

RESEARCH DEVELOPMENT FUND: ALL AWARDS

ROUND ONE (December 2013)

The first round received 44 bids from faculty in all 12 schools. There was a 20% success rate with the successful bids coming from BSMS, English, Global Studies, Life Sciences, Maths and Physical Sciences, and Media, Film and Music.

Michael Collyer, Jeremy Reffin, Susan Collard

Sustaining the Emigrant Voting Database

This project will establish a bespoke search protocol to maintain a global database on systems of emigrant voting. It draws on informatics research tools pioneered at Sussex and will support further applied and theoretical work on the changing spatiality of political authority. The research involves Michael Collyer (Geography), Jeremy Reffin (Informatics) and Susan Collard (Politics), coordinated through the Sussex Centre for Migration Research.

David Hendy

The BBC Centenary History Project

Researchers in MFM will be working with the BBC to bring the Corporation's hitherto-closed Oral History Archive to a wide public audience. The archive consists of more than 400 interviews with senior staff, programme-makers, presenters and contributors spread across the BBC's 91-year history. It promises to be a major new resource for media and cultural historians. RDF funding will allow the material to be scoped and for an interpretation and digitisation strategy to be developed. The project will be led by David Hendy, Professor of Media and Communication and co-ordinator of the new Public Culture Hub, and Dr Margaretta Jolly, Director of the Centre for Life History and Life Writing Research.

George Kostakis, John Spencer

Second-sphere coordination effects on isoskeletal Single Molecule Magnets

The goal of this project is to synthesize isoskeletal Single Molecule Magnets (iSMMs); nanoscale molecules displaying slow relaxation of their magnetization vector, by utilizing Cobalt (II) and/or Dysprosium (III) ions along with organic ligands bearing electron-withdrawing groups.

Sarah Newbury, Chris Jones

Investigating the genetic basis of osteosarcoma in children and domestic dogs.

Osteosarcoma is a deadly form of bone cancer that develops from cells responsible for forming the bone matrix. It is the most common primary bone cancer, with a particularly high incidence in children and domestic dogs. The aim of this project is to investigate the role of the 5'-3' exoribonuclease XRN1 in the progression of osteosarcoma. While we already have evidence that XRN1 is down-regulated in osteosarcoma tissue culture cells, we now need to find out whether this is also the case in tumour samples.

Mika Peck

Rapid Acoustic Survey: Validating Acoustic Methods for Biodiversity Assessment

Biodiversity assessment is a central and urgent task in contemporary biology. Based on the rationale that ecological processes are tightly linked to and reflected in structure of the patterns of sounds emanating from landscapes we aim to validate an acoustic remote sensing device to assess biodiversity over spatiotemporal scales that are currently difficult or impossible to measure.

Paul Kirby

Governing Sexual Violence at the Foreign Office: Evaluating the UK's Preventing Sexual Violence Initiative

This project develops an analysis of the UK Government's Preventing Sexual Violence Initiative, a new and high-profile example of gender-mainstreaming and ethical foreign policy.

Sara Crangle

Aesthetics & Politics: Rethinking Contemporary British Avant-Gardism

Anna Mendelssohn (1948-2009) is a vanguard figure of resounding cultural significance: a cutting-edge, erudite, and well-connected poet and artist, she served five years in prison for her involvement with The Angry Brigade. Her extensive archive was donated to Sussex in 2010; Sussex Research Development funding will facilitate cataloguing her work, a pre-requisite to future research funding bids and Sussex-based scholarship.

Jessica Downs, John Spencer

Validation of chemical inhibitors as a therapeutic strategy in BAF180-deficient cancers

The BAF180 protein is part of a chromatin remodelling complex termed SWI/SNF. Strikingly, this complex is mutated in approximately one fifth of all cancers. We found that cells with mutations in BAF180 are sensitive to drugs that inhibit a specific class of enzymes. This grant will allow us to investigate these findings in greater depth in order to validate these drugs as a therapeutic strategy for BAF180-deficient cancers.

Jose Verdu Galiana

The Geonium Chip: A revolutionary high-end mass spectrometer

A mass spectrometer is a device able to measure the mass of single atoms and molecules with very high precision. Mass is one of the main characteristics of matter therefore the uses of mass spectrometers range from the very academic, such as the high accuracy measurement of fundamental nature constants, to practical applications in chemistry, genomics, proteomics, safety monitoring and many more. Currently, the most advanced mass spectrometers rely upon the use of very big and expensive superconducting solenoids. At our lab, we are developing the mass spectrometer of the future by fabricating an ultra-high resolution mass spectrometer on a chip, thereby eliminating the need of a superconducting solenoid.

ROUND TWO (April 2014)

The second round of the competition received 18 bids from faculty in 10 schools. There was a 39% success rate with the successful bids coming from the following schools: Education and Social Work, Engineering and Informatics, Global Studies and Life Sciences.

Alexander Antonarakis, Pedram Rowhani

Predictions of Current Carbon Stocks in a Temperate Forest

The study, will evaluate the use of satellite lidar from ICESat, rather than airborne techniques, to provide accurate measurements of regional ecosystem structure and current carbon stocks in central New England.

Jeremy Niven, Andrew Philippides, Thomas Collett

Investigating the neural circuits underlying memory formation in foraging ants

This interdisciplinary project will investigate fundamental aspects of memory by pharmacologically interfering with ants' neural pathways as they perform path integration (PI). The project will lead to novel insights into neural circuits underlying memory and allow us to analyse memory systems associated with PI.

George Parisi, Ian Wakeman

Design and implementation of a simulation framework for experimenting with data transport mechanisms in simulated data centre network topologies

This project will build on existing, community-driven work on packet-level network simulations, in order to develop a platform for experimenting with network protocols in simulated data centre topologies.

Frances Pearl, Simon Ward, Tony Carr, Dan Chalmers

A target-prioritization database for cancer drug discovery.

The near universal development of genomic instability that accompanies tumourigenesis has brought the pathways that mediate the DNA Damage Response (DDR) to the fore as targets for development of new approaches to the treatment of a wide range of cancers. This grant will enable us to construct a database

that integrates public domain and proprietorial Sussex cancer data. Using these data we will be able to identify novel DDR oncology targets and prioritise targets currently being studied within Sussex for lead compound development.

Pedram Rowhani

Socio-ecological impacts of agricultural policies in the European Union

The Common Agricultural Policy (CAP) is the biggest budget expenditure of the European Union and influences regional land use and food production. The aim of this proposal is to perform an initial literature review and data analysis to identify regions in New Member States where agricultural practices changed due to the access to the CAP.

Paul Statham

The Politicization of 'Immigration' and 'Europe' in Mass-Mediated Public Debates - a comparison of the UK and Sweden

The pilot project analyses contentious political debates over 'immigration' and 'Europe' carried by mass media from 2005-14, in the UK and Sweden.

Julia Sutherland, Jo Westbrook, Jane Oakhill

Developing secondary students' reading comprehension in Sussex and Brighton and Hove

This interdisciplinary project investigates the measurable impact of an innovative teacher-development programme on secondary students' growth in reading comprehension, drawing on knowledge from Psychology and Education and local teacher networks.

ROUND THREE (NOVEMBER 2014)

The third round of the competition received 23 bids from faculty in 9 schools. There was a 48% success rate with the successful bids coming from the following schools: BSMS, English, Education and Social Work, Global Studies, Life Sciences, LPS, MFM and MPS.

Leena Al-Hasaan, Melanie Newport, Mark Paget, Tony Carr

Investigating infections and antibiotic resistance in Africa

Hospital acquired infections and antibiotic resistance are emerging as major health issues globally. The UK's Chief Medical Officer, Professor Dame Sally Davies, issued stark warnings about the catastrophe we face if we do not immediately address the imminent threats of antimicrobial resistance. This problem is particularly underestimated in Low- and Middle- Income Countries due to the lack of surveillance and reporting. This interdisciplinary collaborative project aims to investigate the epidemiology of infections and characterise the main mechanisms of antibiotic resistance in different African countries.

Sabina Avdagic

Labour Market Insecurity and Distributive Politics

This pilot project focuses on the link between labour market insecurity and distributive outcomes in over thirty countries. The aim is to examine how the increasingly hostile labour market and job insecurity affect income inequality and demands for redistribution, and how governments respond to those demands.

John Barlow, Roger Moore

UAV photogrammetry for sea cliff erosional mapping

This project is intended as a proof of concept for the use of digital photogrammetry from an unmanned aerial vehicle (UAV) in detecting erosional flux from chalk sea cliffs along the Sussex coast. The methods developed will be of use to practitioners from both industry and government (e.g. CH2M HILL, Brighton & Hove City Council, and Channel Coastal Observatory) who have an interest in coastal erosion.

Sue Currell

Mapping the American Radical Periodical: New Masses magazine 1926-48

This project initiates the development of a large digital scholarship project by funding the conservation and digitization of Sussex Special Collection's archive of the New Masses magazine. The digital archive of the magazine will provide an accessible research and teaching archive resource that will be used to springboard further research applications for an extensive digital humanities project focused on expanding research on the magazine into an open source scholarly publishing project.

Iain Day

PASSE: Photochemical Amplification of Signal for Structure Elucidation

Nuclear Magnetic Resonance (NMR) is a key analytical tool for the determination of molecular structure in solution, however, it is hampered by low sensitivity. This project will develop the proof of concept for the use of photochemical signal enhancement techniques in small molecule structure elucidation.

Ivor Gaber, David Weir, Jeremy Reffin, Paul Webb

The Impact of Social Media on the election campaign in Brighton: a case study

This project involves a pilot study – based on the three marginal constituencies in Brighton – that will seek to evaluate the impact of the social media (direct and mediated by national and local press, TV and radio) on voters at the coming General Election. Methodologically the project will develop new tools for analysing social media content and activity but it will also, conceptually, explore the possibility of tracking links between social media activity and electoral behaviour and performance.

Liz Hill, Ali-Abdul-Sada

Acute Kidney Injury: Identifying Next Generation Biomarkers for Detecting Early Stage Kidney Toxicity

Current methods of detecting acute kidney injury (AKI) rely on molecular biomarkers which are secreted in late stages of injury. This proof of concept study will use newly developed sensitive metabolite profiling techniques to identify novel potential biomarkers for use in early detection of AKI.

Michelle Lefevre

Learning from the communication process between Social Workers and children to improve social work practice

There is a pressing need to improve Social Workers' communication with vulnerable children. Most research uses post-hoc accounts; little is known about direct interactions. This pilot tests the feasibility of observing and micro-analysing interactions, triangulating these with interview data, as the basis for scaled up research to examine and improve professional communication with children.

Seb Oliver, Oskar Karczewski, Mark Sargent, Peter Thomas, Ilian Illiev, Steven Wilkins, Charalambos Makridakis

Demonstrating a new methodology for the 3D modelling of complex interstellar environments

The project will demonstrate key elements of a new methodology for self-consistent modelling of realistic interstellar environments of gas and dust in distant galaxies. This will then enable the submission of a project grant proposal to Leverhulme and allow Sussex to take a lead in this emerging field.

Ildiko Kemenes

Introduction of genetic manipulation to a physiologically tractable invertebrate model system of learning and memory

The project will pilot the use of an innovative gene editing method in an established invertebrate model of learning and memory. This interdisciplinary project will lead to a step change in our ability to elucidate the genetic changes involved in the encoding of long-term memory in a defined neural circuit.

Martin Llewelyn, Stefano Caserta, Florian Kern, Sarah Newbury

New biomarkers for infection: investigation of the immunomodulatory role of miRNAs in regulatory T cells

This proposal brings together researchers at BSMS working on clinical infectious diseases (Martin Llewelyn), the immunology of inflammation (Florian Kern and Stefano Caserta) and cell biology (Sarah Newbury) to

address the urgent need for new tests and treatments for infection. Sepsis (the inflammatory response which the body makes to infection) is a major cause of morbidity and death globally. MicroRNAs are a recently identified major family of gene regulators which have previously been studied mostly in cancer. This research will explore the role of microRNAs in inflammation to determine their potential as novel diagnostic and therapeutic targets in sepsis.

ROUND FOUR (APRIL 2015)

The fourth round received 24 bids from faculty in 11 schools. There was a 46% success rate with the successful bids coming from Engineering and Informatics, Education and Social Work, Global Studies, Life Sciences and Psychology.

Jenny Bosten, Peggy St. Jacques

Virtual reality as a tool for assessing vision and memory

Using innovative virtual reality methodologies we aim to develop ecologically valid tests of visual performance and to investigate the influence of visual perspective on memory, both relevant to disease. The project promotes two independent lines of future research linked to separate grant applications.

Christopher Buckley, Leon Lagnado

The Fish Matrix: Understanding brain-wide neural dynamics during active behaviours

This interdisciplinary project will develop the hardware and software infrastructure necessary to image brain-wide neural activity in a fictively behaving zebrafish. This research will establish Sussex as leading innovators of this cutting-edge technology and allow unprecedented insight into the neural basis of active behaviours.

Hans Crombag, Catherine Hall

Control of feeding by learned cues and the adverse consequences of 'obesogenic' diet-induced inflammation and neurovascular function

Overweight and obesity will soon overtake smoking and alcohol as the leading, contributor to preventable disability and death in the UK. To address this priority research area, we will 1) develop a novel preclinical model in the mouse able to delineate learning components in the regulation of appetite and the detrimental effects of high-energy diet, and 2) collect initial evidence that these effects of 'obesogenic' diet depend on central inflammatory responses and neurovascular dysfunction in underlying brain circuits. These outcomes will provide essential preliminary evidence for a multi-investigator grant application, combining innovative behavioural modelling and state-of-the-art neuroscience techniques, targeting the MRC research priority area of obesity.

Geert De Neve, Grace Carswell

The materiality of citizenship and state-society interaction: A study of official documents, cards and paperwork in India

The project is a pilot and scoping study to support an external funding application on the materiality of citizenship and state-society interaction in India. It will explore how cards, documents and official paperwork play a central role in ordinary citizens' engagement with the everyday state, its schemes and actors.

Ben Dyson

Brain states underlying emotional decision making in adversarial game environments

Human decision making is known to be irrational and reliant on emotionally-driven heuristics. While heuristics are essential from a human cognitive point-of-view, such techniques can be exploited in competitive environments and as such may not have evolutionary value. The research seeks to establish the neural indices underlying heuristic decision making informed by emotion during competitive game environments. This complex brain data will provide the backdrop for potential future understanding the interaction between emotion and decision making in specific populations such as individuals identified with Asperger's syndrome.

Matthew Easterbrook, Vivian Vignoles

The really minimal group paradigm: The truly minimal conditions necessary for group identities to emerge

We will develop new experimental paradigms to investigate the minimal environmental conditions that can cue social categorisation, and under which group identities spontaneously emerge.

Vasudevan Kanjirakkad

Investigation of Flow Transition Phenomena over Compressor Blade Surfaces

The dominant aerodynamic conditions that cause flow transition and turbulence over a compressor blade surface will be identified through a simple wind tunnel based experimental programme. The research concept, methods and capabilities will be clearly demonstrated. The results and the knowledge gained from this study will be further used to provide the back ground for an external funding application that looks to build and conduct transition studies in a realistic rotating compressor research facility.

George Kostakis

Selective Liquid Separation of Water/Methanol and Water/Ethanol by Regenerable Pseudopeptidic Coordination Polymers

This proposal seeks to synthesize compounds that behave as desiccants requiring low energy consumption for their re-activation, in contrast to the broadly used molecular sieves, as well showing selective separation, in liquid phase, of water from methanol or ethanol.

Gillian Ruch, Katie Walsh, Denise Turner

(Extra)ordinary Stories: Exploring Children's Diverse Experiences of Home

This innovative feasibility and pilot project will explore young children's everyday experiences of home, utilizing creative qualitative research methods. Of particular interest will be children who, for complex reasons, have experience of more than one home. The project will map the existing literature and examine potential methodological and ethical issues.

Alison Sinclair, Erika Mancini

Working with the enemy: how does a cellular protein combine with two viral proteins to reprogram gene expression?

Epstein-Barr virus invades cells and turns them into viral replication factories. Reprogramming gene expression requires a complex of two viral and one cellular protein. The proposed proof-of-concept interdisciplinary project will develop the tools needed to identify the important molecular interfaces involved in the formation of this complex.

Simon Ward

Identification of Low Molecular Weight, Selective Inhibitors of the P2X4 Ion Channel to Investigate the Potential of Channel Modulation to Treat Neurological Disorders

The aim is to identify several validated, structurally diverse series of selective ion channel modulators to support a grant application to the Medical Research Council Development Pathway Funding Scheme in collaboration with Dr Ruth Murrell-Lagnado, Dr Andrew Thompson (Cambridge) and Dr Andrew Dilley (BSMS).

ROUND FIVE (NOVEMBER 2015)

The fifth round received 29 bids from faculty in 11 schools. There was a 38% success rate with the successful bids coming from BMEC, BSMS, Engineering and Informatics, Global Studies, HAHP, Life Sciences, MPS and Psychology.

Maurizio Marinelli

Gentrification and 'Living Heritage' in Hong Kong: Stories of Survival, Resistance and Metamorphosis

This project focused on the stories of survival, resistance and metamorphosis of street markets and street hawkers in Hong Kong will contribute both to fill a gap in the socio-political and cultural history of Hong Kong, and offer an innovative and original approach which could contribute to the pioneering field of 'Hong Kong identity studies' (香港学).

Gideon Reuveni, Fae Dussart

The Economics of Sexual Exploitation: Jewish sex trafficking syndicates in the German-Speaking World, 1180-1940

In the 1880s, amid mass migration from Continental Europe, sex trafficking became a global phenomenon. East European Jews operated particularly organized and profitable trafficking syndicates. The archive of the Austrian Foreign Service (HHSTA) in Vienna houses untapped files on such syndicates between 1880 and 1918. RDF funding will help us scope and transcribe these files, develop an interpretation strategy for the material therein, and prepare a pilot study ahead of a major funding application on Jewish trafficking syndicates in the German-speaking world.

Lisa Mullen

Safety testing of a novel drug delivery system to underpin therapeutic applications

Research into a novel drug delivery system is ongoing. Queries have been raised about the safety of a by-product of this system which needs to be addressed so that the next phase of funding to explore novel therapies for Multiple Sclerosis and other inflammatory conditions can be secured.

Maria Clara Castellanos

Plant resilience and floral adaptation to pollinator change: field estimates in polyploid plants

The response of wild plant populations to human-induced changes in pollinators depends on their resilience and potential for evolutionary change. This pilot study will develop statistical tools to use a novel combination of field studies and population genomics to measure plant evolutionary potential directly in field populations where pollinators vary.

Gordon Ferns, Lamia Hiekel

The development of a novel platform for local, targeted treatment of cardiovascular disease

The proposed pilot study is essential to provide proof of concept and demonstrate the feasibility of a novel local regenerative medical system based on polymeric hydrogels as a promising therapeutic approach for the treatment of cardiovascular disease. This will enable us to register a patent and apply for external funding.

Martin Rose, Harry Kovisto

Investigation of the unsteady time resolved 3-dimensional nature of the flow in rotating disc systems

The capability to measure high frequency time resolved 3-dimensional unsteady flow fields will be developed through an experimental programme. The results from this study will support two external research grant applications, which, if successful, place Sussex at the forefront of modern gas turbine research.

John Drury, David Weir

Mapping mobilization: The role of identity processes in the spread of solidarity across society through social media

This study develops a methodology for mapping the diffusion of expressions of solidarity across social media, and investigates the relationship between social media activity, identity and social influence. Findings will be relevant to social scientists and practitioners interested in promoting solidarity and positive intergroup relations.

Ryan Scott, Martin Yeomans

Unconscious reward associations driven by sweet tastes

The conscious association of cues, e.g. logos, with experienced reward, such as sweet taste, is known to influence consumption in the context of those cues. This project will use a new unconscious conditioning paradigm to provide proof in principle that such conditioning can be achieved unconsciously. If successful, the work will both challenge the current public health model for modifying consumer behaviour and open a new avenue for therapeutic treatment.

Mariana Mazzucato

The Next Economy Project

The Next Economy Project is a pilot project on how to allow policy makers to feed into high level economic research (funded by the European Commission), through 'co-creation' mechanisms, and to foster dissemination through policy briefs discussed in UK Parliament (achieved through the steering group). Three themes around the public debt, investment in innovation, and the smarter state, have been chosen as points of focus. The project will lead to the submission of a Co-Creation bid to the Horizon 2020 programme in 2017.

W. Clark Griffith, Phil Harris

Demonstration of a He3 absolute magnetometry system for neutron EDM

Measurement of a neutron electric dipole moment (EDM) would give key insights to the basic symmetries underlying our universe. EDM measurements rely crucially on exquisite knowledge of magnetic fields in the apparatus, which will be greatly enhanced by the addition of a new high precision He3 magnetometer.

Filippo Osella, Andrea Cornwall

Expectations of Masculinity: A Comparative Study of India and Nigeria

This project is intended as a proof of concept for a major ESRC grant that will explore the changing contours of masculine identities under neoliberalism in two significant "emerging economies": India, where globalisation and a rapidly changing labour market has opened up new opportunities for women and reconfigured both the possibilities and the realities of men's realisation of traditional identities as providers; and Nigeria, where economic growth and political instability have contributed to the continuing decline of the breadwinner identity created in the wake of colonial proletarianisation, alongside the continued expansion of female opportunities for economic empowerment in the informal sector. As part of this preliminary study, we will also investigate the feasibility of expanding the project to encompass other emerging economies in the global south, such as Brazil and China.

ROUND SIX (APRIL 2016)

The sixth round received 39 bids from faculty in 11 schools. There was a 28% success rate with the successful bids coming from BSMS, Engineering and Informatics, Global Studies, HAHP, Life Sciences, MPS and Psychology.

Tony Carr, Seb Oliver

Mathematical modelling DNA replication dynamics.

DNA replication uses 3 DNA polymerases, Pol ϵ , Pol δ and Pol α . Prof Carr has developed a deep sequencing method (Pu-Seq) to map Pol usage across whole genomes. Astronomers routinely apply statistical methods to large datasets. We will join these disciplines to extract maximum biological insight from Pu-seq data.

James Fairhead, Leena Al-Hassan, Jonathan Bacon

Insect earths as a source of novel antimicrobials.

Combining expertise in Anthropology (medicinal 'earths' used in some African communities), Life Sciences (extracting and identifying bioactive molecules from insects) and BSMS (investigating antimicrobial properties of insect earths and compounds) we will produce robust preliminary data on novel antimicrobials for publication and to underpin a large collaborative application.

Elizabeth Ford, Natalia Beloff, Jackie Cassell, Seb Oliver

A new Bayesian approach to modelling dementia risk using general practice patient records.

Clinical prediction models give doctors important early warnings as to which patients are at risk of a disease. General practice patient records could be a powerful resource for constructing these models. Conventional epidemiological tools, assuming high quality data, have failed to produce useful models for dementia when applied to GP records. This proof of concept study proposes a new Bayesian methodology for modelling onset of dementia, accounting for uncertainties in data quality.

Kate Howland

End-user programming in-situ.

This research pursues an in situ programming interface for end-users to define computational rules for context-aware experiences using gesture and voice. The project pilots a novel methodology for capturing natural expression of such rules in context and prototypes multimodal interfaces.

Christina Jones, Somnath Mukhopadhyay

Every school day matters: reducing school absences in Sussex through targeted primary care-led intervention.

The project aims to use novel methodology to define the proportion of school absences in the local community caused by asthma-related illness, and the common factors that may predispose to this problem. The information will be used to develop and test a primary care-driven intervention aiming to reduce asthma-related school absences in the community.

Sergei Korneev, Guy Richardson, George Kemenes

The role of a long Nos1-related non-coding RNA in the regulation of neuronal differentiation.

At the heart of our project is a distinct class of non-coding RNAs called long natural antisense transcripts (NATs). The overarching goal of the project is to elucidate the role of a novel long NAT (antiNos1) in the regulation of *neural differentiation*.

Yuliya Kyrychko

Making 'smart' networks smarter.

This proposed research will use mathematical modelling techniques to initiate the development of an effective investigative tool for understanding of the fundamental behaviour and management strategies of the Internet of Things network.

Claire Langhamer

Emotional Labour: Feelings at Work in Modern England.

A study of the intersections between work and emotion in England over the last 100 years. It explores feelings about paid employment; the emotional impact of employment; paid and unpaid emotional labour; and the management of feeling within specific workplaces and occupational sectors.

Karen McComb, Lucy Bates

Culture in Elephants.

Cultural inheritance is considered to be a key evolutionary process, but little is known about its prevalence in mammals. Our project will establish whether African elephants possess culture, throwing light on what drives its evolution and providing vital information to guide conservation efforts across Africa.

JoAnn McGregor, Geoff Quilley

South Coast Cosmopolitanism: collections, connections, diversities.

This project will work with four regional Museums (Brighton, Hastings, Maidstone, Powell Cotton) to unravel and render visible histories of cosmopolitan connection encapsulated in key African objects and related archives. This is an initiative of the Sussex Africa Centre, with support from the Sussex Humanities Lab.

Eleanor Miles***Improving self-regulation through psychological interventions: who benefits from what?***

This project will investigate whether individual differences moderate the effectiveness of psychological interventions to improve self-regulation, and thus their effectiveness in enhancing physical and mental health. The ultimate aim of this line of work is to enable researchers and governments to target psychological interventions to the people who will benefit from them the most.

ROUND SEVEN (November 2016)

The seventh round received 30 bids from faculty in 12 schools. There was a 36% success rate with the successful bids coming from Global, Psychology, Mathematical and Physical Sciences, Engineering and Informatics, English, and, Life Sciences.

Peter Cheng***Cognitive Learning Analytics: A real-world large scale experiment with the Educational Testing Service***

A general method has been developed for the assessment of competence in skilled intellectual domains. It uses simple copying tasks and can be administered in a small fraction of the time of conventional tests. Laboratory experiments have demonstrated that the method reliably measures competence in diverse subject domains. In collaboration with the US Educational Testing Service (ETS), this project will conduct the first large scale evaluation of the method in a real educational setting with 250 children in maths classes.

Matthew Dimmock, Benjamin Fowler***'Tamerlanes and Tamer-Chams': Defining the Early Modern 'Turk Play'.***

For the past two decades scholars have increasingly used the term 'Turk play' to refer to a substantial body of drama from early modern England concerning Islam and Muslims. Yet there is no agreement over what this term means. This project explores and redefines this important corpus in its entirety.

Peter Fussey, Daniel Roggen***Application of EPS to an automotive turbocharger***

Extension of existing University of Sussex sensor patents to develop low cost turbo speed sensing for automotive turbochargers. Benefits include improved performance, reduced emissions and fuel consumption together with improved diagnostics.

Dave Goulson, Beth Nicholls and Jeremy Niven***Establishing a method for studying the impact of larval pesticide exposure on adult bee behaviour and physiology***

The impact of pesticide exposure on bees remains much debated. Research to date has focussed heavily on adults; little is known about the effects of dietary exposure of bee larvae to pesticides and how this might affect their development. This pilot will allow us to establish a set-up for rearing honeybee larvae under highly controlled conditions, vastly improving the robustness of future ecotoxicological studies. We will collect preliminary data on the effect of exposure to neonicotinoid insecticides on the development and functioning of the bee brain, furthering our understanding of how neonicotinoids may contribute to current bee population declines.

Paul Graham, Andrew Philippides***A biologically-inspired algorithm for assisted human navigation in everyday environments.***

How might ants help us find our way? This project will adapt an algorithm inspired by the remarkable navigational abilities of ants for route guidance in everyday environments. It will lead to the development of viable assistive technologies for those who have difficulty navigating, such as visually impaired individuals.

Graham Hole***Improving the recognisability of facial composites via repeated recall attempts***

The police will often ask a witness to construct a facial composite of the criminal that they saw, in the hope that the composite will be recognised by someone who is familiar with the criminal's face. Unfortunately, even the most sophisticated of these systems, such as Evo-Fit and EFIT-V, struggle to produce recognisable likenesses of faces.

Based on psychological research on "reminiscence" and "set-averaging" effects in face recognition, this project would investigate the possible benefits of asking a witness to make several composites rather than just one. Combining multiple attempts at composite construction into a single "average" composite might produce an image that is more recognisable (and hence forensically useful) than any individual composite produced by that witness.

George Kemenes, Huimin Wan

Measuring learning-induced protein kinase phosphorylation with single cell resolution in a defined neuronal network

Using single-cell analysis, we will measure, for the first time, learning-induced phosphorylation of CaMKII, a "memory molecule", in a single identified neurone in *Lymnaea stagnalis*, an established animal model of long-term memory. This project will lead to a new direction for neuroscience research and place Sussex Neuroscience in the forefront of functional single-cell analysis.

Evan Killick

La Comunidad Nativa: A Collaborative Research Project on Land Rights and Development in the Peruvian Amazon

In collaboration with indigenous Amazonian people this project will assess the legacy of Peru's Law of Native Communities in relation to land rights and participatory democracy as well as the current well-being and future development of indigenous communities.

Jane Oakhill

Whole class support for reading comprehension

The aim of the project is to trial a set of training materials designed to support and develop primary-school children's reading comprehension. The main outcome would be an external bid to fund a national randomised controlled trial of the materials.

Paul Taggart, Kai Oppermann, Sue Collard, Adrian Treacher, Aleks Szczerbiak

Sailing in Unchartered Waters: Responses to Brexit in Germany, France and Poland

This project is a study of the responses to the Brexit process in three key EU member states: France, Germany and Poland. The study will examine the response of elite and effects on domestic politics in these states as the negotiations over Brexit unfold.

Eleanor Miles

Improving self-regulation through psychological interventions: who benefits from what?

This project will investigate whether individual differences moderate the effectiveness of psychological interventions to improve self-regulation, and thus their effectiveness in enhancing physical and mental health. The ultimate aim of this line of work is to enable researchers and governments to target psychological interventions to the people who will benefit from them the most.

ROUND EIGHT (APRIL 2017)

The eighth round of the competition received 32 bids from faculty in 10 schools. There was a 41% success rate with the successful bids coming from the following schools: BSMS, ENGINF, LIFESCI, LPS, MPS, and Psychology.

Helfrid Hochegger, Antony Oliver

A novel system for expressing full-length recombinant human proteins

This project aims to develop a novel DT40 lymphocyte-based protein expression system, which will enable the facile expression of soluble recombinant human proteins. The research will generate 'proof-of-principle' results with two proteins - Greatwall kinase and PALB2.

Penny Jeggo, Steve Sweet

Identifying the origin of translocation-prone, ATM-dependent DNA double-strand breaks using chromatin immunoprecipitation mass spectrometry

A subset of slow-repairing DNA double-strand breaks (DSBs) contribute disproportionately to translocations. The DSBs' origin, heterochromatin or transcribed regions, is controversial. We will assess the chromatin type in which these DSBs occur using a γ H2AX ChIP mass spectrometric approach.

Kathryn Lester, Andy Field

Children's risky play experiences, parental anxiety and the development of childhood fear and anxiety

This project will provide essential feasibility and pilot data for a longitudinal study investigating the impact of maternal and paternal anxiety on children's experiences with risk and challenge through risky play, and in turn, the effect on risk for childhood fears and anxiety across childhood.

Kun Liang

A Novel Linear Electromagnetic Actuator Driven (LEAD) Camless Valve Train for Internal Combustion Engines

A low cost camless engine using linear electromagnetic actuator driven (LEAD) valve train will be developed. The Sussex LEAD system significantly improves the engine efficiency, maximum torque and power, and emissions.

Liz McDonnell, Laura Morosanu, Mark Walters, James Hampshire and Nuno Ferreira

One year after the EU Referendum: creating a new data set in the Mass Observation Project

This interdisciplinary project seeks to document and understand the complex experiences and perceptions of ordinary British residents as they navigate the dramatic and unfolding political and social changes, triggered by the EU Referendum. A commissioned directive to be delivered by the Mass Observation Project will produce a new and methodologically innovative data corpus consisting of reflective accounts, focusing on the impact of Brexit in the following areas of everyday life: belonging, identity, social and personal relationships, prejudice, perceptions of immigration and politics.

Tony Moore, John Spencer, Luke Young, Mary Albury and Alice Copsey

Testing of specific AOX inhibitors targeted at *Candida auris* – a multi-drug resistant human fungal pathogen

The objective of this proof-of-concept study will be to obtain additional preliminary data which establish that alternative oxidase plays a vital role in the metabolism of *C. auris* and therefore a suitable target for controlling the proliferation of this multi-drug resistant human fungal pathogen.

Jane Oakhill, Robin Banerjee, Alan Garnham, Scarlett Gaebler

Reading Feelings: Does reading fiction improve empathy and social skills in children?

There is evidence that reading (literary) fiction improves empathy in adults. We plan to explore how, why, and to what extent such a link is present in children, what aspects of empathy are related to reading, and whether other social skills are also influenced by reading.

Alessia Pasquazi, Marco Peccianti

Feasibility study for a novel generation of optical clocks for quantum systems based on toroidal optical resonators

This feasibility study will focus on the development of optical clocks based on resonating toroids. These optical resonators feature an extremely high cavity field enhancement. This is an enabling factor in the development of optical clocks with extreme accuracies which are key elements in a large spectrum of emerging quantum technologies. This study will lead to the definition of compact ultraprecise optical clocks operating at very high stability with extremely low laser powers, a major challenge in the field.

Elizabeth Rendon-Morales, Heike Rabe

The first minute of life: novel technologies to monitor heart rate in newborn babies needing resuscitation

This project will develop an innovative heart rate monitoring device to assist neonatal health carers during resuscitation of a newborn baby. The device is based on Electric Potential Sensing technology, which will provide a non-invasive, reliable and quickly administered solution to provide heart rate information from the newborn.

Sandra Sacre, Sarah Newbury, Valerie Jenkins and Chris Jones

Exploring the role of microRNAs in cognitive impairment associated with breast cancer treatment

Chemotherapy treatment for breast cancer may cause cognitive impairment. Patients describe problems with their memory, concentration and speed of thinking. This project will examine if there is a relationship between microRNAs produced during chemotherapy treatment and these symptoms.

Esra Sorguven

Improving energy efficiency of water pumps through novel flow measurement techniques

Water pumps are amongst the most frequently used turbomachines, which account for 10% of global energy consumption. The project aims to make use of the novel experimental and numerical techniques developed at the Thermo Fluid Mechanics Research Centre, for the analysis and improvement of water pumps.

Alan Stewart, Jeremy Niven and Daniel Osorio

See and be seen: Understanding Trade-offs in Glow Worm Bioluminescent Signalling

Glow-worm females attract males through their bioluminescent glow at night, and males fly towards females to mate. This nocturnal signalling is susceptible to artificial lighting at night (ALAN), which is one of the factors implicated in the long-term decline of glow worms. This pilot study will establish the techniques needed to quantify cost-benefit trade-offs in this signaller-receiver system in unprecedented detail and will quantify the impact of ALAN on its efficacy.

Jose Verdu Galiana

Implementation of a quantum transducer of single microwave photons

This project aims at developing an advanced experimental setup for implementing a quantum transducer of single microwave photons using a trapped electron. The potential future applications of this device include ultrasensitive quantum radars and quantum microwave microscopes.

ROUND NINE (APRIL 2018)

The ninth round of the competition received 38 bids from faculty in 9 schools. There was a 29% success rate with the successful bids coming from the following schools: BMEC, BSMS, ENGINF, ENGLISH, ESW, GLOBAL, LIFESCI

Konstantin Blyuss

Fighting crop losses with mathematics and naturally derived biostimulants

One of the biggest challenges for global food security comes from crop parasites. This pilot study will develop mathematical models of protecting crops against parasites using a revolutionary technology of RNA interference, and then test these in proof-of-concept experiments with major agricultural crops.

Andy Philippides, Phil Husbands

Coevolution of Brains and Bodies for Soft Robotics

This project will investigate a novel method for enabling the integrated coevolution of body morphology and brain structure in a soft-bodied robotic system so as to allow new insights into the way information processing can be shared between the nervous system and a flexible body in behaviour generation.

Chris Sandom

Understanding Diverse Vegetation Responses to Low-intervention Ecological Restoration

There is increasing interest in nature-led approaches to biodiversity conservation (a.k.a. rewilding). This project will test the use of LiDAR, photogrammetry, camera traps, and soundscapes in exploring how restoring natural processes can deliver diverse habitats to support rich communities of plants and animals.

Marie Hutton

An innovative methodological and theoretical approach to understanding the communication culture/s at HMP Anon.

No description provided.

Erika Mancini, Tim Chevassut

Discovery of a novel inhibitors of IRF4 to subvert Multiple Myeloma

Multiple myeloma is an aggressive and incurable cancer of the bone marrow. Recent evidence suggests that protein IRF4 is essential for the proliferation of malignant cells. The aim of this project is to initiate a drug discovery programme to cure multiple myeloma centered around inhibition of IRF4.

Lisa Mullen

Development of a targeted therapy for treatment of cartilage destruction in osteoarthritis

We are developing a novel protein-based therapy to inhibit cartilage destruction in osteoarthritis. External grant reviewers have raised the question of whether sufficient quantities of fully functional engineered protein can be produced which needs to be addressed to support future funding applications.

Nicholas Farina, Sube Banerjee

Dementia awareness in adolescents: a pilot study.

Reducing stigma towards people with dementia is a key policy priority. Such stigma forms early during childhood, though it is unclear how best to combat it. This project sets out to evaluate the impact of an existing dementia awareness session on dementia attitudes and knowledge in adolescents.

Pamela Kea

West Africa's return female migrants: Work, gender equality and social change

No description provided.

Mara Cercignani, Neil Harrison, Iris Asllani

Using Diffusion MRI to measure brain 'glymphatic flow' in-vivo

The recently discovered 'glymphatic' system governs brain fluid flow and removal of potentially toxic metabolites; it is believed to be impaired in Alzheimer's. This project will validate diffusion MRI as a method for measuring this system, which is currently only possible using extremely invasive methods.

Wendy Brown, Anna Barnett

Electron irradiation of ices on Europa

Europa is a moon of Jupiter which has an icy surface and a global ocean with a rocky interior. It is considered a candidate for extra-terrestrial life, and hence is of great interest. This project brings together two research groups at Sussex in a new collaboration to look at the electron induced chemistry of Europa.

Iftikhar Hussain, Prof Richard Dickens, Dr Julie Weeds

Detecting Gender Bias in Subjective Performance Assessments: Evidence from School Inspections

Using the English Ofsted school inspection regime as an example of a setting where the evaluator (inspector) exercises discretion, and exploiting large administrative data sets as well as textual analysis techniques, we test whether the gender of the head teacher / inspector affects inspection outcomes for the school as well as the school's leadership, after controlling for objective measures of performance.

ROUND TEN (DECEMBER 2018)

The tenth round of the competition received 19 bids from faculty in 10 schools. There was a 63% success rate with the successful bids coming from the following schools: BMEC, BSMS, ENGINF, ENGLISH, ESW, GLOBAL, LIFESCI, PSYCH.

Heike Rabe

MODERN: Mother Driven bEst pRactice implementation

MODERN (Mother Driven Best Practice Implementation) will develop and test new, patient-centric, digital intervention strategies to increase access to, and implementation of, evidence-based quality care during and after pregnancy. By focussing on priority interventions addressing preeclampsia, post-partum haemorrhage and delayed cord clamping the project will support the broader implementation of World Health Organisation care pathway recommendations for care before, during and after birth reducing mothers' and babies' deaths.

William McEvoy

'Aurora Nova' at the Edinburgh Festival 2001-9: arts collectivity, social and artistic transformation

This RDF-funded project establishes a network of academics, artistic directors, theatre critics, producers and performers to reflect on the impact of the Aurora Nova collective on the Edinburgh Festival between 2001-2009. This network is central to a large grant application to research Aurora Nova's huge influence on Edinburgh theatre and performance since.

Christopher Buckley

Free Energy Robotics: Bayesian routes to adaptive behavior

This project will exploit cutting edges techniques that have emerged in both Machine Learning and the brain sciences to develop novel algorithms to allow wheeled robots to problem solve when faced with previously unencountered and unanticipated environmental challenges.

Amalavoyal Chari

Collating and digitizing data on workplace safety in India

This project will consist of archival research to locate, scan and digitize data relating to workplace safety and occupational health in India, with the aim of enabling research into the effects of globalization on working conditions in developing countries.

Thomas Nowotny

Closed-loop Computational Electrophysiology

We plan to generate a proof of concept for the viability of a closed-loop computational electrophysiology technique for measuring ion channel properties in neurons without the use of pharmacological blockers.

The technique had been proposed under the label “dynamical observer”, but falls into a more general category of methods that very recently has emerged under the name “digital twins”. This project will lead to a new direction for cellular neuroscience research and place Sussex in the forefront of research aiming to develop modern electrophysiology methods aimed at improving our ability to build more predictive computational models of neurons.

Tamsin Hinton-Smith, ESW

Mainstreaming gender pedagogy in HE curricular: practices, challenges, futures

This research will take a qualitative approach to developing interdisciplinary understanding of practices across a cross-section of academic disciplines at the University of Sussex, exploring the extent and ways in which gender pedagogy is incorporated into mainstream curricula. This will include undergraduate and postgraduate levels, and will encompass the substantive content, theoretical, epistemological and pedagogic elements of teaching. The research will include interviews and focus groups with students and staff.

Mohammed Maniruzzaman, Life Sciences

Smart hybrid bandage integrated with wireless sensor for chronic wound management and healing

Chronic wounds that do not heal in an orderly and timely manner are of increasing significance due to lifestyle changes and the ageing population and affect more than 9 million people in the United States and Europe each year. The annual costs to treat chronic wounds exceed US\$ 39 billion worldwide. Thus, chronic wound healing and management presents an immitigable need of the present healthcare regime. We propose a first-of-its-kind wearable smart bandage system to wirelessly monitor and send signals from chronic wounds in real time. The system, comprises multiple 3D bio-printed thin films containing different drugs as well as a pH sensor and a flexible actuator with the option for triggering the drug from the system to the actual wound on demand.

Florian Kern, BSMS

Profiling T-cells in autoimmune disease

By measuring the activating effect of protein fragments on isolated immune cells combined with intelligent database mining we will pilot a new way of identifying which molecules in our bodies are targeted as our defence system turns against us in autoimmune disease. This will benefit future diagnostic tests and therapies.

Majid Hafezparast, Life Sciences

Identification of non-coding RNA-based biomarkers in cerebrospinal fluid of progressive supranuclear palsy patients

Progressive supranuclear palsy (PSP) is the second most frequent cause of degenerative parkinsonism. It has no cure and diagnosis is based on many months of clinical tests, with no robust markers of diagnosis or disease progression. In this study, we will identify noncoding RNAs as ‘biomarkers’ for this disease for early diagnosis and use in clinical trials.

Priya Deshingkar, Global Studies

Testing concepts and methods for research on irregular migration and migration brokerage

This feasibility and pilot project will explore methodologies and ethical challenges in researching clandestine migration networks and irregular migration in the Global South. It will test the feasibility of methods to measure and map the use of digital and IT technologies and quantitative methods for measuring irregular migration and brokerage.

Catherine Hall, Psychology

Modulating hippocampal blood flow to alter cognition

We hypothesise that mild impairments to hippocampal blood flow impair contextual memory in various disease states. By genetically manipulating contractile tone in vascular cells in hippocampus, we will show that we can selectively modulate hippocampal blood flow and test whether this impairs memory.

Charlotte Robinson, Engineering and Informatics

Investigating technological opportunities for children with disabilities through assistive technologies and assistant dog technology

This project's goal is to design and develop technological tools for the home environment for children with disabilities, including but not limited to children with assistance dogs living in the home, informed by current and future inclusive design, smart-homes/technology of the future, and animal-computer interaction.