Awards in focus in this issue include:

Page 8 How do children at the ‘bottom’ of the class fare?

Page 10 What damage do today’s ballistic impacts cause to stone structures?

Page 11 Women in type

Page 5 Architecture and the face of coal: mining and modern Britain

Page 6 Illuminating the workings of a molecular machine
Director’s note

Funding ambition

The final Board Meeting of 2017 saw the Trustees distribute a bumper crop of awards for Leverhulme Doctoral Scholarships, Visiting Professorships, Major Research Fellowships, Research Project Grants and Philip Leverhulme Prizes – some £37 million in total – to support ambitious discovery research in UK universities. A list of the successful proposals is included in this Newsletter.

This year, for the first time since the scheme was launched in the year 2000, the thirty Philip Leverhulme Prize Winners – together with guests, university representatives, and many of the Trust’s friends and supporters – will gather for a celebratory Gala Dinner and Prize-giving in the splendid surroundings of the Drapers’ Company Livery Hall in the City of London. The prizes recognise the achievements of outstanding researchers working in the UK, each winner receiving £100,000 to spend as they choose, in support of their scholarly activities. The prizes are a wonderful way of reminding ourselves of the depth of talent – from all countries – that is to be found in British universities. We are delighted that the awards this year will be presented by Professor Sir Venki Ramakrishnan, President of the Royal Society.

Still on the subject of special occasions, Professor Sir Paul Nurse, Nobel Prize winner and Director of the Francis Crick Institute, delivered the third Leverhulme Annual Lecture in November last year at the Institution of Engineering and Technology in London. Sir Paul’s topic was “Research and the Public Good”. If you missed his lecture the full text is available on the Trust’s website. Next year’s lecture will be given by Mme Christine Lagarde, Managing Director of the International Monetary Fund, who will (coincidentally) be speaking in the final few months before the UK’s scheduled exit from the European Union. If she chooses to address this topic, it will be interesting to hear what she has to say, since many in the sector think that Brexit will have damaging effects on the UK’s hard-won reputation as one of the best countries in the world in which to conduct academic research across the whole range of the sciences, social sciences and humanities.

Finally, the Board is pleased to announce that the Trust will be extending its support for the British Academy/ Leverhulme Trust Small Grants Scheme for a further five years, with an award of £2.5 million. These grants recognise the importance of smaller awards (up to £10,000) for many researchers working in the humanities and the social sciences. They allow the Academy to attract significant matching funds and have, over the years, provided the first step into research which has gone on to shape academic careers and whole fields of study. Working in partnership in this way helps the Trust to fulfill its ambition to provide a comprehensive suite of funding opportunities for talented researchers working in the UK.

Professor Gordon Marshall

Scheme news

Imminent deadlines

All applications close at 4pm, unless otherwise stated.

1 February 2018
Emeritus Fellowships
For senior researchers who have retired from an academic post who wish to complete a research project and prepare the results for publication: research expenses of up to £22,000 over up to two years.

1 March 2018
Early Career Fellowships
For early career researchers with a track record of research who wish to undertake a significant piece of publishable work, but who have not yet held a permanent academic position: 50 per cent match-funding for the salary costs of a three-year academic research position (contribution of up to £25,000 pa, balance to be paid by host institution), plus £6,000 per annum towards research expenses.

Successful applicants for both these awards will be announced in May 2018.

21 March 2018
Detailed applications for Research Project Grants
Up to £500,000 over five years for research on a project of the applicant’s choice, to cover salary and research costs directly associated with the project. Please note that an outline application must be submitted and approved in the first instance.

Successful applicants will be announced in July 2018.

Other rounds currently open

Philip Leverhulme Prizes
Up to thirty awards of £100,000 to recognise the achievement of outstanding researchers whose work has already attracted international recognition and whose future career is exceptionally promising. The 2018 competition offers Prizes in Classics, Earth Sciences, Physics, Politics and International Relations, Psychology, and Visual and Performing Arts.

Closing date: 17 May

Research Project Grants
Outline bids are welcome at any time.

Visiting Professorships
Awarded to UK institutions that wish to invite an eminent researcher from overseas for an extended stay in the UK to enhance the knowledge and skills of academic staff or the student body within the host institution.

Closing date: 10 May

For full details and to apply, see leverhulme.ac.uk/funding
My overall research interest is the role of stories in the construction, communication and challenge of religious ideas, with a focus on early India. I have a particular interest in multi-life stories, including stories of the Buddha’s past lives (jatakas), which form an important literary genre throughout the Buddhist world; they purport to illustrate the many adventures of the Buddha-to-be when he was born amongst animals, humans and gods, as well as outlining his progress towards Buddhahood over multiple lifetimes.

I have also worked on the ways in which narrative characters, motifs and themes reveal the shared historical context of Jain, Buddhist and Hindu traditions. My next project will combine these two research interests and examine jataka stories in their broader Indian – including non-Buddhist – context. My aim is to explore the different ways in which stories of the Buddha’s past lives were understood and used across different Indian Buddhist schools and contexts, as well as the extent to which they are shared with non-Buddhist narrative traditions, up to around the fifth century CE.

Jataka literature is difficult to navigate because of its scale and complexity. The largest textual collection contains around 550 stories, while the many other jataka texts both increase the total number of stories and repeat stories in multiple versions; versions of some stories are also found in non-Buddhist texts. Artistic depictions at Buddhist sites from the first century BCE to the present day add to the challenges of interpreting the genre, while textual scholars and art historians operate in largely separate fields without many opportunities to share their expertise.

For these reasons, research into these fascinating narratives would be greatly enhanced by the creation of an online database of jatakas in texts and art. A variety of search and browse functions, comprehensive bibliographic information, and links to artistic depictions and textual and epigraphic translations, will make the resource invaluable not only for my own research, but also for other scholars of Asian religion, including art historians, with whom I will collaborate on this project. The online database will also be a useful educational resource, within and outside the Buddhist world, and I hope to use it in my own teaching as well as in work I am doing with local schoolteachers.

Jatakas – stories of the Buddha’s past lives – are many and varied. Naomi Appleton is creating an online database bringing together both text and visual versions, before examining the stories in a broader Indian context.

The jataka of the monkey king, in which the Buddha-to-be, born as a monkey, saves his troop by making a bridge to safety out of his own body. Sanchi stupa complex, Madhya Pradesh, c. 1st century BCE.
The transition to walking on two feet represents a defining episode in human evolution. To understand how, when and why upright bipedalism evolved, palaeontologists and anthropologists have long relied on the shape of fossil foot bones and footprints to diagnose the style of locomotion used by our ancestors. Modern human foot anatomy and function are considered the hallmarks of our upright bipedalism: we possess stabilised longitudinal arches in the mid-foot to impart the necessary stiffness to help generate the forces required to stride bipedally over the ground. This contrasts with tree-dwelling non-human apes like chimpanzees that have long toes and a highly mobile mid-foot to provide the necessary flexibility for grasping and climbing. Thus, for example, broadly human-shaped metatarsal bones would be seen as indicating a stabilised mid-foot arch and so constitute evidence that a human ancestor walked efficiently on two feet. The same conclusion would be drawn from a broadly human-shaped fossil footprint.

However, recent biomechanical research suggests that the link between foot bones, footprint morphology, and locomotion may not be so straightforward. There are, it seems, high levels of variation between modern humans, and even within one individual: some of us use a very stiff (i.e. stereotypically human) mid-foot in some steps, but a very flexible (i.e. stereotypically non-human ape) mid-foot in other steps – and how these different motions are reflected in the shape of footprints is unclear. This indicates that a much more detailed understanding of how morphology links to function in modern humans is necessary to understand locomotion in hominin fossils, and subsequently how, when and why upright bipedalism first evolved.

Our primary goal is to investigate how the different use of the mid-foot (stiff or flexible) interacts with bone and footprint shape. We aim to explain how or why some individuals vary the motion of their feet so dramatically step to step. We argue that understanding how this functional variation correlates with morphology in modern humans will provide fundamental insights into how the lower limb functions as a mechanical structure. In turn, this new mechanistic understanding of how morphology works will enable the most robust interpretation of fossil bones and footprints to date.

To achieve this we will integrate multiple-imaging techniques, gait analysis and computational modelling to establish cause–effect relationships between anatomy and motion, and provide measures of mechanical performance. Our computer simulations, digitally modifying both anatomy and behaviour to mimic changes seen in fossils, will allow us to replay the key anatomical transformations seen during the evolution of human locomotion. This will provide measures of mechanical performance and help us understand the selective pressures driving evolutionary changes in locomotion over the past six million years.
In *The Road to Wigan Pier*, his exposé of working class life in 1930s, depression-stricken northern England, George Orwell described the immeasurable impact of the coal industry on contemporary existence both within and beyond the coalfields.

“Our civilisation ... is founded on coal, more completely than one realises until one stops to think about it. The machines that keep us alive, and the machines that make the machines, are all directly or indirectly dependent upon coal. In the metabolism of the Western world the coal miner is second only in importance to the man who ploughs the soil. He is a sort of grimy caryatid upon whose shoulders nearly everything that is not grimy is supported.”

Orwell’s characterisation of the miner as a “grimy caryatid” is both poetic and apt. But the twentieth century’s debt to the coal industry and its workers is more complex than the juxtaposition of messy conditions of production and the distant enjoyment of its products and effects. While the deleterious environmental impact of burning coal and other fossil fuels is now widely accepted, historically there is another side to coal, both socially progressive and hugely under-acknowledged. This concerns another form of environmental impact, which begins within the immediate context of the coalfields but whose influence extends far wider.

From the nineteenth century onwards, the dangerous conditions surrounding coal mining precipitated a series of responses from both within and outside the industry. These began with public and private enquiries, commissions and ultimately acts of legislation that sought to improve aspects of miners’ working and social lives. In time these observations found themselves translated into spatial and environmental interventions which, especially in the twentieth century, realised conspicuously enlightened and humane pieces of architecture and approaches to urban form.

Engaging with extensive visual and textual material contained in various archives across the UK, my research aims to reveal the contribution of the architecture of coal to twentieth-century Britain. Straddling the period before and after nationalisation and until the construction of the last ‘superpit’ at Asfordby in 1993, it critically records and analyses the once pervasive but now largely vanished infrastructure of a departed industry: educational buildings, pithead baths, holiday camps, hospitals, swimming pools, convalescent homes, housing schemes and other forms of urban settlement, model collieries and ‘superpits’. Of particular interest are the relationships between the aesthetics and organisation of these iconic and paradigmatic architectural forms and types of spatial organisation – built expressly for miners and realised through a social and socialist redistribution of wealth – and the development of similar interventions in the creation, nationwide, of a modern welfare state.
Our project aims to understand how a tiny (nanoscale) molecular machine – the kinetochore – shifts chromosomes around within a human cell, and ensures that the two daughter cells receive a complete set of chromosomes upon cell division. This is a mechanical process as kinetochores are believed to work by generating and responding to forces.

The human body is built from around 50 trillion individual cells that originate from divisions of a single cell. A universal feature of these divisions is the separation of duplicated chromosomes into the new daughter cells; errors in this process are linked to human developmental disorders and cancer progression. To move chromosomes the cell uses molecular cables called microtubules that can grow and shrink; each chromosome attaches to these cables by the kinetochore, a protein super-complex comprising some 100 different protein components and measuring some 300nm across. The kinetochore is a versatile and ‘intelligent’ machine that can control each attached microtubule’s growth and shrinkage to generate ‘pushing’ and ‘pulling’ forces, so moving the chromosome around the cell.

A parts list of the kinetochore has been established, with some approximate functions. It is also known that the kinetochore is a compliant structure, undergoing compression, stretching and internal twists. These changes presumably underpin the kinetochore’s mechano-sensing capabilities that feed into ‘intelligent’ chromosome movement. However, it remains unknown how the overall architecture adjusts in response to mechanical forces (inputs) and controls of the functional output of the kinetochore.

To solve this mystery we will use a combination of microscopy and mathematics. By attaching fluorescent markers to two or three kinetochore components at a time we will watch how the kinetochores move and change shape during chromosome movement. Mathematical methods familiar from mobile phone tracking (trilateration) and reverse engineering computational approaches that map a 3D structural kinetochore model to the time-series data will enable us to reconstruct the nanoscopic protein movements from pairs/triples of fluorescent markers and determine the conformation dynamics of the kinetochore super-complex, how these conformations are influenced/driven by forces, and the likely inputs into the mechano-sensors. Our project will thus provide a set of rules explaining how kinetochores make intelligent decisions by sensing mechanical forces, a crucial link between microscopic forces and the generation of chromosome order.
In a recent essay, the architect John Paul Eberhardt tells a story about Jonas Salk, the discoverer of the polio vaccine.¹ In 1948, Salk was in Pittsburgh working feverishly to develop his vaccine, when he became overwhelmed with ‘brain overload.’ He at once left for the town of Assisi, where he stayed at the basilica of St Francis. And it was there, among the building’s harmonious arches and frescoes, that Salk made the vital realisation that a ‘dead’ virus could be used in a vaccine. Years later, he told this story to the American Institute of Architects. For Salk, the physical surroundings of Assisi were central to his breakthrough: he suggested quite seriously to the architects that they devote more attention to the links between architecture and the brain.

I like this story. But I also take it as symbolic of a moment when a striking range of organisations and individuals, across a wide array of fields, not only began to explore the link between architecture and the brain, but become much more widely interested in the delicate interweaving of psychology and the environment – in the idea that the psychological and neurobiological aspects of our lives are intimately caught up with the physical environments and landscapes in which those lives take shape.

This idea – which is not new exactly, but is becoming much more expansive – marks a certain kind of environmental or architectural ‘turn’ in how we think about neuroscience, psychology and, increasingly, mental health. And not only among neuroscientists and psychologists. I am interested in a network, in which, certainly, at one point, teams of clinicians and researchers are trying to figure out why there is so much mental illness in cities. But at another point, there are planners, architects and policymakers, wondering how to actually design for good mental health. There are psychologists and counsellors becoming more and more convinced of the healing power of nature. And there are hotel chains trying to figure out how more ‘natural’ environments can improve the emotional experiences of their guests.

This network coalesces around an important shift in psychological, psychiatric and neuroscientific thinking – one in which our psychological health seems to be more and more closely caught up with the physical environments we inhabit. My research, beginning in 2018, is about making sense of this shift, the institutions and practices holding it together, and its wider consequences for how we think about, and intervene in, our mental health.

Children are not often asked to voice their true opinions at school, especially not about school. In this project, we explore how a group of primary school pupils describe being in a ‘bottom’ attainment group. Through extensive, regular interviews and classroom observations across five years, we learn how a selection of 24 children respond to being in the lowest ‘ability’ group. We investigate in particular whether, and if so how, effects snowball across five years. Through constructing a set of school-life histories, we aim to investigate and challenge the accepted ‘truths’ that:

a) ‘ability’ is a fixed, quantifiable and innate property of the child, and

b) teaching pupils in groups defined by this ‘ability’ is beneficial for their learning and personal/social flourishing.

‘Ability’ grouping was advocated by the Labour government in the late 1990s and early 2000s because students in ability groups apparently became “more engaged in their own learning”.¹ As a result, almost 80 per cent of pupils are now ‘ability’-grouped for most or all subjects. Yet grouping appears to have the opposite effects to those stated by government, for pupils in ‘bottom’ groups. In addition, the concept of innate ‘ability’ has proved more complex than it was then portrayed and the criteria for being labelled as ‘low ability’ questionable. And yet the commonly accepted view still persists, that ‘ability’ grouping is both necessary and normal.

Some reasons for the negative effects of low ‘ability’ groups seem to originate in unsatisfactory teaching conditions. Relatedly, ‘bottom’ group pupils seem to experience lower levels of motivation and aspiration; a poorer sense of belonging; and general feelings of unhappiness/anger. They also make less progress than their peers according to national tests. While research up to now only points to general trends, our project highlights the detail of individual pupils’ experience. Our aim is to improve the sophistication of our knowledge about how ‘ability’ grouping functions by drawing on the perspective of pupils whose voices have been systematically marginalised.

Our team of three researchers will observe and interview six Year 3 pupils in each of four schools over 13 terms, culminating in the pupils’ last term of Year 7. We will also monitor their experiences in English, maths, art and PE. A short film and a monograph will highlight our findings at the end of the five years.

An unsettling presence:
sub-Saharan Africa in Renaissance Italy

Professor Kate Lowe
Queen Mary University of London
Major Research Fellowship

Kate Lowe is examining the contribution of sub-Saharan Africa to Italian history and culture in the fifteenth and sixteenth centuries. Renaissance Italy and sub-Saharan Africa are not normally talked of in the same conversation, so it is unsurprising that there is no previous study of sub-Saharan Africa in Renaissance Italy: analysing Africa’s place in the Renaissance has a great deal to offer.

I am interested in everything African in fifteenth- and sixteenth-century Italy. My project focuses on how the arrival of sub-Saharan objects, animals and enslaved people unsettles and complicates the standard narrative of the history and culture of Renaissance Italy. The encounter with sub-Saharan Africa forced Renaissance Italy to confront ideas of what it was to be human, what it was to be ‘civilised’ and what it was to be different, all of which are central Renaissance concerns. New and precise knowledge of Africa also unsettles the currently accepted view of Renaissance Italy because it shows the limitations of the classical tradition upon which the Renaissance was founded.

I am first and foremost an archival historian, and an extraordinary amount of relevant archival material in Italy, nearly all unknown and unpublished, lies at the core of the project. But one of the attractions of Renaissance Italy to cultural historians lies in the quality and abundance of other types of source material. Consequently, in addition to archival documents, I shall be examining travel accounts, proverbs, plays, frescoes, frontispieces, sculpture, maiolica (tin-glazed pottery), cushion covers, ivory horns and salt cellars, oil paintings, jokes, dictionaries, maps, newsletters, tapestries, classical literature, short stories and furniture. It is intriguing that the perceptions of Africa circulating at the time mostly continued to be taken from the imagination, or from classical and biblical stories, rather than matching what was already known about sub-Saharan Africa in Renaissance Italy. The same is true of representations of Africans themselves, which only sometimes resembled Africans living in Italy at the time.

While most histories of Renaissance Italy tend to focus on just one location, my study will range across the Italian peninsula, comparing Venice with Genoa, Rome with Palermo. This approach will make it possible to examine what Africa and Africanness might have meant across Renaissance Italy.

A further aspect of the project is its contemporary relevance, offering historical context to current sub-Saharan African migration to Italy.
What damage do today’s ballistic impacts cause to stone structures?

Dr Lisa Mol
University of West of England
Research Project Grant

Lisa Mol and team are analysing military-grade impacts and categorising their effects to help conserve heritage sites caught in the crossfire

The destruction during conflict of sites that represent our common humanity has given rise to widespread condemnation. But it is not just the damage done to mosques, shrines and ancient markets in Iraq and Syria; similar devastation wrought in Yemen and Mali has gone largely unreported. While some buildings are targeted deliberately, others are simply caught in the crossfire.

We still know very little about the mechanics of deterioration associated with such ballistic impacts. What happens to the stone structure when a bullet hits? How does this impact vary between stone types? Does the previous deterioration of a surface (e.g. weathering) play a role in its response? Bullets leave scars on a building that spoil its appearance but may also be the surface manifestation of a larger fracture network within the stone work which can threaten a site’s long-term conservation.

We can see a large range of such impact scars across Europe, left by conflicts such as the 1916 Easter Rising in Ireland and the civil war that followed the break-up of former Yugoslavia (1991–95). However, while we can study these impacts to quantify heritage deterioration caused by earlier conflict, they give us little insight into the future of buildings caught in the crossfire of contemporary conflict. As artillery increases in strength and ammunition is designed to penetrate as far as possible into a material, ongoing scientific research must learn to understand their effects accordingly. Without a proper understanding, we risk either prematurely replacing heritage materials or buildings that could potentially still be salvaged, or else overlooking damage that has destabilised the internal structure of stone.

Our project addresses this issue. An interdisciplinary team of geomorphology, petrology and 3D scanning experts will use high-resolution microscopy, 3D scanning and stone deterioration experiments to analyse military-grade impacts created under highly controlled conditions. A step-by-step user guide and risk scorecard will be developed to identify the nature and severity of the damage caused so that eventually we can categorise damage according to ‘beyond repair/stabilise-ok’, based on lithology (the characteristics of the rock type), stone condition and nature of impact. Then, any persons present in the conflict area, such as local volunteers or peacekeeping forces, will be able to use the guide and scorecard to quickly and cheaply document the damage caused, and communicate their findings to experts around the world, without the need for labour-intensive expert field teams. This triage could be used to effectively allocate conservation resources and map areas where damage is most prevalent and in need of attention.
Women’s pivotal role in the development of type design is little known. Fiona Ross and team aim to change this, with an in-depth study of women in type-drawing offices, 1910–90

Type design plays a fundamental role in visual communication: it is crucial to the textual representation of languages to afford literacies to global communities. Histories to date have largely overlooked type design’s importance, and concomitantly the key contributors to the type-design and manufacturing processes that developed in the twentieth century. Women were often central to this development, particularly in Britain within the major type-manufacturing companies of Monotype and Linotype. Our project will provide the first socio-historical account of women’s role and responsibilities in type-drawing studios from 1910 to 1990 as experienced within the two companies: the Monotype Corporation and Linotype Limited (formerly Linotype-Paul Ltd and Linotype-Hell Ltd).

A pilot study in 2016, which included visits to assess relevant archives, determined the scope of the project, its feasibility and the appropriateness of our research methodology. Focusing on the Monotype Corporation, whose type-drawing office was established in 1910, we were able to confirm the availability of relevant archival records and key personnel for interview. Our preliminary investigations and interviews have already yielded valuable undocumented information about women working in this field and the significant roles they occupied. We were able to confirm that during the twentieth century women in type design, as in allied industries, increasingly took over roles traditionally held by men, which were vital to supplying the needs of the print industry. The Monotype and Linotype type-design departments, which had divergent practices, were both run or staffed principally by women from their inception. However, the details of these women’s positions and activities have been overlooked, and in particular their precise contributions to the type-design process during the rapidly changing social and technological environments of the period.

Our team will document agencies of change for women working in these type-drawing offices against three interconnected contexts: in terms of social history; in relation to technological developments; and in terms of contributions to typeface design. Using data gathered primarily through interviews, the analysis of historical records, and the examination of technical drawings and typeface proofs, we will determine accurate histories of the development of typeface design and manufacture.

The findings will transform our understanding of women’s activities and status within the design-based industries from 1910 to 1990, making a profound interdisciplinary contribution to social and design histories while informing current type-design practice.
# Grants awarded between August 2017 and December 2017

**Doctoral Scholarships**

Institutions receive £1.5m to fund fifteen PhD students over three years.

- **University of Aberdeen**
  - Professor Judith Masthoff
  - Centre for doctoral training in sustainable production of chemicals and materials

- **University of Birmingham**
  - Professor Robert MacKenzie
  - The forest edge: emergent properties and contested spaces

- **Durham University**
  - Professor Philip Steinberg
  - Interdisciplinary understanding for a changing Arctic

- **Imperial College London**
  - Professor Oscar Ces
  - Leverhulme Doctoral Scholarship programme in cellular bionics

- **King’s College London**
  - Professor Wyn Bowen
  - Interrogating visions of a post-Western world: interdisciplinary and interregional perspectives

- **Lancaster University**
  - Professor Richard Harper
  - Leverhulme Doctoral Scholarship programme in material social futures

- **Newcastle University**
  - Professor Daniel Nettle
  - Behaviour informatics and the multimodal study of behaviour

- **University of Oxford**
  - Professor Karen O’Brien
  - Publication beyond print: Oxford University Leverhulme doctoral centre

**Research Project Grants**

**Science**

| Dr Karl Bates University of Liverpool | Bones in motion: a new integrated experimental–computational approach to understanding the evolution of human locomotion £249,045 |
| Dr Kate Britton University of Aberdeen | Integrative approaches to late Pleistocene herbivore ecology, ranging and diet £260,519 |
| Dr Julio Cesar Bueno de Andrade University of Exeter | Moments of f-functions in function fields and random matrix theory £282,167 |
| Professor Nigel Burroughs University of Warwick | Mechano-sensing of a molecular machine £360,478 |
| Dr Vijay Chudasama University College London | Understanding how the microenvironment of a protein can dictate the course of bioconjugation £154,274 |
| Professor Ilan Davis University of Oxford | Elucidating the functions of mRNA stability regulation in synaptic plasticity £224,770 |
| Professor John Doonan Aberystwyth University | The cellular basis of ecosystem engineering by sphagnum peatmoss £257,956 |
| Dr Agapi Emmanouilidou University College London | Exotic forms of matter in molecules driven by free-electron lasers £180,939 |
| Professor Boris Gaensicke University of Warwick | Evolved planetary systems: a unique window into the composition of other worlds £159,772 |
| Dr Malte Christian Gather University of St Andrews | Lighting up the brain: organic LEDs as light sources for optogenetics £183,775 |

**Dr Randa Herzallah Aston University**

- **Control of behavioural dynamics £180,078**

**Professor Peter W H Holland University of Oxford**

- **Extreme molecular evolution in an extreme environment: homeobox genes gone awry £179,630**

**Dr Abusaleh Jabir Oxford Brookes University**

- **Monitor: a self-reparable memristive gas sensor array £234,992**

**Professor Keith Jones University of Southampton**

- **Understanding meiotic drive: how Mendel’s law is cheated in oocytes £171,337**

**Professor Jane Kaye University of Oxford**

- **Biomodifying technologies: governing converging research in the life sciences £340,240**

**Professor Syma Khalid University of Southampton**

- **Combining quantum and classical methods to study bacterial membrane enzymes £126,931**

**Dr Istvan Kiss University of Sussex**

- **Bayesian inference and approximations of high-dimensional network models £301,665**

**Professor Stefan Krause University of Birmingham**

- **Plastic rivers: fate and transport of microplastics in rivers £284,974**

**Professor Mark Leake University of York**

- **Probing the shape of DNA by twisting, pulling and ‘seeing’ single molecules £245,669**

**Dr Crispin Little University of Leeds**

- **Macroevolution in Boreal Ocean Jurassic-Cretaceous methane seep communities £191,157**

**Dr Emma McCabe University of Kent**

- **Ferroelectricity: new mechanisms and materials by combined experiment and theory £96,975**

**Dr Alistair McCormick University of Edinburgh**

- **Surpassing evolution to enhance photosynthesis using algal CO₂ superchargers £349,148**
<table>
<thead>
<tr>
<th>Name</th>
<th>University</th>
<th>Project Title</th>
<th>Funding (£)</th>
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<tbody>
<tr>
<td>Dr James McCutcheon</td>
<td>University of Leicester</td>
<td>Neural and peripheral generation of a specific appetite for protein</td>
<td>£194,257</td>
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<td>Dr William McGeown</td>
<td>University of Strathclyde</td>
<td>An investigation of the neural bases of hypnosis and suggestibility</td>
<td>£144,243</td>
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<td>Dr Abbie C McLaughlin</td>
<td>University of Aberdeen</td>
<td>Investigation of novel hexagonal perovskite oxide ion conductors</td>
<td>£149,398</td>
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<td>Professor Thomas Mock</td>
<td>University of East Anglia</td>
<td>Molecular underpinnings of adaptive evolution in diatoms of polar oceans</td>
<td>£236,623</td>
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<td>Dr Lisa Mol</td>
<td>University of the West of England</td>
<td>Ballistic damage of stone heritage structures in conflict areas</td>
<td>£199,745</td>
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<td>Dr Daniel Mulvihill</td>
<td>University of Glasgow</td>
<td>Fundamental mechanical behaviour of nano and micro structured interfaces</td>
<td>£281,479</td>
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<tr>
<td>Professor David Murphy</td>
<td>University of East Anglia</td>
<td>How does the one-humped Arabian camel survive in the desert without drinking?</td>
<td>£318,415</td>
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<tr>
<td>Dr Dianne Newbury</td>
<td>Oxford Brookes University</td>
<td>Speaking backwards – sdrawkcab gnikaep$</td>
<td>£232,412</td>
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<td>Professor Kim Plunkett</td>
<td>University of Oxford</td>
<td>Language mediated attention in infancy</td>
<td>£42,099</td>
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<td>Professor Alban Potherat</td>
<td>Coventry University</td>
<td>The non-linear states of convection in the Earth core</td>
<td>£297,852</td>
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<td>Professor Stephen D Price</td>
<td>University College London</td>
<td>Studies of radical-surface chemistry of relevance to the interstellar medium</td>
<td>£177,961</td>
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<td>Dr David Rippin</td>
<td>University of York</td>
<td>Archival polar photography – unearthing the forgotten record of glacier change</td>
<td>£316,607</td>
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<td>Dr Misha Rudnev</td>
<td>University of Bristol</td>
<td>Geometry, combinatorics and algebra of sum-products</td>
<td>£176,247</td>
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<tr>
<td>Dr Michal Stamatakis</td>
<td>University College London</td>
<td>From molecules to chemical reactors by boosting kinetic Monte-Carlo</td>
<td>£274,554</td>
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<td>Professor Alexander Strohmeier</td>
<td>University of Leeds</td>
<td>Mathematical analysis of Casimir interactions</td>
<td>£174,962</td>
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<td>Professor Mark Van Rossum</td>
<td>University of Edinburgh</td>
<td>Energy limited neural plasticity: learning with minimal changes</td>
<td>£179,632</td>
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<td>Dr Craig Walling</td>
<td>University of Edinburgh</td>
<td>Testing the evolutionary basis of the longevity response to dietary restriction</td>
<td>£287,841</td>
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<tr>
<td>Professor David Whitmore</td>
<td>University College London</td>
<td>Can individual cells in culture tell the time of year?</td>
<td>£183,372</td>
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<tr>
<td>Professor Sivaramesh Wigneshwararaj</td>
<td>Imperial College London</td>
<td>Molecular analysis of a bacterial metabolic break</td>
<td>£199,425</td>
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<tr>
<td>Dr Gerald Williams</td>
<td>University of Essex</td>
<td>Searching for gems in the landscape of cyclically presented groups</td>
<td>£177,486</td>
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<tr>
<td>Professor Semir Zeki</td>
<td>University College London</td>
<td>Social influences on aesthetic judgements and their neural basis</td>
<td>£279,869</td>
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**Humanities**

<table>
<thead>
<tr>
<th>Name</th>
<th>University</th>
<th>Project Title</th>
<th>Funding (£)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professor Gregory Currie</td>
<td>University of York</td>
<td>Learning from fiction: a philosophical and psychological study</td>
<td>£142,223</td>
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<tr>
<td>Dr Oliver Harris</td>
<td>University of Leicester</td>
<td>Beyond the three age system: mapping a history of materials, 3000–6000CE</td>
<td>£221,898</td>
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<td>Professor Patricia Owens</td>
<td>University of Sussex</td>
<td>Women and the history of international thought</td>
<td>£286,503</td>
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<td>Dr’Tamara Rathcke</td>
<td>University of Kent</td>
<td>Does language have groove? Sensorimotor synchronisation for the study of linguistic rhythm</td>
<td>£203,349</td>
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<td>Professor Li Wei</td>
<td>University College London</td>
<td>Early childhood bilingualism: effects on brain structure and function</td>
<td>£305,748</td>
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**Social sciences**

<table>
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<tr>
<th>Name</th>
<th>University</th>
<th>Project Title</th>
<th>Funding (£)</th>
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<tr>
<td>Dr Eleanore Hargreaves</td>
<td>University College London</td>
<td>A longitudinal study of primary children’s journey at the ‘bottom’ of the class</td>
<td>£258,077</td>
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<tr>
<td>Dr Keith Hyams</td>
<td>University of Warwick</td>
<td>Anthropogenic global catastrophic risk: the challenge of governance</td>
<td>£189,985</td>
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<td>Dr Chris Jones</td>
<td>Aston University</td>
<td>Tax havens and emerging market multinational enterprises</td>
<td>£121,590</td>
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<td>Professor Duncan McVicar</td>
<td>Queen’s University Belfast</td>
<td>Zero hours contracts: characteristics, prevalence and impacts on workers</td>
<td>£125,276</td>
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<td>Professor Anna Marcom</td>
<td>Royal Holloway, University of London</td>
<td>Music, money and power: an economic anthropology of music</td>
<td>£299,904</td>
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<td>Professor Fiona Ross</td>
<td>University of Reading</td>
<td>Women in type: a social history of women’s role in type-drawing offices, 1910–90</td>
<td>£161,821</td>
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<td>Professor Jonathan Tonge</td>
<td>University of Liverpool</td>
<td>An evaluation of historical and contemporary debates on lowering the voting age</td>
<td>£119,740</td>
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</table>
Philip Leverhulme Prizes
Prize Winners receive £100,000, to be used for any purpose that will advance their research.

**Biological Sciences**

Dr Tom Baden  
School of Life Sciences, University of Sussex

Dr Katie Field  
Faculty of Biological Sciences, University of Leeds

Professor Nick Graham  
Lancaster Environment Centre, Lancaster University

Dr Kayla King  
Department of Zoology, University of Oxford

Dr Andrea Migiano  
UCL Anthropology, University College London

**Philosophy and Theology**

Dr Naomi Appleton  
School of Divinity, University of Edinburgh

Dr Joel Cabrita  
Faculty of Divinity, University of Cambridge

Dr John Michael  
Department of Philosophy, University of Warwick

Professor Ian Phillips  
Department of Philosophy, University of Birmingham

Dr Bryan W Roberts  
Department of Philosophy, Logic and Scientific Method, London School of Economics and Political Science

**History**

Dr Andrew Arsan  
Faculty of History, University of Cambridge

Dr Toby Green  
Department of History and Department of Spanish, Portuguese & Latin American Studies, King’s College London

Dr David Motadel  
Department of International History, London School of Economics and Political Science

Dr Lucie Ryzova  
Department of History, University of Birmingham

Dr Alice Taylor  
Department of History, King’s College London

**Mathematics and Statistics**

Dr Anders Hansen  
Department of Applied Mathematics and Theoretical Physics, University of Cambridge

Dr Oscar Randal-Williams  
Department of Pure Mathematics and Mathematical Statistics, University of Cambridge

**Law**

Professor Pinar Akman  
School of Law, University of Leeds

Dr Ana Aliverti  
School of Law, University of Warwick

Professor Fiona de Londras  
Birmingham Law School, University of Birmingham

Professor Rosie Harding  
Birmingham Law School, University of Birmingham

Professor Jeff King  
UCL Faculty of Laws, University College London

**Sociology and Social Policy**

Dr David Clifford  
Department of Social Statistics and Demography, University of Southampton

Dr Des Fitzgerald  
School of Social Sciences, Cardiff University

Dr Suzanne Hall  
Department of Sociology, London School of Economics and Political Science

Dr Alice Mah  
Department of Sociology, University of Warwick

Dr Maria do Mar Pereira  
Department of Sociology, University of Warwick

**Sociology and Social Policy**

Professor John M G Barclay  
Durham University  
*Reciprocity and co-interest at the roots of the Christian tradition*  
£86,669

Professor Eugenio Biagini  
University of Cambridge  
*Intact: the political philosophy of the unmodified body*  
£197,265

Professor Dominic Vella  
Mathematical Institute, University of Oxford  
*Charles Lamb and romanticism*  
£159,766

Professor Nick Graham  
Lancaster Environment Centre, Lancaster University  
*People of ancient Egypt: an ethnography of pharaonic Egypt*  
£104,805

Professor Katie Lowe  
Queen Mary, University of London  
*Franco’s prison, 1936-1976*  
£181,669

Professor Josephine Guy  
University of Nottingham  
*Oscar Wilde’s development as a successful West End dramatist*  
£110,467

Professor Helen Graham  
Royal Holloway, University of London  
*Nothing is said: linguistics without the saying implicating distinction*  
£106,220

Professor John Andrew Lippitt  
University of Hertfordshire  
*Love’s forgiveness*  
£92,235

Professor Kate Lowe  
Queen Mary, University of London  
*An unsettling presence: sub-Saharan Africa in Renaissance Italy*  
£120,041

Professor Teresa Morgan  
University of Oxford  
*The invention of faith: Christian pistoris/fides and the Roman empire c.100–500*  
£161,559

Professor Andrew George  
SOAS, University of London  
*The drunken gods: a new study of ancient Mesopotamian mythology*  
£187,885

Professor Simon Goldhill  
University of Cambridge  
*Playing god with time*  
£114,548

Professor John Foot  
University of Bristol  
*Blood and power: a history of Italian fascism, 1915–1945 and beyond*  
£104,805

Professor John M G Barclay  
Durham University  
*Intact: the political philosophy of the unmodified body*  
£197,265

Professor Gregory Charles Dart  
University College London  
*Charles Lamb and romanticism*  
£159,766

Professor Christopher Eyre  
University of Liverpool  
*People of ancient Egypt: an ethnography of pharaonic Egypt*  
£104,805

Professor John Foot  
University of Bristol  
*Blood and power: a history of Italian fascism, 1915–1945 and beyond*  
£104,805
Professor Stella Sandford
Kingston University
Sex division in natural history
£141,484

Professor Alison Shell
University College London
Drama and the British counter-reformation: Catholic college plays in context
£154,990

Professor Alexandra Shepard
University of Glasgow
Childcare, family and economy in England, 1660–1815
£149,143

Professor Roland Smith
University of Oxford
The Greek East under Rome: a visual history
£167,629

Professor Nicholas Vincent
University of East Anglia
A diplomatic edition of the letters and charters of King Richard I
£95,645

Dr Alexandra Wilson
Oxford Brookes University
Opera wars: culture, accessibility and identity in Britain, 1900–2020
£156,204

Visiting Professorships

Social sciences

Dr Felia Allum
University of Bath
Women, crime and culture: transnational organized crime as an equal opportunity industry
£171,566

Professor Kenneth Armstrong
University of Cambridge
The Brexit effect: convergence, divergence and variation in UK regulatory policy
£173,536

Dr Gary Boyd
Queen's University Belfast
Architecture and the face of coal: mining and modern Britain
£155,569

Dr Alex Bremner
University of Edinburgh
Edwardian baroque architecture and imperialism in Britain and the British world
£140,033

Professor Ben Clift
University of Warwick
The OBR and the politics of UK growth amidst Brexit, uncertainty and austerity
£162,755

Professor Sionaidh Douglas-Scott
Queen Mary, University of London
Brexit and British constitutional unsettlement
£172,987

Professor Sondra Hausner
University of Oxford
Renaissance of the world: Hindu politics and ascetic life in independent India
£113,441

Professor Clare Holdsworth
University of Keele
The social life of busyness in an age of de-acceleration
£152,657

Professor Lindsay Paterson
University of Edinburgh
Education and society in Scotland
£139,322

Professor Corey Ross
University of Birmingham
Blue revolution: fisheries, development and environment in the 20th century
£179,312

Dr Pauline von Hellermann
University of Oxford
The social life of busyness in an age of de-acceleration
£154,990

Dr Vitaly Moroz
Swansea University
Visiting Professor – Professor Friedemann Brock
£73,812

Dr Vijay Nagarajan
University of Edinburgh
Visiting Professor – Professor Daniel Sorin
£24,395

Dr Friederike Otto
University of Oxford
Visiting Professor – Dr Maïsa Rojas
£25,280

Professor Rosalind Rickaby
University of Oxford
Visiting Professor – Professor Katsumi Matsumoto
£70,522

Dr Felix Schulze
University College London
Visiting Professor – Professor Mariel Saez
£20,050

Humanities

Professor Tamar Garb
University College London
Visiting Professor – Professor Deborah Posel
£88,560

Dr Mark Knight
Lancaster University
Visiting Professor – Professor Colin Jager
£48,039

Dr Antonio Lázaro-Reboll
University of Kent
Visiting Professor – Professor Susana de la Sierra Morón
£21,139

Professor Steven Mithen
University of Reading
Visiting Professor – Professor Guiyun Jin
£80,035

Dr Jairo Lugo-Ocando
University of Leeds
Visiting Professor – Professor Federico Subervi
£22,130

Professor Giorgio Riello
University of Warwick
Visiting Professor – Professor Miki Sugiuira Nishiyama
£48,780

Dr Annette Jackle
University of Essex
Visiting Professor – Professor Christopher R. Bollinger
£33,711

Social Sciences

Professor Sir Richard W Blundell
University College London
Visiting Professor – Professor Francois Maniquet
£10,550

Professor Annette Jackle
University of Essex
Visiting Professor – Professor Christopher R. Bollinger
£53,711
Professor Gregory Currie
University of York
Research Project Grant
Learning from fiction: a philosophical and psychological study

Professor Andrew George
SOAS University of London
Major Research Fellowship
The drunken gods: a new study of ancient Mesopotamian mythology

Senso-motoric eye glasses allow observation of natural eye movement patterns during reading and social situations.

Bas-relief wall slabs depicting a Mesopotamian storm god repelling a hostile monster, Nineveh.