-75), a US Navy Arleigh Burke-class guided missile destroyer, docked in Cobh, County Cork, Ireland. My PhD thesis concerns the historical and ongoing viability of American nuclear counterforce – that is, the efficacy of a preemptive/preventive disarming first strike against an adversary’s nuclear arsenal. This image is entitled Aegis due to the ship’s ‘Aegis’ ballistic missile defense (BMD) system. As directed-energy weapons such as chemical lasers and particle beam weapons highlight the future of missile defense, hypersonic glide vehicles and stealthy cruise missiles re-assert the viability of disarming counterforce strikes.

### **Kellie Lucken – ‘Cancer cells promote cell division errors’**

In this image we see three cells about to divide. The cell in the centre of the image has normal bipolar morphology and will divide successfully into two daughter cells without any errors. The other two cells about to divide have duplicated their centrosomes (in green) and have tried to cluster these into a pseudo-bipolar state. This arrangement has detrimental implications for chromosome biorientation promoting chromosomal segregation errors and cancer progression through accumulated genetic mutations.

### **Laura Albertini – ‘Here we used to cross the river’**

During a bicycle ride, my father was telling me how he and his family used to cross with a boat the river that flows parallel to the road in the photo. However, to me his storytelling was overshadowed by the horrifying quantity of waste left on both sides of the path. My father’s narrative of that place and the emotional closeness that his story was enhancing between us in that moment were significantly transformed by the unethical actions of others. As I work on travel writing and environmental ethics, I am becoming more aware of the outcome that unethical attitudes and action can have not only on the natural landscape but also on emotional landscapes both on an individual and collective level.

### **Michael J Curtis – ‘An ancient mariner’s tale’**

Today we hear a lot about the need to patrol our territorial waters. The same could have been said if you had lived on Crete in Classical and Hellenistic times as both archaeological and epigraphical evidence attests. Photographed earlier in 2020, the shipsheds of the ancient city of Rhithymna, modern Rethymno, on the northern coast of Crete, lie in the shelter of the Venetian fortress. The site is a popular spot for sunbathing, picnics, and swimming in the sheltered, shallow waters, but in times past this was where naval patrol vessels were hauled out of the water and stored, probably with a timber superstructure for added protection. Shipsheds are important evidence of ancient state-run maritime activity that is still practiced today.

### **Paige Emerick – ‘Royal Road’**

My statement is: The Round Tower at Windsor Castle has stood since the twelfth century, was doubled in height during the nineteenth century, and today houses 1,000 years of history in the Royal Archives Collection. This was my view every morning during my month-long research placement with the Georgian Papers Programme; taking a peaceful walk up to the castle before all the tourists arrived, climbing over 90 stone steps to ascend the tower, and spending the day reading through the private papers of past monarchs.

### **Shirley Yang – ‘Scandalous man missing in the news’**

Us Weekly exposed an affair between female actor Kristen Stewart and director of the film Snow White and the Huntsman (2012) Rupert Sanders. The media enjoyed focusing on a 22-year-old young woman other than a married man in his 40s. Headlines like ‘Kristen Stewart Cheats on Vampire Boyfriend with Married Human Father of Two’ (Breslaw, 2012), which did not mention the man’s name. It emphasizes the gendered construction of news. It reveals a gap in public tolerance towards male celebrities and female celebrities. The public seems more forgiving when a scandal is attached to a man compare with a woman. (Original photo of Kristen Stewart and Rupert Sanders: Getty Images)

### **Sohaib Rufai – ‘Window of the Soul’**

“The eye, the window of the soul, is the chief means whereby the conscience can most fully and abundantly appreciate the infinite works of Nature.” – Leonardo Da Vinci In my clinical research, I

spend most of my time looking into patients' eyes. I am most fortunate to benefit from an incredible technology called optical coherence tomography (OCT) – ultra high-resolution three-dimensional imaging of the retina and optic nerve, captured non-invasively within seconds. This is a retinal OCT image demonstrating the layers of the retina in amazingly minute detail. This allows me to diagnose and treat eye conditions.

#### **Sophia Sheikh & Kristina Tomkova – ‘At the CELLestial level’**

Presented are cells adhered to the base of a plate after loading onto a Seahorse XF Analyzer (Agilent Technologies); an instrument capable of measuring oxygen consumption and extracellular acidification. Cells are scattered in a shimmering colour spectra across the microscope field, extending from a large, dense cluster to smaller groupings towards the edges. A certain resemblance to the cosmic arrangement of stars in galaxies ensued. One of the many examples where an image in science can present likeness to another for the viewer, even when the aesthetic similarities are at opposite extremities of the size scale.

#### **Tia Ndu – ‘The height of gentrification?’**

Dubbed the ‘final frontier’, the state-led gentrification of London’s council estates sees previously disinvested and undesirable estates, often in predominantly BAME neighbourhoods, demolished and rebuilt. Often, existing residents are displaced and new buildings are populated with residents of a different racial and socioeconomic make-up. Examining one of London’s most stigmatised council estates, Broadwater Farm in Tottenham, my research explores the role of class and race-based stigma on residents’ differentiated experiences of gentrification. Broadwater Farm’s towering Northolt block (pictured) is among the first buildings in the estate selected for demolition following decades of being off-limits for gentrification due to neighbourhood stigma and neglect. Is this the height of gentrification?

#### **Tom Matheson – ‘Abandoned’**

With the onset of the Covid-19 lockdown in March 2020, most lab work ceased at short notice and much has not re-started. Equipment lies fallow and chairs wait. With Institutional ‘reshaping’ in the wind, some labs may not see active research again.

#### **Vinay Patel – ‘Microstructure from a Steel Alloy Wheel from a Earth Moving Vehicle’**

The following optical image is taken at X200 magnification and shows the microstructure of a mild steel alloy used to make a large wheel for an earth moving vehicle based in an Australian mining facility. In order to reveal the microstructure a chemical solution of 2% Nitric Acid in Ethanol was used after an initial grinding and polishing stage.